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Comparative analysis of Poland and selected countries in terms of household financial behaviour during the COVID-19 pandemic

JEL Classification: C13; C22; C53; F31; D10

Keywords: *personal finance management; COVID-19 pandemic; consumer financial behaviour*

Abstract

Research background: The outbreak of the COVID-19 pandemic, the reduction in income or the total loss of jobs have affected the financial behaviour of consumers worldwide. Managing the budget in times of turbulence and crisis has posed a challenge for households.

Purpose of the article: The aim of the article is to determine to what extent the COVID-19 pandemic has affected the financial behaviour of the inhabitants of various countries and how Poland has stood out from the rest.

Methods: Due to the orderly nature of the questions analysed, non-parametric tests were used in the analysis. The distribution of current expenditure in comparison with the period before the pandemic was analysed, as well as the results of comparative analyses with Mann-Whitney U tests for comparison of Poland with Austria, Belgium, the Czech Republic, France (974), Germany, Italy, Luxemburg, the Netherlands, Romania, Spain, Turkey, the United Kingdom, the USA. A study was carried out on the relationship between planning for the future, having debts and savings and financial behaviour after the COVID-19 pandemic and the metric variables in the group of Poles via Chi square and a series of τ Kendall's tests.

Findings & value added: There has been a fall in expenditure compared to the period before the pandemic, which may explain the lack of opportunities to spend money, the fall in revenue and the freezing of expenditure for fear of an uncertain future. There has also been a change in the

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way payments are made. Payment cards and purchases made over the Internet are increasingly popular. In the face of the COVID-19 pandemic, consumers are trying to save more, but not everyone can afford to do so. Long-term value added of this paper is analysis of change in the model of financial behavior of households under the shock of the pandemic in international comparisons of the analysed countries.

Introduction

The COVID-19 pandemic has frozen some economic sectors and worsened the financial situation of societies worldwide. Total or partial loss of a source of income has exacerbated financial security concerns related to the pandemic. One in three people in Europe (35%) have lost income as a result of the pandemic, and almost half of consumers (47%) state they are more concerned about their financial situation than ever before (European Consumer Payment Report, 2020; Drescher *et al.*, 2020, pp. 1–6). Economic uncertainty has evoked interest in topics related to personal finance. Consumers are concerned about the impact of the economic downturn on local businesses (Barrafren *et al.*, 2020, pp. 1–5; Friedline *et al.*, 2020, pp. 1–18).

The shift in consumer preferences and mobile customer activity are mainly due to forced social isolation (Yue *et al.*, 2020, pp. 2363–2377). It is worth considering whether the combination of technological progress, novel applications of data and changes in preferences and expectations may lead to permanent structural changes in financial services (Xiao & Tao, 2020; Thorun & Diels, 2019, pp. 177–191) such as credit, digital payments, savings, investments & PFM, distributed ledger technology (Marder, 2016).

The goal of the paper is to determine to what extent the COVID-19 pandemic has affected the financial behaviour of the inhabitants of various countries and how Poland has stood out from the rest. Due to the orderly nature of the questions analysed, non-parametric tests were used in the analysis. The distribution of current expenditure in comparison with the period before the pandemic was analysed, as well as the results of comparative analyses using Mann-Whitney U tests to compare Poland with other countries. A study was carried out on the relationship between planning for the future, having debts and savings and financial behaviour after the COVID-19 pandemic and the metric variables in the group of Poles via Chi-square and a series of τ Kendall's tests. The article uses the international, representative ING survey conducted by Ipsos on 13,364 respondents in the following countries: Poland (994), Austria (963), Belgium (970), the Czech Republic (999), France (974), Germany (962), Italy (1049), Luxembourg (512), the Netherlands (983), Romania (991), Spain (984), Turkey

(984), the United Kingdom (999), the USA (1000). A representative sample in terms of age, sex and region of residence. The survey was conducted online using a survey questionnaire (CAWI) in December 2019 and May/June 2020.

The research gap in the area of the article concerns relationship between planning for the future, having debts and savings and financial behavior before and after the COVID-19 pandemic. Due to the unique nature of a pandemic as shock caused by an exogenous health factor in the modern economic history of the world, the findings of the study can help long-term public and private sector decision makers, including financial institutions and banks, in the event of future pandemics.

The article is divided into four parts. The first focuses on personal finances and the changes taking place in consumer behaviour in terms of payments, savings and credit products during the pandemic period. The second part presents the research methodology, the statistical methods used and an analysis of the population studied, with particular emphasis on Poland. The third part discusses the results obtained from the study, as well as conclusions that may be drawn on the possibility of using remote forms of personal finance management. The final section offers conclusions on the research.

Literature review

The pandemic has accelerated certain shifts in consumer and business behaviour that have been observed over a number of years. In recent months, the volume of e-commerce turnover has surged, along with an increase in the number of digital payments including, in particular, contactless payments via mobile applications (Payment Gateway Market — Growth, Trends, and Forecasts 2020–2025, 2020). Analysing the current negative scenarios of persistent and further restrictions during the pandemic, one positive note may be that once the coronavirus has been dealt with, the outlined trends in non-cash payments will probably continue, although some consumers around the world will return to their previous habits and pay in coins and banknotes (Bhutta *et al.*, 2020, pp. 645–672; Yue *et al.*, 2020, pp. 2363–2377).

The literature explains the behaviour of consumers by dividing them into three groups: (a) behaviour based on the relationship between the psyche and the behaviour of the consumer, (b) sociological: reactions devoted to consumer reactions and how sociological stimuli and social opportunities affect consumer behaviour, (c) economic factors based on basic knowledge

of the market in which consumers define their requirements (Valaskova *et al.*, 2015, pp. 174–182). Also, the psychological factor and overconfidence often cause mistakes in financial planning (Sue, 2020). From the macroeconomic point of view, in line with the assumptions of Flatters and Willmott (2009, pp. 64–72), consumers try to maximise their usefulness, satisfaction or joy through the purchase of consumer goods. Some trends are accelerated by recession, while others are slowed down or thwarted entirely (Li *et al.*, 2020, pp. 3626–3634). Trends indicating the demand for simplicity are most often visible in a crisis — consumers look for simple, value-oriented products and services that enable transactions to be made quickly, and modern financial tools to be used with little complexity (Methta *et al.*, 2020, pp. 291–301).

The COVID-19 pandemic and the subsequent unexpected financial turmoil caught many households unawares (Catheriné *et al.*, 2020, pp. 1–20). In the field of personal finance, financial health is defined as a state, a financial condition in which a household effectively manages income and expenses and is able to make timely payments and rationally manage the household budget in terms of savings, expenses, borrowing and general financial planning (Bhutta *et al.*, 2020, pp. 645–672). Concerns about one's own health, current needs and financial stability are the most significant problems indicated by the data (Table 1).

Comparing the initial period of the study from March 2020 to the results from the last study period in May 2020, one should note that fear for health and loved ones remained relevant. When analysing fears of an economic and financial nature, perception of personal financial situation was perceived as a noticeably greater threat at the beginning of the pandemic (China 44%, Germany 39%, United Kingdom 40%, US 54%) and had faded somewhat by the final stage of the study (China 53%, Germany 36%, United Kingdom 38%, US 45%). The presented data testifies to a shift in the perception of threat to personal finance. The society has learned to live in a period of pandemic, to improve financial management, and has begun to see the global financial effects of the crisis (van Dalen *et al.*, 2020, pp. 229–232). The prospect of some industries collapsing along with the loss of many jobs has meant that households have begun to look at their financial future from a broader perspective (Catheriné *et al.*, 2020, pp. 1–9).

Households perceive their finances and market behaviour from the perspective of both internal and external factors (Waliszewski & Warchlewska 2020a, pp. 893–904; 2020b, pp. 399–420). Internal factors include individual attitude, awareness, numeracy, knowledge, risk-taking, farsightedness, and learned behaviour. Internal factors are subjective and vary from person to person. External factors may include socio-economic, political, geo-

graphic and natural disasters (e.g. diseases that can potentially lead to a pandemic). External factors cannot be controlled and, more importantly, they can wreak financial havoc (Friedline *et al.*, 2020, pp. 1–18). Awareness of financial issues and a grasp of financial knowledge allow clients to better prepare for changes (Lusardi *et al.*, 2020, pp. 1–7). The pandemic period brought in its wake an intensified analysis of personal finances and financial behaviour in the times of crisis (Liu *et al.*, 2020, pp. 2378–2389).

The results of research on how Poles have acted during the pandemic are not unequivocal as a result of methodological differences and the fact that behaviour was analysed in different months of the pandemic. The period of social isolation contributed to a reduction in shopping opportunities at brick-and-mortar facilities. Poles also spend less money on their own security (Eurostat, 2020) (Table 2).

Research methods

The statistical material used in the article stems from the ING International Survey — New Technologies 2020. This online survey was carried out by Ipsos from December 19, 2019 till May/June 2020. The survey sample was representative in terms of age, gender and area of residence and reflects gender ratios and age distribution. These data were made available for research purposes by the Macroeconomic Analysis Office of ING Bank Śląski S.A.

European consumer figures are expressed as an average, weighted to take the varying populations of the countries into account: Poland (994), Austria (963), Belgium (970), the Czech Republic (999), France (974), Germany (962), Italy (1049), Luxemburg (512), the Netherlands (983), Romania (991), Spain (984), Turkey (984), the United Kingdom (999), the USA (1000).

A research hypothesis was formulated that COVID-19 has had a significant impact on the financial behaviour of households, including savings, debt, payments and shopping habits in the countries surveyed, and this indicates some personal finance fragility, but the impact has varied between countries.

The research material collected from a secondary source presented limitations in terms of the methods of statistical data analysis that might be applied. Due to the orderly nature of the analysed questions, non-parametric tests were used in the analysis. The following research methods were used:

- the U Mann-Whitney test for comparative analyses of Poland with other countries;
- a series of Kendall's τ correlation analyses to investigate the relationship between planning for the future, having debts and savings, and financial behaviour after the COVID-19 pandemic;
- a Chi-square test of independence to determine the relationship between planning for the future and metric variables;
- logistic regression using the Wald backward elimination method to determine the impact of metric factors and future planning on having savings.

The aim of the study was to determine to what extent the COVID-19 pandemic has influenced the financial behaviour of inhabitants of different countries and how Poland has stood out against them. The results of the study and the conclusions drawn fill an existing gap in the literature.

Results

Table 3 presents the distribution of current expenses in comparison to the period before the pandemic and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries.

A series of analyses based on Mann-Whitney U tests showed that the current expenditure of Poles relative to before the pandemic differed in a statistically significant way from the expenditure of the French $Z = 2.18$; $p < .05$; $r = .06$, Italians $Z = 4.15$; $p < .001$; $r = .09$, Luxembourgers $Z = 4.65$; $p < .001$; $r = .12$, Spanish $Z = 2.91$; $p < .01$; $r = .07$, Turks $Z = 9.62$; $p < .001$; $r = .22$ and UK residents $Z = 2.46$; $p < 0.05$; $r = 0.06$. Poles usually spent less due to the COVID-19 pandemic (45.88%). The inhabitants of Turkey spent the most after the pandemic hit, with 47.87% admitting that they have been spending more. Turkey was the only country where most of the population admitted that their spending was greater after the pandemic arrived. On the other hand, the inhabitants of Luxembourg and Italy spent the least, where over 50% admitted spending less money than before the pandemic. However, these differences were minor.

Another analysis examined the changes in how often people paid in cash (Table 4) or by card (Table 5) during the pandemic by country.

U Mann-Whitney test analyses revealed that Poland differed from the other countries examined with the exception of Belgium $Z = 1.33$; $p = .183$; $r = .03$, Luxembourg $Z = 1.63$; $p = .103$; $r = .04$, the Netherlands $Z = 1.93$; $p = .053$; $r = .04$ (result bordering on statistical tendency) and Great Britain $Z = 1.82$; $p = .069$; $r = .04$ in terms of the current share of cash payments.

About 70% of Poles stated that they currently make cash payments much less frequently. In this respect, only the Belgians were less likely to pay in cash, but the difference was statistically insignificant. On the other hand, residents of Turkey, the USA and Romania proved the most reluctant to give up paying in cash. However, in general, across all countries, cash payments were less frequent.

Table 5 indicates that all the results of the Mann-Whitney U test analyses turned out to be statistically significant. This means that Poles differed from all other nationalities in terms of the frequency of card payments. 66.70% of Poles stated that they pay by card more often than before the pandemic. A similar tendency was observed in other countries are markedly so in Turkey, Spain, Romania and Belgium. The smallest increase in card payments was noted in the USA, the Netherlands, France and Austria.

Next, online (Table 6) and in-store (Table 7) shopping was examined in comparison with the period before the pandemic in selected countries.

Another series of comparative Mann-Whitney U test analyses also turned out to be statistically significant. After the COVID-19 pandemic hit, 59.96% of Poles stated that they shop online more often. Purchases made by the residents of Italy, Turkey, Great Britain, the USA and Spain also followed a similar pattern. The pandemic had the least impact on increased online shopping among the inhabitants of Austria, the Czech Republic, France, the Netherlands and Germany.

Comparative analyses via Mann-Whitney tests showed that Poles differed from other nationalities in terms of how often they shop in-store, with the exception of the residents of Italy $Z = 1.84$; $p = .065$; $r = .04$, Luxembourg $Z = 1.66$; $p = .097$; $r = .04$, Turkey $Z = 1.20$; $p = .231$; $r = .03$ and Great Britain $Z = 0.25$; $p = .800$; $r = .01$.

55.94% of Poles stated that they currently shop in-store less frequently. In this respect, it was not demonstrated that any country declared this form of purchase to be less frequent in a statistically significant way. The inhabitants of the Czech Republic and Germany were the most reluctant to abandon the standard form of in-store shopping, but the differences in this respect were not extreme.

Furthermore, Mann-Whitney U tests helped determine how saving habits have changed among Poles during the pandemic compared to other countries.

A series of Mann-Whitney U test analyses revealed statistically significant differences between Poles and residents of Belgium $Z = 3.44$; $p < .01$; $r = .08$, Luxembourg $Z = 7.10$; $p < .001$; $r = .18$, Turkey $Z = 2.63$; $p < .01$; $r = .06$, Great Britain $Z = 2.02$; $p < .05$; $r = .05$ and the USA $Z = 2.02$; $p < .05$; $r = .05$ in terms of amount of savings after the pandemic began. The pandem-

ic had the greatest impact on increased savings among the inhabitants of Luxembourg, Turkey, Great Britain and the USA. In terms of the amount of money saved once the pandemic hit, no differences were found between Poles and residents of other countries. Opinions on the amount of money saved during COVID were divided and it cannot be clearly stated whether other countries changed their financial behaviour in terms of saving money.

The analyses also aimed to compare the inhabitants of different countries in terms of their attitude towards making plans for the future or living from day to day. These comparisons were also made through a series of Mann-Whitney U test analyses.

A series of Mann-Whitney U test analyses showed that Poles differed in a statistically significant way from the inhabitants of the Czech Republic in terms of making plans for the future $Z = 5.55$; $p < .001$; $r = .12$, German $Z = 2.86$; $p < .01$; $r = .06$, Italy $Z = 2.02$; $p < .05$; $r = .04$, Luxembourg $Z = 3.63$; $p < .001$; $r = .09$, the Netherlands $Z = 4.61$; $p < .001$; $r = .10$, Romania $Z = .64$; $p < .001$; $r = .08$ and Great Britain $Z = 3.58$; $p < .001$; $r = .08$.

Polish attitudes towards making plans for the future tended to fall in the middle of the scale. The inhabitants of Luxembourg were the most conscientious in terms of making plans for the future, while the Czechs and Turks were the least likely to make plans for the future. Overall, analysing the distribution of respondents' answers, it can be concluded that the respondents made plans for the future to a moderate extent.

The results of Mann-Whitney test analyses indicated that Poles differed from other nationalities (except for the French $Z = 0.94$; $p = .346$; $r = .02$) in terms of compliance with the statement that they live from day to day.

About 41% of Poles stated that they tend not to live from day to day. Fig. 8 below reveals strong variation between the inhabitants of different countries in terms of how they respond to this statement. The most conservative people who disagreed the most with the statement that they live from day to day were the residents of Turkey and Luxembourg. On the other hand, the inhabitants of Romania, Spain, the Czech Republic, the USA and Germany displayed the greatest tendency towards day-to-day living.

It was also shown that Poles differed from all countries except Luxembourg $Z = 1.66$; $p = .097$; $r = .04$, Spain $Z = 0.25$; $p = .803$; $r = .01$ and the USA $Z = 1.59$; $p = .111$; $r = .04$ in terms of propensity to make plans for the future. Poles usually stated that they often like to make plans and prepare for the future. In this respect, only the inhabitants of Luxembourg were more eager to plan for the future. The inhabitants of Great Britain, the Netherlands, Germany and the Czech Republic were reluctant to make plans for the future.

A further analysis using Mann-Whitney U tests compared Poland with other countries in terms of having household savings.

Analyses performed using Mann-Whitney comparative tests showed that Poles differed from the inhabitants of Germany $Z = 3.10$; $p < .01$; $r = .07$, Italy $Z = 2.75$; $p < .01$; $r = .06$, Luxembourg $Z = 6.92$; $p < .001$; $r = .18$, Romania $Z = 5.29$; $p < .001$; $r = .12$ and Turkey $Z = 2.70$; $p < .01$; $r = .06$ in terms of having household savings.

In the case of 74.92% of the households surveyed, Poles had savings. The country with the highest percentage of household savings was Luxembourg (90.83%). A smaller number of households than in Poland had savings in Germany, Italy, Romania and Turkey. These differences, however, were not large.

Similarly, using Mann-Whitney U tests, the amount of savings in individual countries was compared among the households that declared having savings.

The inhabitants of Poland differed in a statistically significant way from the inhabitants of all countries except Austria $Z = 0.84$; $p = .404$; $r = .02$, the Czech Republic $Z = 1.31$; $p = .189$; $r = .03$, the Netherlands $Z = 1.85$; $p = .064$; $r = .04$ and Spain $Z = 1.80$; $p = .072$; $r = .04$ in terms of the amount of savings held. Most Poles have savings in the amount of 1-3 salaries (31.95%) or 4-6 salaries (25.46%). The inhabitants of Luxembourg had the largest savings, followed by the inhabitants of Great Britain and the USA. On the other hand, the inhabitants of Romania and Turkey had the smallest amounts of savings.

By means of Mann-Whitney U test analyses Poles were also compared with residents of other countries in terms of debt.

The inhabitants of Poland differed from the inhabitants of all countries in a statistically significant way except for Belgium $Z = 1.15$; $p = .249$; $r = .03$, the Czech Republic $Z = 1.66$; $p = .096$; $r = .04$, Spain $Z = 0.92$; $p = .357$; $r = .02$ and Great Britain $Z = 1.35$; $p = .177$; $r = .03$ in terms of debt ownership. 58.55% of Poles were in debt. More people were in debt in Luxembourg (72.07%), Romania (71.54%) and Turkey (87.50%). Germany and the Netherlands had the smallest percentage of people with debts.

In terms of type of debt, loans from recognised institutions such as banks were prevalent, followed by overdrafts on current accounts. These loans were mainly incurred by design (e.g. mortgages) rather than by necessity. Loans secured at a pawnshop or student loans were the least popular. The inhabitants of Turkey stood out from the rest of the countries as they often cited credit card debt not fully paid every month and a large proportion of people also took loans from their families.

The next part of the study examined whether, and if so, what relations existed between planning for the future, having debts and savings, and financial behaviour once the COVID-19 pandemic hit. The future planning variable was defined as average planning for the future and the will to do so while avoiding living day-to-day. The relationships between the questions were examined using a series of Kendall's τ correlation analyses.

Correlation studies showed that planning one's future was associated with savings $\tau = .20$; $p < .001$ and the amount of these savings $\tau = .14$; $p < .001$ in a statistically significant way. These relationships were positive, which means that people who stated that they plan their future tended to have savings and in higher amounts. It was also demonstrated that the amount of debt is related to saving $\tau = -.12$; $p < .001$ and the amount of these savings $\tau = -.25$; $p < .001$. People with larger debts tended to have fewer or no savings.

A similar analysis of the relationship between plans for the future and having savings or debts was performed according to country.

Correlation analyses revealed that analogous relationships between planning the future and having savings or debts were relevant to almost all the countries analysed. Planning for the future and having savings were most strongly associated in Poland, France and the USA, while the weakest link between the two occurred in Turkey and Austria. The amount of savings related to future planning to the greatest extent in France, Luxembourg and the USA. However, future planning mainly turned out to be associated with a low level of debt in Poland, Austria and Turkey. The weakest links between planning for the future and having savings or debt were observed in Spain and Romania.

Table 18 presents the results of Kendall's τ correlation analyses for the relationship between plans for the future and having savings or debts, with financial behaviour.

Using a series of Kendall's τ correlation analyses, it was demonstrated that there were a number of statistically significant correlations between plans for the future, having savings or debts and financial behaviour during the COVID-19 pandemic.

People who planned their future during COVID spent smaller amounts, paid less in cash and shopped in-store less frequently. In contrast, planning for the future was associated with more frequent payments by card, more frequent purchases online, and saving more money.

Having savings was also associated with spending less money, paying less in cash and making less in-store purchases, while greater savings were associated with more frequent payments by card, online purchases and even greater savings after the pandemic hit.

Nevertheless, correlation analyses indicated that people with debts spent more after the pandemic began, more often paying by cards or in cash, and more often shopping online and in traditional stores, and saving less.

The above analyses were then broken down according to gender. Table 19 presents the results of Kendall's τ correlation analyses for the relationship of future plans with financial behaviour according to country.

Correlation analyses showed that similar links between financial behaviour during COVID and future planning were present in all analysed countries. The strongest and statistically significant associations were found in Poland, Romania and the United Kingdom. In these countries, the financial behaviour caused by the pandemic was most closely related to future planning.

Kendall's τ correlation analyses also showed that having savings was associated with the impact that the COVID-19 pandemic brought to bear on financial behaviour in all the countries studied (Table 20). The strongest relationship was between having savings beforehand and saving even more during the pandemic. This relationship was strongest in Belgium, the Netherlands and Spain, and the weakest in Turkey. In Poland, it was moderately strong compared to other countries.

The amount of savings was no longer so strongly related to financial behaviour during the COVID-19 pandemic (Table 21). The amount of savings was mainly associated with even greater savings made during the pandemic, but the relationships were mainly visible in Belgium, Luxembourg, the Netherlands, Spain and the United Kingdom, while in Poland the relationship was weaker.

The results of correlation analyses for the relationship between the amount of debt and financial behaviour caused by the COVID-19 pandemic are presented in a similar way (Table 22). A large amount of debt was linked to greater spending and purchases made during the pandemic mainly in Turkey, Romania, the UK and the US.

On the other hand, a larger sum of debt was associated with less savings made during the pandemic — mainly in Poland, Austria, Belgium, the Netherlands and Spain. Nevertheless, an inverse relationship occurred in Turkey and the USA, where people who had large debts saved more during the pandemic.

The next part of the study verified whether, and to what extent, there were any relationships between planning for the future, having debts or savings, and financial behaviour during the COVID-19 pandemic and metric variables in the Polish group. In order to verify the relationship between the analysed variables and the gender of the respondents, a series of anal-

yses were performed using Chi-square of independence tests, and the results are presented in Table 23.

The results of analyses using Chi-square tests of independence showed that among Poles gender was associated with the frequency of paying in cash in a statistically significant way $\chi^2(2) = 6.29$; $p < .05$; $V = .08$ as well as with the frequency of making in-store purchases $\chi^2(2) = 14.87$; $p < .01$; $V = .12$ and bordered on statistical tendency with savings $\chi^2(2) = 5.96$; $p = .051$; $V = .08$. Men paid in cash more often during the pandemic, and they also shopped more often in stores, but also declared that they were saving more.

Gender was demonstrated to be associated with making plans for the future in a statistically significant way $\chi^2(4) = 18.91$; $p < .01$; $V = .14$ and with the intention to plan for the future $\chi^2(4) = 13.25$; $p < .05$; $V = .12$. Polish women made plans for the future much more often than men.

The Chi-square tests of independence also revealed that gender was associated with savings in a statistically significant way $\chi^2(1) = 9.10$; $p < .01$; $V = .10$ as well as with having debt $\chi^2(1) = 9.07$; $p < .01$; $V = .10$. In the surveyed group, men tended to have more savings while women had more debt

It was also shown that the amount of debt was related to the amount of savings held $\chi^2(4) = 31.66$; $p < .001$; $V = .23$. Men had larger savings than women.

To verify the relationship of the analysed variables with age, household size, education and income, a series of Kendall's τ correlation analyses was performed.

Analyses of Kendall's τ correlation indicated that among Poles, older people more often paid in cash and made more in-store purchases, while younger people more often paid by card, made more online purchases and saved more. Older people planned their future to a lesser extent, had smaller debts, but larger savings.

Household size was positively associated with more frequent card payments and the number of purchases made via the Internet. On the other hand, people from larger households paid in cash less often and shopped less frequently during the pandemic than before the pandemic. It was also shown that people from larger households more often claimed to plan for the future, had greater savings as well as a higher debt burden.

The level of education among Poles was directly proportional to the frequency of card payments and shopping via the Internet, while the frequency of paying in cash during the pandemic was indirectly proportional. People with higher education more often declared that they plan for the future and had larger savings.

Analysis of Kendall's τ correlation showed that the income in the Polish group was associated with more frequent card payments and online shopping in a statistically significant way. In contrast, the highest earners were less likely to pay in cash during the pandemic. Greater earnings were also associated with planning for the future and having greater savings.

The factors that could have had an impact on having savings in the Polish group were also examined. For this purpose, logistic regression analysis was performed using the Wald backward elimination method. The categories of variables used: gender (female, male), age (quotient continuous: i.e. age simply without creating intervals), income (ordinal variable: graded income as in the survey), education (ordinal scale: elementary to higher), employment (no, yes), day-to-day life (ordinal variable: concordance on the Likert 5-point scale), planning for the future (ordinal variable: Likert 5-point concordance). The model was well suited to the data based on the Hosmer-Lemeshow coefficient $\chi^2(8) = 9.22; p = .324$. The value of Nagelkerke's R^2 was 27.7%, which means that the variables included in the model explained only 27.7% of the variability in terms of a household having savings. The presented model shows that the probability of having savings was higher among people with higher education, higher income and future planning. On the other hand, in the Polish group, the chance of having savings was lower in the case of women and people living from day to day.

Discussion

Based on the empirical material obtained on household budget management in the area of savings and credit, it should be concluded that the households surveyed tended to spend less than before the pandemic. Credit commitments were taken out mainly on the basis of assumptions and plans made earlier (for instance mortgages), rather than out of necessity.

Comparative studies between countries on the financial behaviour of households during the COVID-19 pandemic had not been previously conducted, which makes it difficult to conduct an in-depth comparative analysis. The results of secondary research on the behaviour of Poles during the pandemic are not conclusive, which is due to methodological differences and the fact that behaviour was analysed in different months of the pandemic. Most Poles do not experience major financial problems and describe their financial situation as stable (Consumers' Federation and the Financial Market Development Foundation — October 2020). Other research indicates that consumers admit that rising cost of life has had a negative impact

on their well-being and financial future (European Consumer Payments Report — Intrum — October 2020). In addition, a Public Opinion Research Center survey March 2020 indicates that the financial situation of many households has worsened, even though they have savings.

The ongoing (at the time of writing this article) period of the pandemic does not allow to refer to the far-reaching effects of the pandemic in terms of the field of household financial management. The challenge for the financial services market is to diagnose which determinants may have significant relevance for the consumer in order to shift financial management towards modern financial tools and robo-advice. The implementation of modern technologies within the process of personal finance management brings in its wake a number of challenges in the area of data circulation and analysis, digitisation and automation of manual processes, and Big Data architecture.

One methodological limitation was the use of secondary empirical sources (ING) data, which necessitated the use of non-parametric tests and logistic regression. The authors are aware of the limitations of their study, and at the same time emphasise the broad range of study participants from many countries and its representativeness in terms of age, gender and place of residence, including financial institutions and banks, in the event of future pandemics.

Conclusions

The outbreak of the pandemic significantly influenced the public's behaviour in terms of method of payment choice. Fear for one's health often forced people who had previously been undecided to switch from cash to payments using remote tools. Total cash payments lost out in favour of cards and mobile payments. In addition, the e-commerce market surged while purchases in brick-and-mortar stores decreased.

In terms of household budget management in the area of savings and loans, it should be stated that the surveyed households tended to be inclined towards spending less than before the pandemic. In terms of the amount saved after the pandemic hit, no differences were found between Poles and residents of other countries. Opinions on saving levels during COVID were split and it cannot be unequivocally stated whether other countries changed their financial behaviour in this regard. In terms of type of debt, debts from recognised institutions such as banks prevailed, followed by bank account overdrafts. These loans were mainly incurred by design (e.g. mortgages) rather than by necessity. Loans secured at a pawnshop or student loans

were incurred by the smallest percentage of people. The inhabitants of Turkey stood out from the rest of the countries as they often had credit card debt not paid every month and a large proportion of people had also borrowed from their families. People with larger debts more often had little or no savings.

Methods of planning the financial future are not uniform. Poles usually took a typical approach to making plans for the future. The inhabitants of Luxembourg were the most conscientious in terms of making future plans, while the Czechs and Turks were the least likely to make plans in this regard.

Based on the analysis, it should be stated that consumer behaviour mostly changes along with the market needs and restrictions at a given moment. Forced behaviour — including on the payment market (cards, mobile applications) — may lead to permanent changes in this area and further development of cashless payments. As for consumer behaviour in terms of shopping habits (online, brick-and-mortar), it is difficult to indicate any clear directions. Overlong social isolation in many economies may contribute to a return to the traditional form of shopping after the market has been unfrozen, including a return to cash payments.

The conclusions of the study have practical implications for financial institutions and non-financial service providers for the household sector. Due to the unique nature of a pandemic as a shock caused by an exogenous health factor in the modern economic history of the world, the findings of the study can help long-term public and private sector decision makers in the event of future pandemics.

The article may be a starting point for further, in-depth comparative research on an international scale on the financial behavior of households in the post-pandemic period in various countries and their determinants.

References

- Barrafren, K., Väsfall, D., & Tinghög, G. (2020). Financial well-being, COVID-19, and the financial better-than-average-effect. *Journal of Behavioral and Experimental Finance*, 28, 100410. doi: 10.1016/j.jbef.2020.10041.
- Bhutta, N., Blair, J., Dettling, L., & Moore, K. (2020). COVID-19, The cares act, and families' financial security. *National Tax Journal*, 73(3), 645–672. doi: 10.17310/ntj.2020.3.
- BioStat Research and Development Center (2020). Retrieved from <https://www.bio-stat.com.pl/zachowania-konsumentow-koronawirus-maj.php>.

- Bongini, P., Iwanicz-Drozdowska, M., Roggi, O., & Elliot, V. (2020). Global report on business continuity planning and management (BCP/BCM). Survey results. SSRN. doi: 10.2139/ssrn.3764401.
- Catheriné, S., Miller, S., & Sarin, N. (2020). Relaxing household liquidity constraints through social security. *Journal of Public Economics*, 198, 104243. doi: 10.1016/j.jpubeco.2020.104243.
- Consumer Federation and Foundation for Financial Market Development (2020). The third wave of the pandemic hit the finances of 40- and 50-year-olds the hardest. Retrieved from <http://www.federacja-konsumentow.org.pl/270,finanse-polakow-w-czasie-COVID19--raport-z-badania.html>.
- Drescher, K., Fessle, P., & Peter, L. (2020). Helicopter money in Europe new evidence on the marginal propensity to consume across European households. *Economics Letters*, 195, 109416. doi: 10.1016/j.econlet.2020.1094.
- European Consumer Payment Report (2020). Retrieved from <https://www.intrum.pl/partner-biznesowy/nasze-raporty/ecpr/european-consumer-payment-report-2020/>.
- Eurostat (2020). Impact of COVID-19 on household consumption and savings. Retrieved from <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20200806-2>
- Flatters, P., & Willmott, M. (2009). Understanding the postrecession consumer. *Harvard Business Review*, 87(7/8).
- Friedline, T., Chen, Z., & Morrow, S. (2020). Families' financial stress & well-being: the importance of the economy and economic environments. *Journal of Family and Economic Issues*, 42, 34–51. doi: 10.1007/s10834-020-09694-9.
- Li, J., Song, Q., Peng, Ch., & Wu, Y. (2020). COVID-19 pandemic and household liquidity constraints: evidence from micro data. *Emerging Markets Finance and Trade*, 56(15), 3626–3634. doi: 10.1080/1540496X.2020.18.
- Liu, T., Pan, B., & Yin, Z. (2020). Pandemic, mobile payment, and household consumption: micro-evidence from China. *Emerging Markets Finance and Trade*, 56(10), 2378–2389. doi: 10.1080/1540496X.2020.17885.
- Lusardi, A., Hasler, A., & Yakoboski, P. J. (2020). Building up financial literacy and financial resilience. *Mind & Society*. Advance online publication. doi: 10.1007/s11299-020-00246-0.
- Marder, T. (2016). Fintech for the consumer market: an overview, consumer compliance Outlook. Retrieved from <https://www.consumercomplianceoutlook.org/2016/third-issue/fintech-for-the-consumer-market-an-overview>.
- Payment Gateway Market – Growth, Trends, and Forecast (2020-2025) (2020). Retrieved from https://www.researchandmarkets.com/reports/5176203/payment-gateway-market-growth-trends-and?utm_source=GNOM&utm_medium=PressRelease&utm_code=8g3gq4&utm_campaign=1454591+-+Global+Payment+Gateway+Market+Report+2020%3a+Assessment+of+the+Impact+of+COVID-19+on+the+%2440%2b+Billion+Industry&utm_exec=chdo54prd
- Statista Survey (2020). COVID-19 barometer. Retrieved from <https://www.statista.com/study/72001/COVID-19-barometer>.

- Statista.com. (2020). Financial situation of households during the COVID-19 pandemic in Poland 2020. Retrieved from <https://www.statista.com/statistics/1111125/poland-financial-situation-of-households-during-the-COVID-19-pandemic/>
- Sue, E. (2020). Capital markets volatility and COVID-19: background and policy responses. Retrieved from <https://crsreports.congress.gov/product/pdf/R/R46424>
- Thorun, C., & Diels, J. (2020). Consumer protection technologies: an investigation into the potential of new digital technologies for consumer policy. *Journal of Consumer Policy*, 43(1), 177–191. doi: 10.1007/s10603-019-09411-6.
- Valaskova, K., Kramarova, K., & Bartosova, V. (2015). Multi criteria models used in Slovak consumer market for business decision making. *Procedia Economics and Finance*, 26, 174–182. doi: 10.1016/s2212-5671(15)00913-2.
- Van Dalen, H. P., & Henkens, K. (2020). The COVID-19 pandemic: lessons for financially fragile and aging societies. *Work, Aging and Retirement*, 6(4), 229–232. doi: 10.1093/workar/waaa011.
- Waliszewski, K., & Warchlewska, A. (2020a). Attitudes towards artificial intelligence in the area of personal financial planning: a case study of selected countries. *Entrepreneurship and Sustainability Issues*, 8(2), 399–420. doi: 10.9770/jesi.2020.8.2(24).
- Waliszewski, K., & Warchlewska, A. (2020b). Socio-demographic factors determining expectation experienced while using modern technologies in personal financial management (PFM and robo-advice): a Polish case. *European Research Studies Journal*, 23(2), 893–904. doi: 10.35808/ersj/1904.
- Xiao, J., & Tao, CH. (2020). Consumer finance/household finance: the definition and scope. *China Finance Review International*, 11(1), 1–25. doi: 10.1108/CFR I-04-2020-0032.
- Yue, P., Korkmaz, A. G., & Zhou, Z. (2020). Household financial decision making Amidst the COVID-19 Pandemic. *Emerging Markets Finance*, 56(10), 2363–2377. doi: 10.1080/1540496X.2020.178471.

Annex

Table 1. The main worries or concerns about the COVID-19 pandemic — the beginning and end of the survey (%)

Base	Country							
	China		Germany		United Kingdom		United States	
	B	E	B	E	B	E	B	E
Food shortages	30	29	24	12	50	18	42	33
My country's economic stability	61	64	63	57	50	57	63	62
My country's political stability	29	33	27	28	17	21	28	33
My economic situation	44	53	39	36	40	38	54	45
My family's health	71	70	76	63	76	69	71	67
My job security	35	37	24	20	26	27	23	25
My mental health	18	24	29	24	36	35	26	27
My parents'/older friends' health	53	49	59	48	54	47	52	43
My physical health	60	63	57	51	57	47	55	49
Rioting or looting	8	9	19	11	15	8	19	15
Other	1	0	4	3	2	3	4	4
Don't know	2	0	1	2	1	1	1	2

Note:

Beginning of survey (B): March 23 to 29, 2020; N=2840 (2717 respondents who said they were at least slightly worried about the pandemic)

End of survey (E): May 25 to 31, 2020; N=2137 (1924 said they were at least slightly worried about the pandemic. The data for China are from the most recent period when the last representative sample was taken: April 27 to May 3.

Source: own study based Statista Survey (2020).

Table 2. Selected studies on financial behaviour during the COVID19 pandemic in Poland

No	Author, year/period	Research description	Selected conclusions
1	Consumers' Federation and the Financial Market Development Foundation – October 2020	The financial situation facing the Polish population during COVID-19. How the pandemic affected Polish wallets and financial habits	Most Poles are not experiencing any major financial problems and describe their financial situation as stable. For 56% of respondents, the state of their home finances did not change as a result of the pandemic. For 39% of respondents, however, their home finances deteriorated. In turn, 5 out of 100 Poles declared an improvement in their financial situation over recent months
2	European Consumer Payments Report – Intrum – October 2020	Expenses and the ability to manage one's home finances every month	61% of consumers admit that rising bills have had a negative impact on their well-being; 48% of respondents claim that the current situation and the uncertainty of tomorrow have prompted them to extend their knowledge of personal finance; 69% of consumers said they are not satisfied with the amount they can save each month
3	Waliszewski Krzysztof, Warchlewska Anna – Poznań University of Economics and Business – August – September 2020	A Polish nationwide study on the use of modern financial solutions in financial management.	Users of applications supporting personal financial management mainly use non-banking solutions. PFM applications gained relevancy during the pandemic when respondents felt a drop in their income and savings
4	BioStat Research and Development Center – May 2020	Consumer behaviour during the SARS-CoV02 pandemic	Only 3.6% of Poles consider their situation to be better than before the pandemic. The percentage of Poles who feel the impact of the pandemic on their personal lives is falling. In the case of businesses, a periodically updated business continuity plan helped them to effectively adapt to the circumstances of the pandemic.

Table 2. Continued

No	Author, year/period	Research description	Selected conclusions
5	A study conducted by a team of scientists from various centres, i.e. Prof. Małgorzata Iwanicz-Drozdowska of the SGH Warsaw School of Economics, Prof. Paola Bongini from the University of Milan-Bicocca, Prof. Oliviero Roggi from the University of Florence and Fundação Dom Cabral (Brazil), as well as Prof. Viktor Elliot from Göteborgs Universitet – May 2020	Business continuity during the SARS-CoV-2 pandemic – Poland compared to other countries	Organisations operating in Poland fared similarly to those from other high-income countries
6	Public Opinion Research Center, Statista.com – March 2020	The financial situation of households during the coronavirus (COVID-19) epidemic in Poland in March 2020	Due to the outbreak of the coronavirus in Poland in March 2020, the financial situation of many households deteriorated. 61% of respondents declared that their family had savings, while 38% had debts to pay, but the vast majority stated that they had no problems paying them off

Source: own study based on: Consumer Federation and Foundation for Financial Market Development (2020); BioStat Research and Development Center (2020); Bongini *et al.* (2021); European Consumer Payment Report (2020); Waliszewski and Warchlewska 2020b; Statista.com. (2020).

Table 3. Distribution of current expenses in comparison to the period before the pandemic and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

I currently spend:	Less	The same	More	Z	p	r
Poland	45.88%	35.01%	19.11%			
Austria	41.64%	46.83%	11.53%	0.28	0.776	0.01
Belgium	47.73%	37.94%	14.33%	1.71	0.088	0.04
Czech Republic	38.04%	51.45%	10.51%	0.71	0.479	0.02
France	47.64%	40.25%	12.11%	2.18	*	0.05
Germany	37.94%	48.75%	13.31%	1.36	0.174	0.03
Italy	54.24%	32.03%	13.73%	4.15	***	0.09

Table 3. Continued

I currently spend:	Less	The same	More	Z	p	r
Luxemburg	56.05%	33.79%	10.16%	4.56	***	0.12
Netherlands	38.56%	49.24%	12.21%	0.91	0.361	0.02
Romania	48.94%	32.80%	18.26%	1.23	0.218	0.03
Spain	40.45%	35.57%	23.98%	2.91	**	0.07
Turkey	36.18%	15.96%	47.87%	9.62	***	0.22
United Kingdom	51.75%	31.13%	17.12%	2.46	*	0.06
USA	44.80%	34.10%	21.10%	0.81	0.417	0.02

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, **p* < 0,05, ***p* < 0,01, ****p* < 0,001

Table 4. Distribution of the frequency of cash payments relative to the period before the pandemic and the results of comparative analyses using Mann-Whitney tests to compare Poland with other countries

In terms of cash payments, I currently make:	Less	The same	More	Z	p	r
Poland	69.52%	25.15%	5.33%			
Austria	47.25%	45.17%	7.58%	9.59	***	0.22
Belgium	72.37%	22.47%	5.15%	1.33	0.183	0.03
Czech Republic	51.55%	42.64%	5.81%	7.71	***	0.17
France	50.10%	42.40%	7.49%	8.46	***	0.19
Germany	44.39%	46.88%	8.73%	10.85	***	0.25
Italy	55.00%	36.22%	8.77%	6.76	***	0.15
Luxemburg	64.26%	33.01%	2.73%	1.63	0.103	0.04
Netherlands	65.51%	28.08%	6.41%	1.93	0.053	0.04
Romania	58.22%	29.67%	12.11%	5.81	***	0.13
Spain	65.65%	24.70%	9.65%	2.33	**	0.05

Table 4. Continued

In terms of cash payments, I currently make:	Less	The same	More	Z	p	r
Turkey	63.31%	13.21%	23.48%	5.26	***	0.12
United Kingdom	66.47%	25.03%	8.51%	1.82	0.069	0.04
USA	42.20%	42.70%	15.10%	12.58	***	0.28

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, **p* < 0,05, ***p* < 0,01, ****p* < 0,001

Table 5. Distribution of the frequency of card payments in relation to the period before the pandemic and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

In terms of card payments, I currently make:	Less	The same	More	Z	p	r
Poland	6,34%	26,96%	66,70%			
Austria	9,76%	45,90%	44,34%	9.58	***	0.22
Belgium	11,34%	31,34%	57,32%	4.68	***	0.11
Czech Republic	8,11%	45,25%	46,65%	8.53	***	0.19
France	11,91%	47,84%	40,25%	11.48	***	0.26
Germany	9,04%	48,13%	42,83%	10.08	***	0.23
Italy	12,96%	36,42%	50,62%	7.71	***	0.17
Luxemburg	5,27%	41,02%	53,71%	4.41	***	0.11
Netherlands	14,65%	38,25%	47,10%	9.21	***	0.21
Romania	12,92%	29,06%	58,02%	4.64	***	0.10
Spain	11,18%	27,95%	60,87%	3.21	**	0.07
Turkey	23,17%	12,91%	63,92%	3.75	***	0.08
United Kingdom	12,41%	32,13%	55,46%	5.62	***	0.13
USA	15,40%	45,20%	39,40%	12.34	***	0.28

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, ****p* < 0,001

Table 6. Distribution of the frequency of online shopping in relation to the period before the pandemic and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

I currently shop online:	Less	The same	More	Z	p	r
Poland	8,15%	31,89%	59,96%			
Austria	13,91%	54,72%	31,36%	12.07	***	0.27
Belgium	15,67%	44,85%	39,48%	9.25	***	0.21
Czech Republic	12,91%	59,06%	28,03%	13.34	***	0.30
France	19,20%	49,38%	31,42%	12.88	***	0.29
Germany	12,68%	54,99%	32,33%	11.51	***	0.26
Italy	13,44%	35,75%	50,81%	4.63	***	0.10
Luxemburg	9,96%	49,02%	41,02%	6.48	***	0.17
Netherlands	18,62%	48,73%	32,66%	12.35	***	0.28
Romania	16,75%	37,54%	45,71%	7.09	***	0.16
Spain	15,35%	35,77%	48,88%	5.63	***	0.13
Turkey	25,41%	16,87%	57,72%	3.92	***	0.09
United Kingdom	12,91%	38,54%	48,55%	5.37	***	0.12
USA	15,90%	37,00%	47,10%	6.43	***	0.14

Symbols: Z- Mann-Whitney U statistics, p- level of statistical significance, r-strength of the relationship, *** $p < 0,001$

Table 7. Distribution of the frequency of in-store shopping in relation to the period before the pandemic and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

I currently shop in-store:	Less	The same	More	Z	p	r
Poland	55.94%	33.80%	10.26%			
Austria	37.28%	53.06%	9.66%	6.99	***	0.16
Belgium	45.57%	42.58%	11.86%	4.26	***	0.10
Czech Republic	34.33%	56.46%	9.21%	8.10	***	0.18
France	44.25%	44.46%	11.29%	4.66	***	0.11
Germany	37.73%	51.35%	10.91%	7.03	***	0.16

Table 7. Continued

I currently shop in-store:	Less	The same	More	Z	p	r
Italy	59.58%	32.13%	8.29%	1.84	0.065	0.04
Luxemburg	59.18%	34.38%	6.45%	1.66	0.097	0.04
Netherlands	44.56%	45.07%	10.38%	4.39	***	0.10
Romania	47.83%	35.82%	16.35%	4.25	***	0.10
Spain	52.74%	32.01%	15.24%	2.18	*	0.05
Turkey	65.45%	11.08%	23.48%	1.20	0.231	0.03
United Kingdom	56.56%	33.23%	10.21%	0.25	0.800	0.01
USA	49.70%	33.40%	16.90%	3.66	***	0.08

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, **p* < 0,05, ****p* < 0,001

Table 8. Distribution of the money-saving in relation to the period before the pandemic and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

I currently save	Less	The same	More	Z	p	r
Poland	23.94%	45.88%	30.18%			
Austria	18.59%	57.94%	23.47%	0.57	0.566	0.01
Belgium	29.28%	46.60%	24.12%	3.44	**	0.08
Czech Republic	16.62%	65.27%	18.12%	1.75	0.081	0.04
France	19.40%	54.11%	26.49%	0.15	0.880	0.00
Germany	16.94%	59.15%	23.91%	0.05	0.961	0.00
Italy	25.64%	40.99%	33.37%	0.52	0.605	0.01
Luxemburg	7.62%	50.20%	42.19%	7.10	***	0.18
Netherlands	22.48%	52.90%	24.62%	1.34	0.179	0.03
Romania	28.36%	38.65%	33.00%	0.39	0.699	0.01
Spain	27.24%	39.53%	33.23%	0.01	0.993	0.00
Turkey	41.36%	20.93%	37.70%	2.63	**	0.06

Table 8. Continued

I currently save	Less	The same	More	Z	p	r
United Kingdom	20.22%	46.65%	33.13%	2.02	*	0.05
USA	19.00%	46.20%	34.80%	2.91	**	0.07

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, **p* < 0,05, ***p* < 0,01, ****p* < 0,001

Table 9. Attitudes towards making plans for the future and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

On the whole, I plan for the future	Not at all	Rather not	To some extent	Rather yes	Definitely yes	Z	p	r
Poland	5.23%	10.76%	33.00%	32.80%	18.21%			
Austria	5.09%	14.33%	31.26%	34.79%	14.54%	1.78	0.076	0.04
Belgium	5.46%	12.68%	33.81%	32.78%	15.26%	1.77	0.076	0.04
Czech Republic	8.31%	16.92%	32.13%	31.83%	10.81%	5.55	***	0.12
France	4.93%	13.76%	33.88%	31.83%	15.61%	1.92	0.055	0.04
Germany	5.72%	13.20%	34.93%	33.06%	13.10%	2.86	**	0.06
Italy	3.53%	12.68%	37.46%	32.13%	14.20%	2.02	*	0.04
Luxemburg	3.32%	7.81%	25.98%	43.36%	19.53%	3.63	***	0.09
Netherlands	5.90%	16.07%	35.71%	30.11%	12.21%	4.61	***	0.10
Romania	8.98%	9.59%	38.65%	28.36%	14.43%	3.64	***	0.08
Spain	4.27%	11.28%	34.04%	33.94%	16.46%	0.38	0.707	0.01

Table 9. Continued

On the whole, I plan for the future	Not at all	Rather not	To some extent	Rather yes	Definitely yes	Z	p	r
Turkey	12.40 %	17.07%	20.12%	26.42%	23.98%	1.78	0.075	0.04
United Kingdom	5.51%	16.22%	35.64%	26.13%	16.52%	3.58	***	0.08
USA	5.50%	9.80%	33.40%	27.20%	24.10%	1.39	0.164	0.03

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, **p* < 0,05, ***p* < 0,01, ****p* < 0,001

Table 10. The attitude of living day-to-day and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

I live from day to day	Not at all	Rather not	To some extent	Rather yes	Definitely yes	Z	p	r
Poland	21.83%	29.07%	32.09%	10.06%	6.94%			
Austria	7.79%	21.18%	37.59%	25.65%	7.79%	10.96	***	0.25
Belgium	15.26%	22.99%	35.15%	19.07%	7.53%	6.05	***	0.14
Czech Republic	5.81%	15.72%	36.14%	28.53%	13.81%	15.16	***	0.34
France	26.08%	27.21%	27.10%	11.81%	7.80%	0.94	0.346	0.02
Germany	6.65%	18.30%	37.73%	27.65%	9.67%	12.93	***	0.29
Italy	10.96%	23.93%	38.70%	18.49%	7.91%	7.90	***	0.17
Luxemburg	30.47%	28.91%	26.37%	10.35%	3.91%	3.71	***	0.10

Table 10. Continued

I live from day to day	Not at all	Rather not	To some extent	Rather yes	Definitely yes	Z	p	r
Netherlands	4.17%	17.29%	39.88%	27.98%	10.68%	14.67	***	0.33
Romania	6.96%	8.38%	39.86%	28.25%	16.55%	17.02	***	0.38
Spain	4.27%	14.23%	39.23%	29.78%	12.50%	16.09	***	0.36
Turkey	41.87%	28.66%	15.75%	8.23%	5.49%	9.52	***	0.21
United Kingdom	7.01%	20.52%	39.14%	20.92%	12.41%	11.88	***	0.27
USA	6.20%	15.20%	38.00%	22.70%	17.90%	15.10	***	0.34

Symbols: Z- Mann-Whitney U statistics, p- level of statistical significance, r-strength of the relationship, ***p < 0,001

Table 11. Attitudes towards preparing for the future and the results of comparative analyses using the Mann-Whitney tests to compare Poland with other countries

I like to plan and prepare for the future	Not at all	Rather not	To some extent	Rather yes	Definitely yes	Z	p	r
Poland	3.52%	10.26%	30.18%	35.61%	20.42%			
Austria	4.26%	15.26%	32.50%	34.06%	13.91%	4.54	** *	0.10
Belgium	4.95%	10.93%	35.05%	30.82%	18.25%	2.74	**	0.06
Czech Republic	7.31%	14.11%	33.03%	31.13%	14.41%	5.58	** *	0.13
France	4.52%	13.24%	31.42%	32.85%	17.97%	2.62	**	0.06

Table 11. Continued

I like to plan and prepare for the future	Not at all	Rather not	To some extent	Rather yes	Definitely yes	Z	p	r
Germany	5.61%	16.11%	32.74%	33.68%	11.85%	6.07	** *	0.14
Italy	3.72%	12.20%	39.94%	30.31%	13.82%	5.08	** *	0.11
Luxemburg	3.32%	8.40%	27.54%	38.48%	22.27%	1.66	0.0 97	0.04
Netherlands	4.17%	17.90%	34.08%	30.52%	13.33%	6.19	** *	0.14
Romania	7.77%	9.79%	36.63%	30.17%	15.64%	4.63	** *	0.10
Spain	2.74%	9.76%	33.54%	33.33%	20.63%	0.25	0.8 03	0.01
Turkey	13.41%	18.29%	18.60%	24.90%	24.80%	4.10	** *	0.09
United Kingdom	5.71%	14.51%	37.44%	25.23%	17.12%	5.53	** *	0.12
USA	5.50%	11.50%	32.80%	27.20%	23.00%	1.59	0.1 11	0.04

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, ***p* < 0,01, ****p* < 0,001

Table 12. Distribution of savings and the results of comparative Mann-Whitney U test analyses to compare Poland with other countries

Does your household have any savings?	No	Yes	Z	p	r
Poland	25.08%	74.92%			
Austria	27.53%	72.47%	1.17	0.242	0.03

Table 12. Continued

Does your household have any savings?	No	Yes	Z	p	r
Belgium	25.21%	74.79%	0.06	0.952	0.00
Czech Republic	24.25%	75.75%	0.41	0.682	0.01
France	25.74%	74.26%	0.32	0.746	0.01
Germany	31.66%	68.34%	3.10	**	0.07
Italy	30.79%	69.21%	2.75	**	0.06
Luxemburg	9.17%	90.83%	6.92	***	0.18
Netherlands	22.74%	77.26%	1.16	0.246	0.03
Romania	36.47%	63.53%	5.29	***	0.12
Spain	28.86%	71.14%	1.83	0.067	0.04
Turkey	30.74%	69.26%	2.70	**	0.06
United Kingdom	24.89%	75.11%	0.09	0.925	0.00
USA	21.82%	78.18%	1.66	0.096	0.04

Symbols: Z- Mann-Whitney U statistics, p- level of statistical significance, r-strength of the relationship, ** $p < 0,01$, *** $p < 0,001$

Table 13. Distribution of the amount of savings and the results of comparative analyses using the Mann-Whitney tests to compare Poland with other countries

What amount of household savings do you have?	More than 1 monthly salary	1-3 monthly salaries	4-6 monthly salaries	7-12 monthly salaries	More than 12 monthly salaries	Z	p	r
Poland	13.81%	31.95%	25.46%	12.48%	16.31%			
Austria	14.13%	31.17%	21.97%	11.88%	20.85%	0.84	0.404	0.02
Belgium	12.29%	28.18%	18.43%	13.98%	27.12%	3.33	**	0.08
Czech Republic	10.50%	34.35%	20.80%	17.18%	17.18%	1.31	0.189	0.03

Table 13. Continued

What amount of household savings do you have?	More than 1 monthly salary	1-3 monthly salaries	4-6 monthly salaries	7-12 monthly salaries	More than 12 monthly salaries	Z	p	r
France	11.23%	27.89%	21.05%	14.91%	24.91%	3.55	***	0.08
Germany	11.82%	29.66%	22.85%	15.43%	20.24%	2.09	*	0.05
Italy	10.84%	29.66%	20.53%	14.45%	24.52%	3.16	**	0.07
Luxemburg	5.99%	19.37%	22.89%	21.13%	30.63%	6.94	***	0.18
Netherlands	13.81%	27.61%	23.47%	14.00%	21.10%	1.85	0.064	0.04
Romania	24.10%	34.25%	21.35%	9.94%	10.36%	4.90	***	0.11
Spain	14.36%	26.73%	23.45%	15.64%	19.82%	1.80	0.072	0.04
Turkey	27.22%	31.76%	19.06%	11.43%	10.53%	5.43	***	0.12
United Kingdom	11.03%	23.64%	23.29%	13.13%	28.90%	4.95	***	0.11
USA	13.48%	26.16%	19.42%	14.61%	26.32%	3.46	**	0.08

Symbols: Z- Mann-Whitney U statistics, p- level of statistical significance, r-strength of the relationship, * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 14. Distribution of debt ownership and the results of comparative analyses using the Mann-Whitney U test to compare Poland with other countries

Do you have any debts?	No	Yes	Z	p	r
Poland	41.45%	58.55%			
Austria	47.87%	52.13%	2.86	**	0.06
Belgium	44.02%	55.98%	1.15	0.249	0.03

Table 14. Continued

Do you have any debts?	No	Yes	Z	p	r
Czech Republic	45.15%	54.85%	1.66	0.096	0.04
France	52.05%	47.95%	4.71	***	0.11
Germany	55.41%	44.59%	6.17	***	0.14
Italy	50.05%	49.95%	3.90	***	0.09
Luxemburg	27.93%	72.07%	5.15	***	0.13
Netherlands	55.65%	44.35%	6.31	***	0.14
Romania	28.46%	71.54%	6.07	***	0.14
Spain	43.50%	56.50%	0.92	0.357	0.02
Turkey	12.50%	87.50%	14.49	***	0.33
United Kingdom	44.44%	55.56%	1.35	0.177	0.03
USA	38.90%	61.10%	1.16	0.246	0.03

Symbols: Z- Mann-Whitney U statistics, *p*- level of statistical significance, *r*-strength of the relationship, ***p* < 0,01, ****p* < 0,001

Table 15. Distribution of the type of debts incurred

Country	Bank overdraft	Loan from a recognised institution such as a bank or public administration	Pawnshop loan	Credit card debt not fully paid each month	Loan from family or friends	Consumer credit, e.g. to buy a car or retail credit etc.	Student loan
Poland	20.81%	32.66%	4.80%	17.90%	18.74%	14.66%	3.06%
Austria	24.68%	32.48%	4.56%	11.30%	11.49%	11.52%	5.83%
Belgium	18.09%	38.67%		13.47%	11.12%	13.05%	5.61%
Czech Republic	16.21%	33.44%	12.04%	9.38%	19.53%	14.97%	3.55%
France	16.95%	27.87%	6.15%	8.15%	11.09%	14.21%	6.05%

Table 15. Continued

Country	Bank overdraft	Loan from a recognised institution such as a bank or public administration	Pawnshop loan	Credit card debt not fully paid each month	Loan from family or friends	Consumer credit, e.g. to buy a car or retail credit etc.	Student loan
Germany	17.96%	24.39%	7.42%	12.29%	12.63%	15.10%	10.47%
Italy	14.69%	29.22%	7.16%	12.21%	16.54%	20.23%	7.43%
Luxemburg	11.07%	56.83%	4.14%	9.66%	5.62%	24.80%	17.49%
Netherlands	19.48%	22.25%	5.39%	8.26%	12.10%	8.09%	16.15%
Romania	31.13%	50.21%		20.89%	32.68%	15.05%	11.16%
Spain	12.18%	35.88%	7.11%	20.54%	15.85%	18.58%	7.84%
Turkey	45.42%	59.43%	21.06%	55.19%	44.13%	26.02%	31.21%
United Kingdom	26.73%	19.14%	7.56%	29.57%	13.07%	15.49%	18.78%
USA	19.23%	27.64%	11.74%	36.26%	13.51%	26.37%	22.22%

Table 16. The results of Kendall's τ correlation analyses for the relationship between plans for the future and having savings or debts

Answers	I plan for my future	I have savings	Amount of savings	Amount of debt
I plan for my future	1			
I have savings	0.20***	1		
Amount of savings	0.14***		1	
Amount of debt	-0.07***	-0.12***	-0.25***	1

Symbols: *** $p < 0,001$

Table 17. The results of Kendall's τ correlation analyses for the relationship between plans for the future and having savings or debts by country

Country	I plan for my future		
	I have savings	Amount of savings	Amount of debt
Poland	0.27***	0.13***	-0.15***
Austria	0.15***	0.18***	-0.13***
Belgium	0.20***	0.19***	-0.07**
Czech Republic	0.21***	0.08*	-0.06*
France	0.27***	0.21***	-0.09**
Germany	0.21***	0.14***	-0.08**
Italy	0.19***	0.13***	-0.09**
Luxemburg	0.21***	0.21***	-0.10**
Netherlands	0.18***	0.18***	-0.11***
Romania	0.16***	0.06	0.00
Spain	0.18***	0.07*	-0.03
Turkey	0.10**	0.07*	-0.17***
United Kingdom	0.20***	0.18***	-0.08***
USA	0.24***	0.25***	-0.09**

Symbols: * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 18. The results of Kendall's τ correlation analyses for the relationship of plans for the future, having savings and debts, and financial behaviour

Answers	I plan for my future	I have savings	Amount of savings	Amount of debt
I currently spend more	-0.04***	-0.03***	-0.04***	0.09***
I currently pay more in cash	-0.07***	-0.07***	-0.04***	0.02*
I currently pay more by card	0.08***	0.07***	0.00	0.07***
I currently shop online more	0.09***	0.10***	0.00	0.08***
I currently shop in-store more	-0.08***	-0.07***	-0.04***	0.01
I currently save more	0.09***	0.16***	0.08***	-0.03**

Symbols: * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 19. The results of Kendall's τ correlation analyses for the relationship of future plans with financial behaviour, by country

Country	I plan for my future					
	I currently spend more	I currently pay more in cash	I currently pay more by card	I currently shop online more	I currently shop in-store more	I currently save more
Poland	-0.07**	-0.05*	0.06*	0.09**	-0.05*	0.13***
Austria	-0.06*	-0.05	0.13***	0.06*	-0.06*	0.08**
Belgium	-0.03	-0.03	0.04	0.09**	-0.02	0.09**
Czech Republic	0.01	-0.02	0.06*	0.09**	-0.09**	0.09**
France	-0.05	-0.09**	0.051807	0.04	-0.07**	0.16***
Germany	-0.05	-0.04	0.08**	0.05	-0.05	0.07*
Italy	-0.01	-0.03	0.07**	0.07*	-0.05	0.11***
Luxemburg	-0.07	-0.02	0.06	0.00	0.01	0.12***
Netherlands	-0.04	-0.11***	0.07*	0.09**	-0.05	0.12***
Romania	-0.07*	-0.10**	0.08**	0.13***	-0.08**	0.10**
Spain	-0.04	-0.06*	0.04	0.11**	-0.08**	0.08**
Turkey	-0.03	-0.13***	0.10**	0.05	-0.17***	-0.06*
United Kingdom	-0.10**	-0.07*	0.06*	0.09**	-0.08**	0.14***
USA	-0.03	-0.01	0.07*	0.12**	-0.06*	0.11***

Symbols: * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 20. The results of Kendall's τ correlation analyses for the relationship between having savings and financial behaviour by country

Country	I have savings					
	I currently spend more	I currently pay more in cash	I currently pay more by card	I currently shop online more	I currently shop in-store more	I currently save more
Poland	-0.03	-0.09**	0.11***	0.15***	-0.06	0.13***
Austria	-0.07*	-0.09**	0.11***	0.03	-0.08*	0.09**
Belgium	-0.06	-0.05	0.03	0.11***	-0.08*	0.22***
Czech Republic	0.01	-0.09**	0.10**	0.10**	-0.08*	0.17***
France	0.03	-0.08**	0.09**	0.08*	0.00	0.19***
Germany	0.01	-0.05	0.10**	0.08*	-0.04	0.14***
Italy	0.04	-0.05	0.10**	0.13***	-0.11***	0.13***
Luxemburg	-0.04	0.12***	-0.08	0.00	-0.04	0.11**
Netherlands	0.02	-0.09**	0.08*	0.13***	-0.05	0.23***
Romania	-0.08*	-0.08*	0.08*	0.17***	-0.12***	0.18***
Spain	0.01	-0.09**	0.14***	0.17***	-0.08*	0.21***
Turkey	-0.03	-0.08*	0.08**	0.08**	-0.09**	0.07*
United Kingdom	-0.10**	-0.05	0.01	0.07*	-0.09**	0.15***
USA	-0.09**	-0.01	0.02	0.06*	-0.07*	0.18***

Symbols: * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 21. The results of Kendall's τ correlation for the relationship between the amount of savings and financial behaviour by country

Country	Amount of savings					
	I currently spend more	I currently pay more in cash	I currently pay more by card	I currently shop online more	I currently shop in-store more	I currently save more
Poland	0.04	-0.09*	0.08*	0.07	-0.04	0.07*
Austria	0.03	-0.05	0.07	0.07	-0.01	0.09*
Belgium	0.02	-0.02	0.00	-0.02	0.05	0.14***
Czech Republic	0.07	0.07	-0.06	-0.03	0.01	0.00
France	-0.05	-0.01	-0.03	0.03	-0.09*	0.10**
Germany	-0.11***	-0.02	0.04	-0.05	-0.01	0.08*
Italy	-0.05	-0.02	0.03	0.00	-0.06	0.09*
Luxemburg	-0.03	-0.03	0.03	-0.01	-0.03	0.13**
Netherlands	-0.05	-0.10*	0.03	-0.02	-0.04	0.14***
Romania	-0.01	-0.11***	0.03	0.04	-0.06	-0.02
Spain	-0.09*	-0.11***	0.05	0.00	-0.07	0.12***
Turkey	-0.03	-0.05	-0.03	0.03	-0.08*	-0.05
United Kingdom	-0.05	0.02	-0.04	0.00	-0.03	0.11***
USA	-0.05	-0.04	0.06	0.05	-0.05	0.06

Symbols: * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 22. The results of Kendall's τ correlation analyses for the relationship between the amount of debt and financial behaviour, by country

Country	Amount of debt					
	I currently spend more	I currently pay more in cash	I currently pay more by card	I currently shop online more	I currently shop in-store more	I currently save more
Poland	0,05	-0,01	0,07*	0,12***	-0,06*	-0,12***
Austria	0,02	0,01	0,01	0,00	0,04	-0,10**
Belgium	0,06*	0,01	0,04	0,13***	0,02	-0,10**
Czech Republic	0,01	-0,04	0,04	0,03	0,00	-0,03
France	0,02	-0,05	0,07*	0,08**	-0,05	-0,04
Germany	0,07*	-0,03	0,06*	0,06	0,02	0,03
Italy	0,04	0,02	0,06*	0,05	0,04	-0,05
Luxemburg	0,01	-0,05	0,07	0,11***	-0,05	-0,07
Netherlands	0,06*	0,10**	-0,03	0,02	0,01	-0,09**
Romania	0,10**	0,01	0,10**	0,07**	0,00	0,00
Spain	0,06*	0,05	0,03	0,08**	0,01	-0,09**
Turkey	0,19***	0,12***	0,06*	0,08**	0,18***	0,13***
United Kingdom	0,09**	0,06*	0,06*	0,06*	0,10**	-0,01
USA	0,16**	0,04	0,17***	0,10**	0,11***	0,12***

Symbols: * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Table 23. The results of Chi-square of independence test analyses for the relationship between planning for the future, having debts or savings, and financial behaviour during the COVID-19 pandemic and metric variables in the Polish group

Answers	χ^2	df	p	V
I currently spend more	2.95	2	0.229	0.05
I currently pay more in cash	6.29	2	*	0.08
I currently pay more by card	5.29	2	0.071	0.07
I currently shop online more	3.41	2	0.182	0.06

Table 23. Continued

Answers	χ^2	<i>df</i>	<i>p</i>	<i>V</i>
I currently shop in-store more	14.87	2	**	0.12
I currently save more	5.96	2	0.051	0.08
On the whole, I make plans for the future	18.91	4	**	0.14
I live from day to day	5.52	4	0.238	0.08
I like to plan and prepare for the future	13.25	4	*	0.12
Does your household have any savings?	9.10	1	**	0.10
What amount of household savings do you have?	31.66	4	***	0.23
Do you have any debts?	9.07	1	**	0.10

Symbols: χ^2 - Chi-square statistics, *df*- number of degrees of freedom, *p*- level of statistical significance, *V*- strength of the V Cramer relationship

Table 24. Results of Kendall's τ correlation analyses for the relationship of future plans, savings and debts by country

Answers	Age	Household size	Education	Income
I currently spend more	0.05	-0.02	-0.02	-0.01
I currently pay more in cash	0.08**	-0.11***	-0.07*	-0.12***
I currently pay more by card	-0.12***	0.15***	0.06*	0.14***
I currently shop online more	-0.24***	0.24***	0.06*	0.24***
I currently shop in-store more	0.12***	-0.08**	-0.04	-0.07*
I currently save more	-0.14***	0.02	0.03	0.09**
I plan for my future	-0.07**	0.07**	0.08**	0.13***
I have savings	-0.19***	0.12***	0.10***	0.23***
Amount of savings	0.13***	-0.03	0.14***	0.24***
Amount of debt	-0.07*	0.10***	0.03	0.04

Symbols: **p* < 0,05, ***p* < 0,01, ****p* < 0,001

Table 25. Results of logistic regression analysis for the prediction regarding having savings in the Polish group

	β	SE	$Wald$	df	p	$exp(\beta)$
Sex (male)	-0.40	0.18	5.11	1	*	0.67
Education	0.16	0.07	5.70	1	*	1.17
Income	0.40	0.08	27.82	1	***	1.49
Employed (yes)	0.39	0.22	3.25	1	$\frac{0.07}{1}$	1.48
I live from day to day	-0.32	0.08	15.54	1	***	0.73
I like to plan and prepare for the future	0.52	0.09	34.29	1	***	1.69
Age	-0.03	0.01	25.71	1	***	0.97
Constant	-0.31	0.64	0.23	1	$\frac{0.63}{2}$	0.74

Symbols: β - Beta coefficient, SE - standard error, $Wald$ - Wald's coefficient, df - number of degrees of freedom, p - statistical significance, $exp(\beta)$ / OR - odds ratio