Fates of indebted households during the Corona crisis: Survey results from Slovakia

Martin Cesnak, Andrej Cupák, Ján Klacso, Martin Šuster

NATIONAL
BANK OF
SLOVAKIA
EUROSYSTEM

www.nbs.sk

Fates of indebted households during the Corona crisis: Survey results from Slovakia*

Martin Cesnak[a], Andrej Cupák[b], Ján Klacso[c], Martin Šuster[d]

Abstract

A satisfactorily small share of households expects serious difficulties in resuming their debt instalments after a payment moratorium is lifted. As documented across six waves of a survey administered by the National Bank of Slovakia on indebted households, the payment moratorium programme was very important. Many households have suffered negative income or employment shocks, and the moratorium conserved household liquidity during the crisis. Loan payment deferral was used mainly at the beginning, and gradually households preferred individual agreements with their banks. The Covid-19 crisis disproportionately affected households that were highly indebted already before the crisis, working in sensitive sectors, less educated, or with large drops in income. As a result of the crisis, vulnerable households plan to keep higher financial buffers to cope with future risks, as well as better diversifying their income activities to less vulnerable sectors.

---

[a] Research Department, National Bank of Slovakia. E-mail: martin.cesnak@nbs.sk
[b] Research Department, National Bank of Slovakia; University of Economics in Bratislava. E-mail: andrej.cupak@nbs.sk
[c] Research Department, National Bank of Slovakia. E-mail: jan.klacso@nbs.sk
[d] Research Department, National Bank of Slovakia. E-mail: martin.suster@nbs.sk

Introduction

Negative consequences of the Covid-19 pandemic and the subsequent crisis are difficult to measure on the micro level. The individual distributional consequences are key, however, for understanding consumer behaviour and the risks in the financial markets. Neither banks nor regulators had enough information about the financial situation of households during the Covid-19 crisis. While governments have imposed lockdowns[1] to slow down the spread of the pandemic, packages of measures were introduced to support businesses and households to cope with the crisis. One of the most widespread measures is some form of a loan instalments deferral.

The Slovak real economy has decreased by 5.2% in 2020, due to both direct epidemic effects and the imposed anti-epidemic interventions. The government has implemented a broad set of measures concentrating on preserving employment and partially compensating income losses caused by lockdowns. In terms of financial stability, a worsening financial situation of both non-financial corporations and households affects the demand as well as supply side of the loan market and can lead to an increase of credit risk costs. This is particularly important for the Slovak banking sector, where loans to households represent almost 45% and loans to NFCs almost 22% of total assets.

One of the most important policy measures from the financial stability perspective was the introduction of the debt payment moratorium for individuals, self-employed and SMEs for at most nine months. The share of indebted households opting for loan payment deferral reached its maximum of more than 7% during the summer of 2020, representing more than 10% of the overall retail loan portfolio. This measure helped indebted households to offset a temporary loss of income. However, during the payment moratorium, neither the banks nor the regulators have enough information on the financial situation of these households to judge their riskiness post crisis.

To gather alternative information, the National Bank of Slovakia has launched a series of surveys among indebted retail clients, focusing on the development of their financial situation and their expectations regarding loan repayments after the deferral expires in 2021 (survey results are presented in Cupák et al., 2020a, Cesnak et al., 2020a – 2020e and 2021a). The survey had a monthly frequency and was conducted from July to December 2020. Approximately 1,000 indebted households responded in each wave. Although there have been similar surveys launched focusing on the impact of the Covid-19 recession on household financial situation (see, e.g. Neri and Zanichelli, 2020), to our knowledge we are the first to focus on the impact on households' credit risk.

The survey also contributes to the growing literature on the impacts of the Covid-19 recession on households' financial and consumption behaviour utilizing ad-hoc surveys or administrative microdata. Recent examples of such studies are by Baker et al. (2020), studying the impact of the pandemic on household income and consumption situation for US households,

---

[1] Countries imposed different preventive measures to increase social distance, ranging from closing public spaces such as restaurants or non-essential shops, through closing educational institutions, up to "stay-at-home" orders for the general population. More information about the measures imposed by countries can be found, e.g., here: https://www.ecdc.europa.eu/en/publications-data/download-data-response-measures-covid-19.

or Brewer and Gardiner (2020), analyzing the impact of Covid-19 on household incomes in the UK. Clark et al. (2020a) found a somewhat surprising result for five European countries (France, Germany, Italy, Spain and Sweden): overall income inequality has decreased during the crisis. On the other hand, Christelis et al. (2020) show that the pandemic caused a significant drop in households' non-durable consumption. Finally a survey by Clark et al. (2020b) points to different vulnerable household groups that might be at risk of financial fragility due to the Covid-19 crisis. Interestingly, the authors highlight the fact that more financially literate households were better prepared to absorb pandemic-related economic shocks.

In this paper, we summarize results of the six survey waves. One of the most important result is that only a small share of households had negative expectations on their ability to resume loan payments once the deferral is over. Households preferred to ask for deferral mainly at the very beginning of the program. Our data reveal, that in later months they rather entered into individual agreements with the banks. The income changes due to the crisis and pre-crisis DSTI are important drivers of the decision to opt for the deferral. Negative expectations are also driven by higher pre-crisis DSTI, income changes and the related change in the economic activity. The level of education and financial literacy seems to play a role, too.

Survey data also enabled to study the drivers of income changes using panel techniques. Changes in household income were closely related to changes in employment status. Similarly, for households that have opted for a deferral – thus in greater financial stress – we observe a significantly larger drop in income compared to the pre-crisis period. The impact of age on changes in income is U-shaped: younger families have a higher income drop than older ones, who have been less affected by the crisis. We also observe a stark income drop in self-employed households. On the other hand, the impact of university education and gender is positive and significant. A lesson was learned by households during the crisis: vulnerable households plan to change their financial behaviour in the future and keep higher financial buffers to cope with future risks, also better diversifying their self-employment business portfolios, and possibly shifting to jobs less sensitive to fluctuations.

The paper is organised as follows. The next section describes the survey in more details. Section 2 discusses the main results of all six waves of the survey. Section 3 analyses determinants of household expectations. Section 4 is dedicated to the panel analysis of the income changes due to pandemic. Section 5 discusses the possible moral hazard of the deferral policy and future household financial plans. Finally, section 6 concludes.

1 Survey details

The survey collected information about the financial development of indebted households, with an emphasis on those that opted for a payment deferral in 2020. Design of the survey is described in Appendix B.[2] An intentional overrepresentation of households with deferral allows us to follow the development of financial conditions of these households. While the composition of households responding in the survey changed within respective waves, there were 179 households participating in all six waves.

The survey collects information at both household- and individual-level. In general, the survey can be divided into two parts. The first part collects information about socio-demographic characteristics of the household (age and education of the respondent, region of the household's main residence, number of family members and children, etc.). The second part focuses on the economic activity and the impact of the pandemic on the financial situation of the household. We collect information about pre-crisis income[3] and the change in the income and economic situation of the household due to the pandemics and consecutive lockdown. Also, the survey covers information about pre-crisis loan payments and a possible loan payment deferral. A key question is about households' expectations regarding the loan payment after the end of the deferral. The detailed list of survey questions is provided in Appendix A.

Weights were calibrated to margins including income source, education, age categories, the level of monthly instalment (with the outstanding debt level added in the second wave), and an indicator of whether a household opted for a loan deferral.[4] A detailed description of the weighting is available in Appendix C.

2 Main results

Household's income and employment expectations have deteriorated mainly in the first months of the pandemic, marking the initial uncertainty about future economic outlook. This was followed by stabilisation in late summer and early autumn. A very strong second wave of the pandemic in the fall was mirrored by a very negative turn in expectations documented in the last two surveys in November and December 2020.

The share of households expecting serious difficulties with resuming payments of their debts after moratorium was relatively low across all survey waves. In July and August, the share of these households was just over 1% of the whole sample and consisted mainly of households

---

[2] The survey was carried out as a Computer-Assisted Telephone Interview (CATI). Sampled survey participants were selected from the three largest Slovak banks, covering around two thirds of the overall retail bank loan portfolio. The survey was conducted in six waves with a monthly frequency from July to December 2020. Around 1,000 households were interviewed in each wave.
The overall response rate was above 20%. Participants were selected based on socio-demographic as well as financial criteria, to construct a representative sample of indebted households based on the distribution of the outstanding amount of loans, income, income source (employees, self-employed or other), education, and the number of household members.

[3] We are asking the net income of the household. It means that if a household opted for payment deferral, this is not reflected in the income change.

[4] We have used Calif 4.0 calibration tool to construct the weights, which allows for approximate solutions and is able to calibrate weights based on a broad number of calibration criteria (ESS, 2017) following the state-of-the-art principles (Deville and Särndal, 1992). The calibration tool is available freely on: https://github.com/SO-SR/Calif.

that took advantage of other type of credit easing than a deferral.[5] The share of households with negative expectations was consecutively declining. Finally, in November and December expectations worsened again, mainly in the group of households opting for deferral. This increase largely reflects the onset of the second wave of pandemic as well as re-tightening of the non-pharmaceutical measures. The share of negative expectations among households opting for deferral roughly doubled at the end of the year to approximately 8%.

Chart 1 Households' negative expectations (in %)

Share of negative expectations among all households
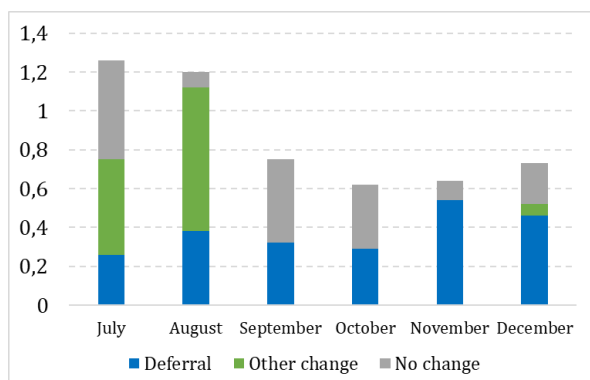
Share of households with negative expectations by type of household
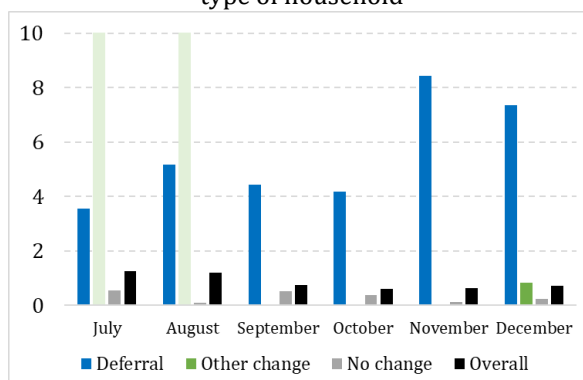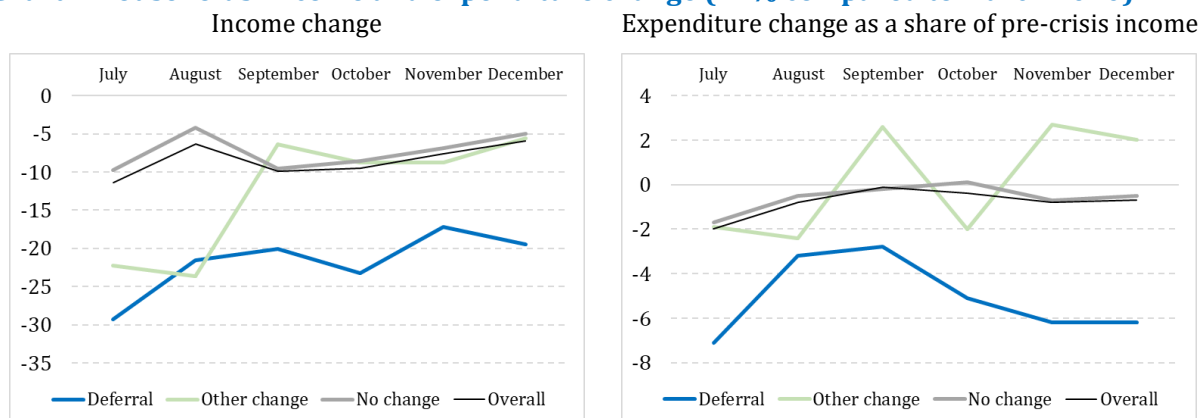

Source: Survey of indebted households, National Bank of Slovakia.
Note: survey fieldwork dates in horizontal axis.

Income change of indebted households was a key driver of the decision to opt for a deferral as well as negative expectations. Despite the overall improvement of income situation of households in December to almost pre-crisis levels, average income of households with deferral was still more than 20 % lower. Income change dynamics in separate groups of indebted households was reflected in their expenditure change dynamics as well. Most of households gradually restored their expenditure almost to their pre-crisis levels. Households with deferral increased their expenditure as well after the first survey wave. However, after the onset of the second pandemic wave their expenditure decreased again and remained lower compared to their pre-crisis levels as well as to households without deferral.

---

[5] The survey wasn't primarily focused on debtors that opt for any other adjustment in credit conditions than deferral. Since this group had not postponed their debt payments, the banks were properly informed about their repayment ability. The consequence is that results of this group are relatively volatile, especially in first two survey waves, where the number of such households is low compared to the whole sample.

Chart 2 Households' income and expenditure change (in % compared to March 2020)

Income change	Expenditure change as a share of pre-crisis income

Source: Survey of indebted households, National Bank of Slovakia.

Besides income, the decision to opt for a deferral is also driven by the pre-crisis level of debt service-to-income (DSTI) ratio.[6] Median DSTI value of households with deferral exceeds the median DSTI value of the rest of households. The same applies to the share of households with relatively high values of DSTI ratio.

Chart 3 DSTI by the type of household (in %)
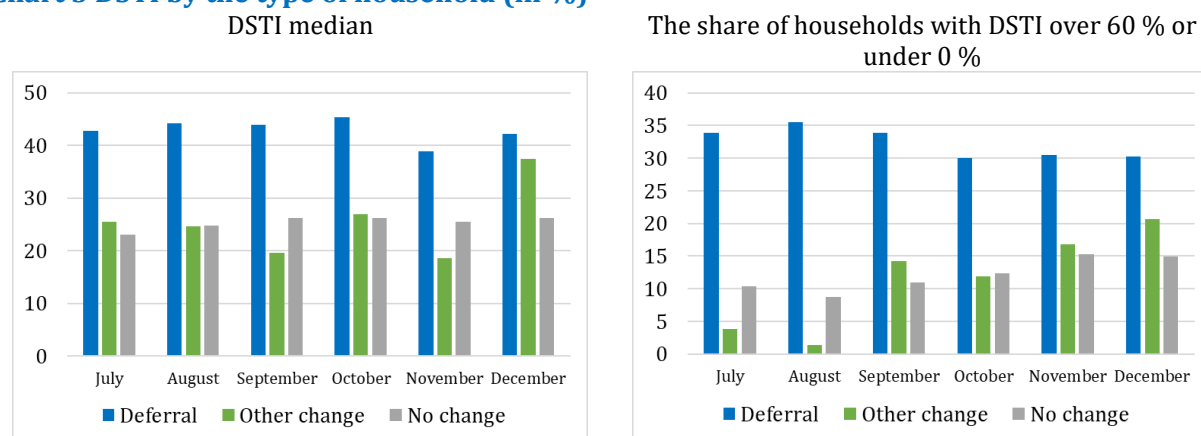
DSTI median	The share of households with DSTI over 60 % or under 0 %

Source: Survey of indebted households, National Bank of Slovakia.
Note: DSTI under 0% means, that after payment of the monthly instalment the debtor is left with insufficient amount of money, even to cover the subsistence minimum.

The survey also shows the strength of the pandemic had a significant impact on the economic status of debtors. At the beginning of the summer, the crisis had a negative impact at least on some household members in more than 60% of indebted households.[7] The situation improved by the end of the summer, nevertheless, the strongest negative impact is noticeable in case of households with repayment deferral. Even after the situation improved in August, the share of

---

[6] Debt service-to-income is calculated, in line with the definition used for borrower-based measures introduced by the National Bank of Slovakia, as

$$DSTI = \frac{Overall\ sum\ of\ monthly\ instalments}{Monthly\ net\ income - Minimum\ subsistance\ amount\ of\ the\ household}$$

Minimum subsistence amount of household is given by regulation based on the number of adults and children. If net income falls below this minimum, DSTI can be negative.

[7] Along with possible job loss or termination of business, other negative impacts on job/business due to pandemic were monitored, e.g., reduced income due to decline in sales/hours worked, reduced bonuses as well as leaving to care for a family member. The necessity of changing the job due the corona crisis was also considered as a negative impact of the pandemic.
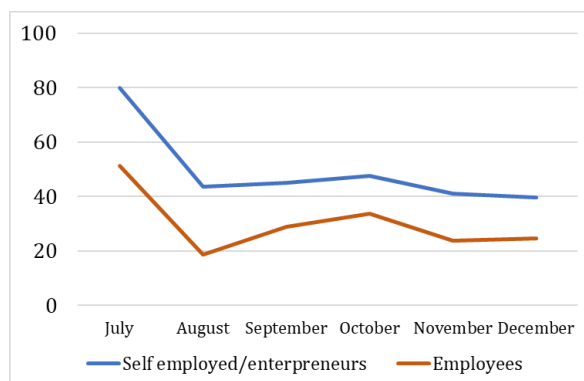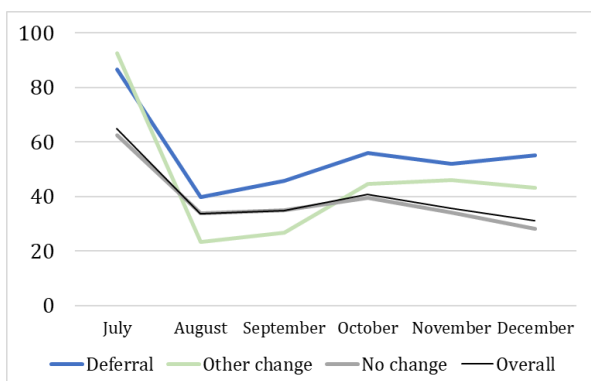
negatively affected households in this group was gradually increasing. The crisis had stronger impact on self-employed than employed across all survey waves.

Chart 4 Negative impact of the pandemic on the labour market (in %)

At least one household member negatively affected | Negative impact by the type of work
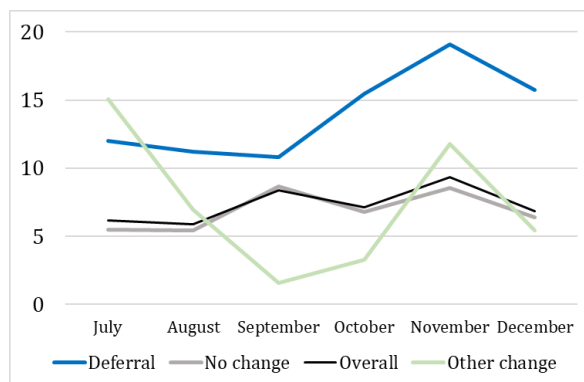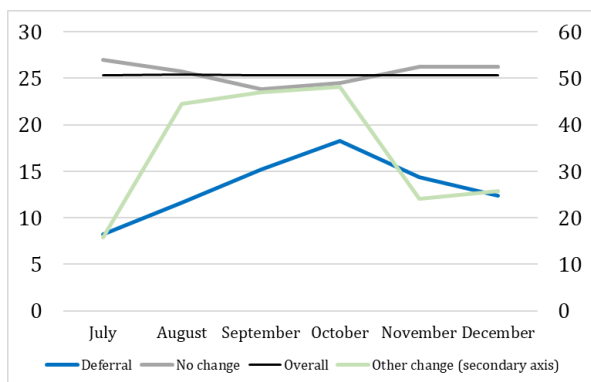

Source: Survey of indebted households, National Bank of Slovakia.

Education and the sector of employment also affect the fates of the households. The education may be directly related to debt ratio, as well as financial literacy (possible drivers of high DSTI ratios are discussed in Box 1). While the share of debtors with university education was 25% overall,[8] this share in the "deferral category" was lower across all survey waves, at 10 – 15%. The most negatively affected sectors were accommodation and food services, and art, entertainment, and recreation (more in Cupák et al. 2020b). The share of debtors with repayment deferral in these sectors was significantly more frequent across all survey waves. This share even increased in the last survey waves, reaching almost 20% in November.

Chart 5 The structure of indebted households by education and sector sensitivity (in %)

Share of debtors with university education | Share of debtors working in sensitive sectors

Source: Survey of indebted households, National Bank of Slovakia.

While deferral helped households at the beginning of the crisis, when the negative impact of the crisis was more notable, as the income situation was improving, individual arrangement with banks became the preferred option. Uncertainty at the earlier stages of the crisis manifested in a larger share of all indebted households considering any type of adjustment in credit conditions, including deferral. As the public knowledge of the pandemic improved, this share has decreased. In October, along with the onset of the second wave of pandemic, the share

---

[8] The share follows on from the sample construction itself. Construction of the survey sample was based on quota selection, while one of the selection parameters was the education of the respondent. This parameter was then used as a calibration criterion in the process of weights construction.

of households planning repayment deferral increased again. Approaching the end of the year, the share of deferral-planning households achieved practically zero. Simultaneously the share of households planning another type of adjustment prevailed. It indicates that, at the beginning of the crisis the most preferred option to ease the credit conditions was repayment deferral, while other types of adjustment became preferred over time.

Chart 6 The share of households planning deferral or other option of easing credit conditions (in %)
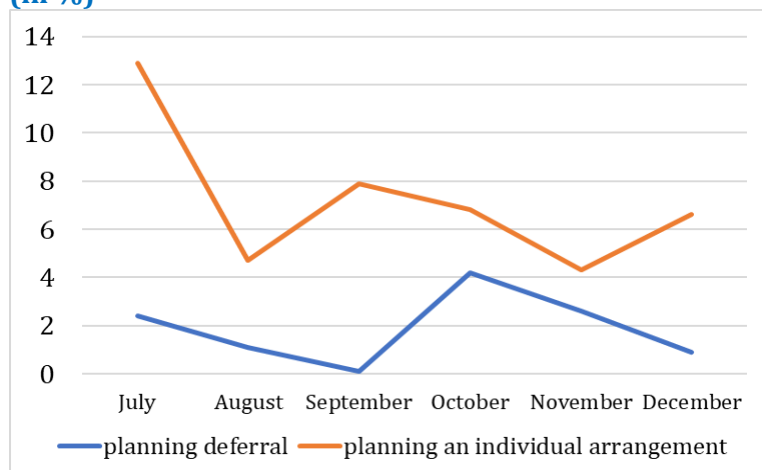
Source: Survey of indebted households, National Bank of Slovakia.

Box 1 Drivers of high DSTI

The DSTI turned out to be one of the main factors affecting the decision to opt for any credit conditions adjustment, especially the option of repayment deferral. As the sample of households collected in survey differs from wave to wave, median pre-crisis values of DSTI, instalment and income also differ. For this reason, as well as for comparison purposes and higher volatility occurrences, we used weighted average values of these indicators.

First relevant driver of high DSTI appears to be the level of education attained by the respondent. As the number of observations in category of at most elementary education is low across all survey waves, DSTI values are relatively volatile compared to other two categories, where the values are sufficiently consistent. Nevertheless, in almost all monitored months both median and the share of households with higher DSTI were the highest in this category, which results in the highest DSTI among all categories in average. The second highest DSTI belongs to the category of households with secondary education, followed by university-educated category. Therefore, as the level of education increases, the tendency of debt-service overburden decreases, which can be strongly related to the level of financial literacy as well as credibility of debtors.

Chart A DSTI by main debtor's highest achieved level of education (in %)
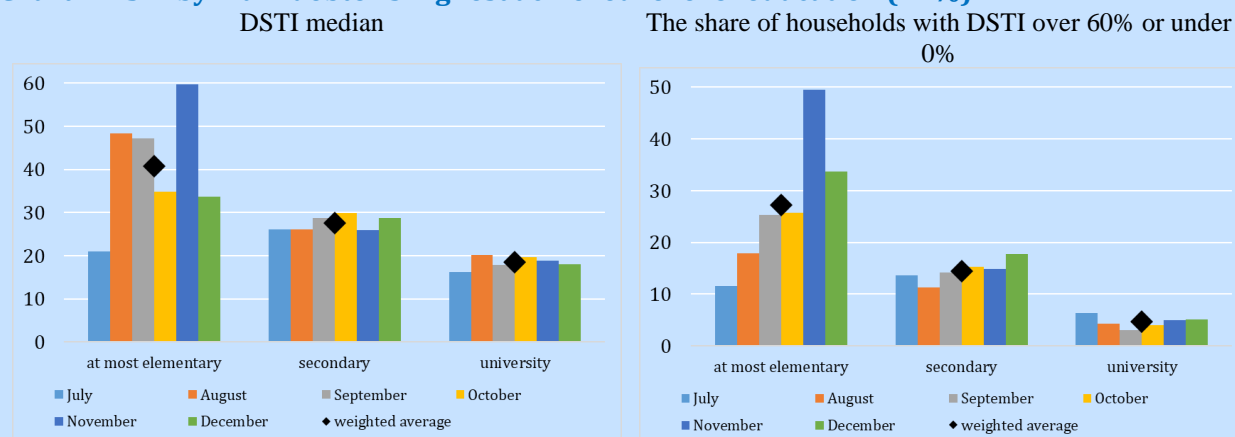
DSTI median

The share of households with DSTI over 60% or under 0%

Source: Survey of indebted households, National Bank of Slovakia.
Note: DSTI under 0% means, that after payment of the monthly instalment the debtor is left with insufficient income, even to cover the subsistence minimum.

The next significant driver of high DSTI is the number of children living in the same household. As the number of observations of households with 4 and more children rapidly decreases with every child added, this category is grouped into one. Even then, high volatilities occurred in category of 3 and 4 and more children. The differences among households with 0, 1 or 2 children are relatively insignificant. The 2nd child, however, seems to be a breaking point, from which households tend to accept higher levels of debt-service burden with every additional child. This scheme intuitively makes sense, as the number of children enters the DSTI calculation in the form of subsistence minimum.

Chart B DSTI by number of children in the same household (in %)
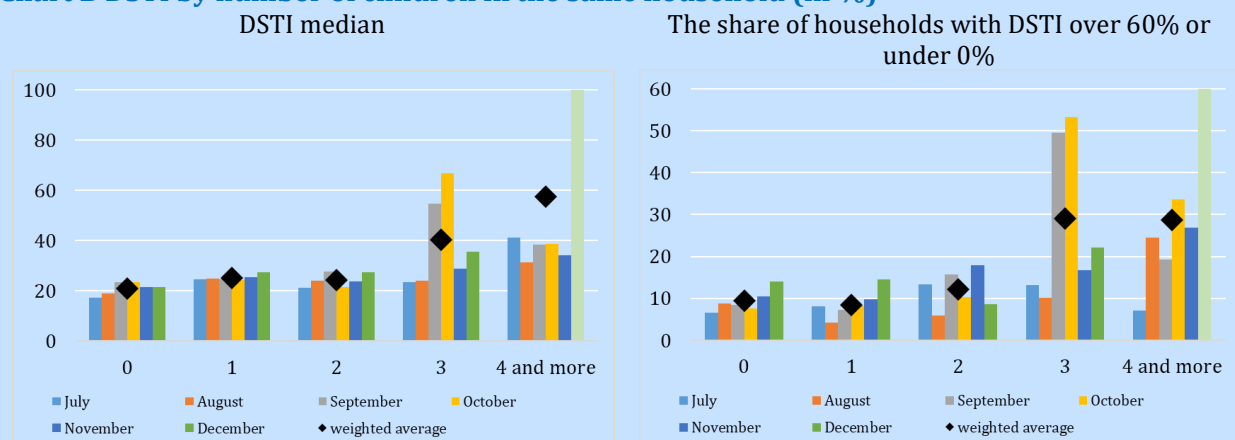
DSTI median

The share of households with DSTI over 60% or under 0%

Source: Survey of indebted households, National Bank of Slovakia.
Note: DSTI under 0% means, that after payment of the monthly instalment the debtor is left with insufficient income, even to cover the subsistence minimum.

The other two indicators entering the DSTI calculation are household income and their monthly instalment, therefore the impact on DSTI values was expected. However, between those two, pre-crisis income level appears to play much bigger role in debt-service burden. Households with DSTI ratio exceeding "safe" limits have median income more than two times lower than households having DSTI ratio within the limits. Difference between "safe" and "unsafe" DSTI category with respect to median level of instalment is not that apparent. Median value of instalment in DSTI category over 60% and under 0% is at about 20% higher compared to DSTI category over 0% and under 60%. Although in last two survey waves the median value in "unsafe" DSTI category was equal or even less than in "safe" DSTI category.
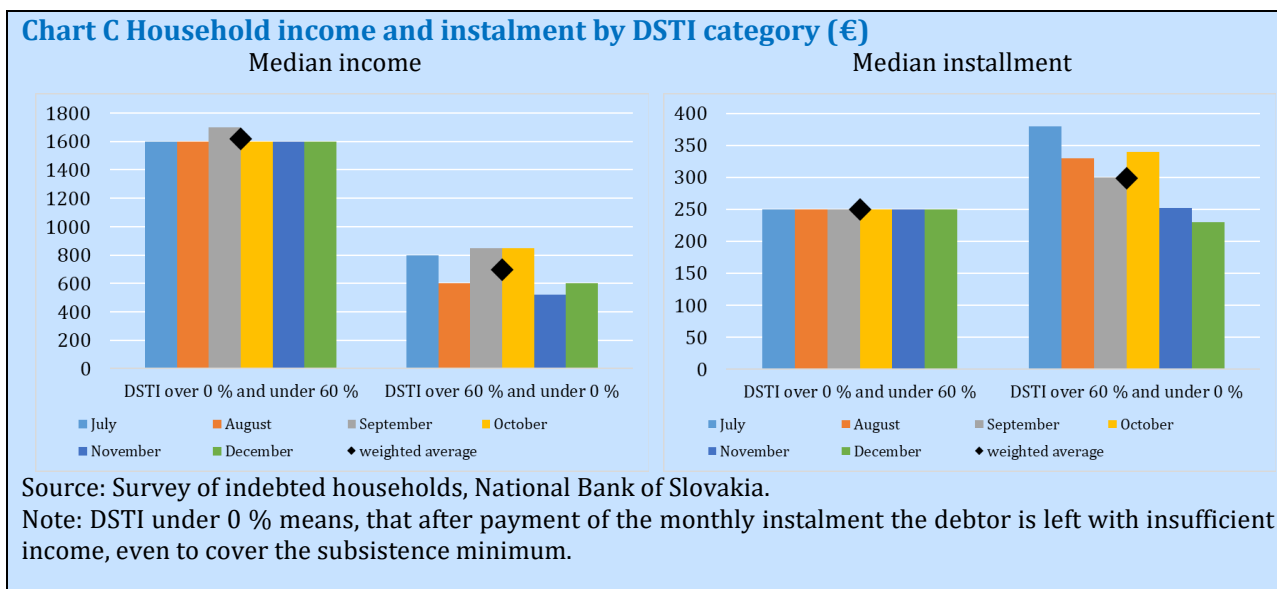
3 Households with negative expectations

We assume the most affected households are those opting for deferral and having negative expectations. They were generally the most indebted ones. Therefore, they are also subject to the highest probability of failing to comply with their payment schedule once the deferral is over.

Chart 7 Median DSTI of households asking for deferral and having negative expectations (in %)
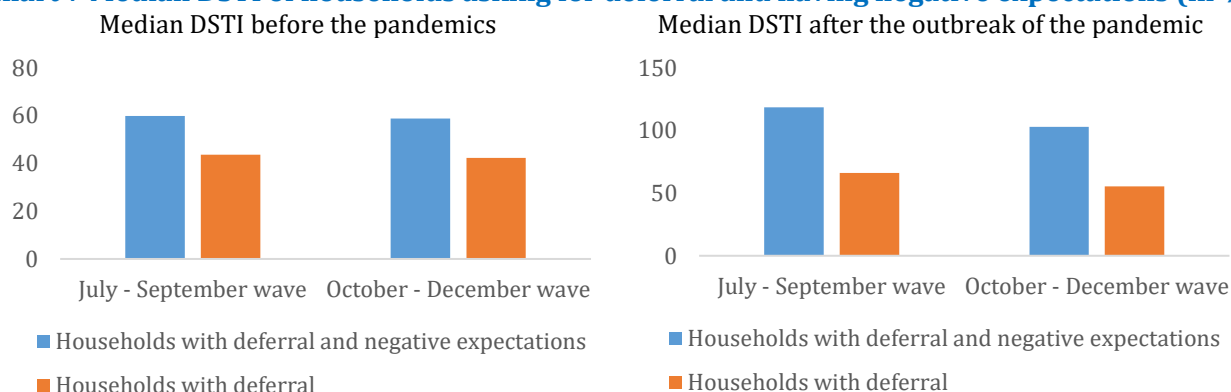
Source: Survey of indebted households, National Bank of Slovakia.
Note: The chart shows weighted averages of the first three and second three waves using weights of the respective groups in the respective months.

Box 2 Follow up survey – results

In March 2021 a follow up survey was conducted to assess the financial situation of households making use of deferral in 2020 (see Cesnak et al., 2021b). By this time the deferral has already expired for more than 95% of retail borrowers. Only slightly more than 3% of the borrowers opting for deferral were not able resume payments on their loans after the moratorium. This is even a better result than households expected based on the December 2020 round of the survey. Income has increased to pre-crisis levels for around 45% of households and thus they are currently on track with loan payments. Another 40% of households reported still lower income compared to pre-crisis levels, but they were able to resume payments. A low share of households, 6%, can keep paying only with the help of family or friends. These survey results are to a large extent in line with data reported by banks. Based on the later, almost 90% of households are regularly paying back their loans. Around 3% of households are in arrears up to 30 days, but this can be caused also by technical and reporting

issues. Less than 3% of households are not able to pay back their loans and 4% of households asked for a new deferral.

Chart D Households' ability to pay back loans after the end of deferral

Survey data   Data from banks

Income returned to pre-crisis levels

Income hasn't returned but able to pay instalments

Income hasn't returned but able to pay with help of family/friends

Income hasn't returned and not able to pay instalments

Monthly instalments still deferred

Paying instalments after the end of deferral without any problems

Past due 1 - 30 days

Default and pas due 31 - 90 days

Asked for another deferral

Source: Survey of indebted households, National Bank of Slovakia.

During the first months of 2021 the pandemic situation in Slovakia worsened resulting in a stronger lock-down. This is visible also on the financial situation of the surveyed households. As of March 2021, the share of employed borrowers losing their job increased form 3.6% (December wave) to 7.1%. The share of self-employed borrowers forced to end their business increased from 1% to 3.3%.

While in general the share of such households is relatively small (see Appendix B), some interesting conclusions can be drawn also for this group.[9] The median DSTI of the pessimistic households is even higher than the already high value for the whole group of households with deferral. This is true not only for the DSTI impacted by the pandemic, but even for the pre-crisis DSTI.[10]

The share of households with high DSTI is also higher among households asking for deferral and having negative expectations. Pre-crisis DSTI was confirmed as a relevant factor impacting households' expectations (see Box 3). The higher the pre-crisis DSTI, the higher is the probability a household has pessimistic expectations. This result is significant mainly for the first three waves.

---

[9] Due to the low number of households with negative expectations and the volatility of this group, in the charts we present aggregated statistics for the first three waves and the second three waves of the survey, when the second wave of the pandemic already affected the economy and government decisions about the lockdown.

[10] As these households asked for deferral, in reality they do not have to pay back the loan in the followed period. DSTI affected by the crisis is a theoretical value calculated from the pre-crisis monthly payment and the income affected by the crisis.

Chart 8 Share of households with DSTI above 60% or below 0% (in %)
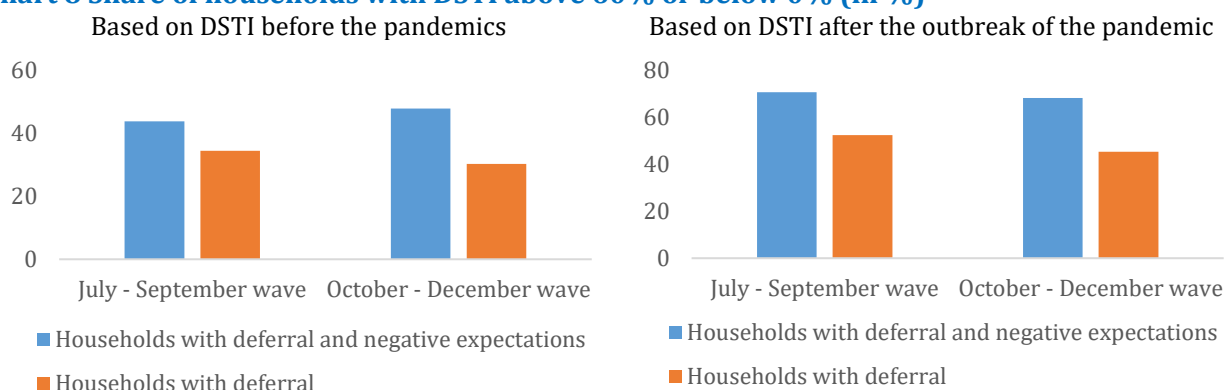
Based on DSTI before the pandemics

Based on DSTI after the outbreak of the pandemic

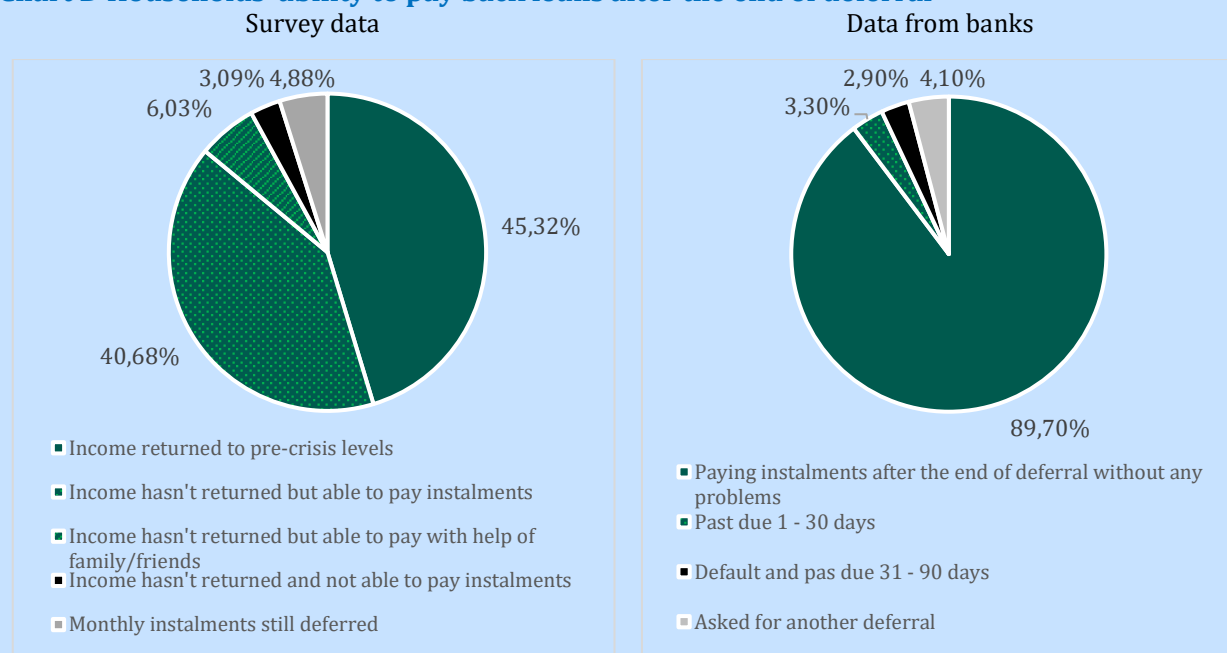Source: Survey of indebted households, National Bank of Slovakia.
Note: The chart shows weighted averages of the first three and second three waves using weights of the respective groups in the respective months.

While more pronounced in the first three waves of the survey, the change in net income was higher among households having negative expectations compared to the whole group of households with deferral. The share of households with a university educated head is lower within the group of households with deferral and negative expectations. Again, this difference is more pronounced in the first three waves.

Chart 9 Income change and education of households with deferral and negative expectations (in %)
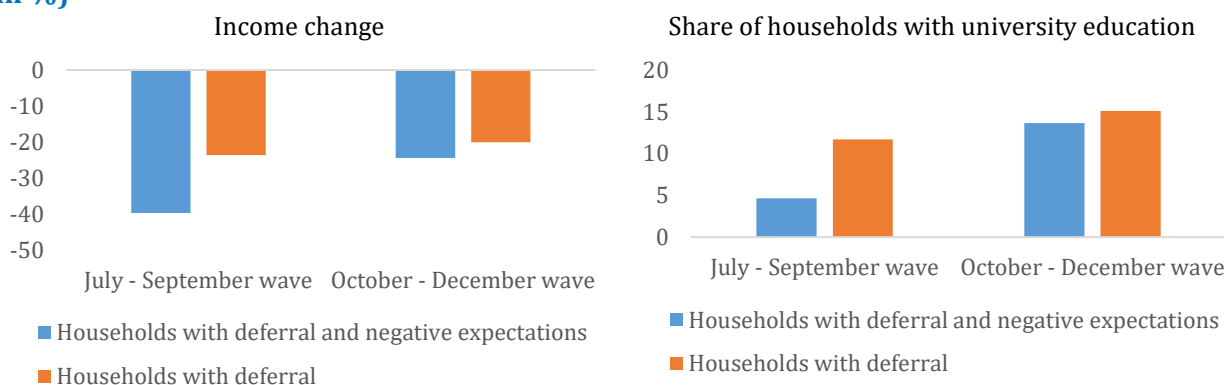
Income change

Share of households with university education

Source: Survey of indebted households, National Bank of Slovakia.
Note: The chart shows weighted averages of the first three and second three waves using weights of the respective groups in the respective months.

The higher is the drop in income, the higher is the probability a household has negative expectations. This result holds for all the waves but the last conducted in December 2020. A possible explanation is the gradual improvement in the income and thus the gradual decrease of the difference of the income change between the two groups of households. Another factor affecting negative expectations, related to income change, is the negative change in the economic status. In case of regressions using not weighted data, the negative change of the economic status of one or both household members significantly increase the probability that a household has negative expectations.

Interestingly, regression based on the first, July wave, points to a significant impact of the type of work of the respondent. Households, where the respondent was self-employed, had higher probability of having negative expectations. This can be related to the still high uncertainty regarding future economic development during the first wave of the survey.

4 Covid-19 crisis and income changes

Chart 10 Distribution and evolution of income changes during the pandemic

Distribution of income changes by wave　　　Evolution of average income changes over time
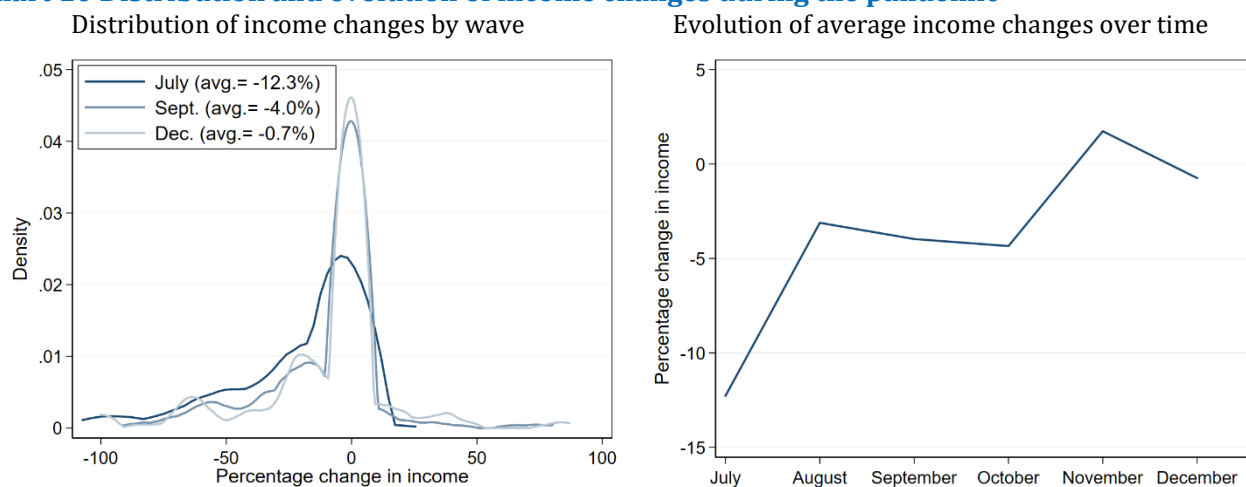
Source: Survey of Indebted Households, National Bank of Slovakia.
Note: weighted figures presented. Based on panel households (N=179).

In the previous empirical analysis, we focused predominantly on the cross-sectional structure of the data and the analysis of household indebtedness and expectations. It is natural to ask what the impact on household wellbeing is.[12] We proxy the household prosperity by net income. Furthermore, the availability of longitudinal component for some households (which had participated in several consecutive waves of the survey) also allows us to shed light on the

---

[11] No change / job loss or termination of business / reduction in salary, sales, or working hours / temporary closed shops or temporary cessation of business / new job or new business.
[12] See Clark et al. (2020a) or Clark and Lepinteur (2021) who analyse the impacts of the pandemic on income and wellbeing in selected European countries.

evolution of household incomes vis-à-vis the development of the pandemic by means of panel data models.

Before the actual econometric analysis, it is worthwhile to look at the changes in the income situation for panel households. In Chart 10, we can observe that during the first July wave of the survey, incomes fell in most cases, or remained unchanged (average drop of around -12% as compared the pre-crisis period). The situation gradually improved through the pandemic: lower drops in September (-4%) and the smallest drops in December (-1%). The question remains what determines such development.

Table 1 Panel regression estimates of household income changes

	Fixed effects			Random effects			
	(1) unweighted	(2) weighted	(3) weighted	(4) unweighted	(5) weighted	(6) weighted	(7) weighted
Age	–	–	–	-0.307	-2.317***	-2.419***	-2.156***
	–	–	–	(0.983)	(0.015)	(0.015)	(0.015)
Age2	–	–	–	0.003	0.024***	0.025***	0.021***
	–	–	–	(0.011)	(0.000)	(0.000)	(0.000)
University	–	–	–	4.020	0.894***	1.017***	0.960***
	–	–	–	(2.481)	(0.041)	(0.041)	(0.041)
Male	–	–	–	5.173**	9.285***	9.531***	8.629***
	–	–	–	(2.605)	(0.041)	(0.041)	(0.040)
Self-employed (1st person)	–	–	–	-12.141***	-5.614***	-6.072***	-5.892***
	–	–	–	(3.011)	(0.049)	(0.050)	(0.050)
One fam. member experienced change in emp. status	-7.877***	-6.430***	-4.618*	-8.827***	-7.833***	-6.387***	-6.688***
	(1.676)	(2.403)	(2.458)	(1.591)	(0.026)	(0.028)	(0.028)
Both fam. members experienced change in emp. status	-15.902***	-28.032***	-25.344***	-17.269***	-28.204***	-26.025***	-25.952***
	(2.262)	(10.678)	(9.734)	(2.143)	(0.034)	(0.036)	(0.037)
Deferral	-7.604**	-5.135**	-5.330***	-10.359***	-8.478***	-8.729***	-10.486***
	(3.246)	(2.007)	(1.925)	(2.077)	(0.047)	(0.047)	(0.046)
Constant	-4.508**	-0.206	1.888	2.035	47.167***	51.365***	47.335***
	(1.768)	(1.058)	(1.762)	(20.196)	(0.305)	(0.307)	(0.322)
Time effects	No	No	Yes	No	No	Yes	Yes
Regional effects	No	No	No	No	No	No	Yes
R^2	0.21	0.18	0.17	–	–	–	–
Number of groups	179	179	179	179	179	179	179
Number of observations	1074	1074	1074	1074	1074	1074	1074

Source: Survey of Indebted Households, NBS.
Note: standard errors in parentheses. Reference categories of the respective dummy variables sets were omitted. Weighted panel regressions are estimated using weights that were calibrated to margins: education, monthly instalment categories, and asking for a deferral. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The results of regression analysis are described in Table 1. We estimated several panel regressions for households that participated in all six waves of the survey (i.e., August, September, October, November, and December). Columns 1 to 3 show the estimates of the panel models using fixed effects: for these models, the individual time-invariant characteristics are constant and therefore the coefficients for these variables are omitted. On the other hand, if both working members of the household have negative changes in employment due to the crisis, drop in their income is significantly larger (-16% to -28%) as compared to households with no change in employment status. Similarly, for households that have requested a deferral – thus in greater financial need – we can observe a significantly larger drop in income compared to the pre-crisis period (effect of -5.3 to -7.6% depending on the model). For models estimated using random effects (columns 4 to 7), we can also observe the estimated coefficients for individual characteristics. These effects are usually highly statistically significant (p<0.01) and have the expected signs. The impact of age on changes in income is U-shaped: younger families have a higher income drop than older households, who have been less affected by the crisis. We can also observe a larger drop in income for the self-employed households. On the other hand,

the impact of university education and gender is positive and significant. The result of the positive effect of university education is in line with findings of Clark et al. (2020b) who found that in the U.S. households with higher literacy were more resistant to shocks stemming from the crisis. The marginal effects for the change of employment status and deferral requests are similar to those estimated for models with fixed effects.

Box 4 Technical details of the econometric analysis

In this part of the analysis, we estimate the following panel regression model:

$$\Delta Income_{it} = \alpha + \beta X'_{it} + v_i + \epsilon_{it},$$

where $\Delta Income_{it}$ represents the percentage change in the net disposable income of household i at time t compared to the benchmark pre-crisis period (March 2020). X'_{it} represents a vector of explanatory variables that affect the household income situation such as change in employment status, age profile, education and gender. A random error term consists of two parts: v_i is a household-specific error term and ϵ_{it} is a classical error term satisfying the *i.i.d.* assumptions. In our panel regression we estimate both models with random- and fixed-effects as well as models with and without weights.

Similarly to the cross-sectional data analysis, the panel data analysis should be that individual households are representative of the total population of the Slovak indebted households. We calibrated the panel weights in a manner similar to the cross-sectional weights (see Appendix C) with the difference that in the case of panel weights, fewer variables were used for calibration, namely: level of education, categories of monthly instalments, and information on opting for a deferral.

---

5 Financial plans

In general households more affected by the pandemic made use of the payment deferral. They worked in more sensitive sectors, reported higher income drops and had higher pre-crisis DSTI, meaning they entered the crisis with an already high debt burden. A natural question that arises is whether the pandemic has had an impact also on the financial behaviour of the households.

While the primary goal of the payment moratorium was to maintain household welfare during the crisis, and to mitigate the risks to the financial sector, there could be situations in which moratorium in fact increases the fragility of the financial sector. If a large share of households exploits the payment moratorium to shift their asset holdings abroad, to other family members, etc., after the end of the moratorium no assets can be claimed by the bank resulting in large depreciation of the loan portfolios.

In the absence of real-time data, such hypothesis of a moral hazard cannot be addressed. However, we have an indirect way of testing. Households were asked about their future financial behaviour (see question 17 in Appendix A). This can, to some extent, shed light on the risk of households making use of the moratoria to shift their asset holdings.

Chart 11 Planned changes in financial behaviour as a consequence of the pandemic

Any change

Higher fin. reserve

Better diversified self-emp. business

Changing employment to a less sensitive sector
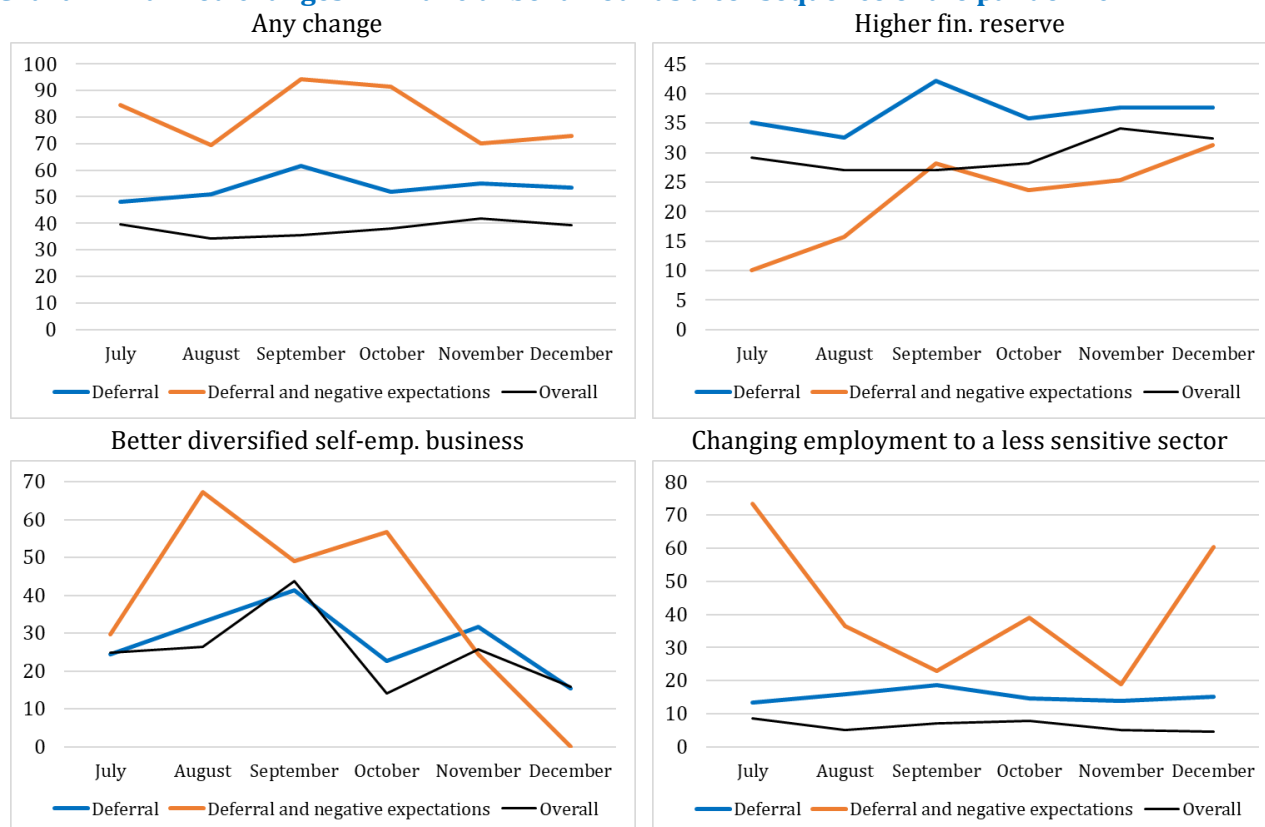
Source: Survey of Indebted Households, National Bank of Slovakia.

Households plan to make some responsible financial decisions in the near future. Overall, around 40% plan to make changes in their financial behaviour. Building a greater financial buffer is among the most frequently considered plans (around 30%). This is followed by better diversification of the self-employment business (from around 20% to 40%, depending on the wave), and shifting jobs to less sensitive sectors (from 5% to 10%).

What is more important, the share of households with payment moratoria is larger in nearly all classes of more prudent behaviour. More than half of these households plan some changes in their financial behaviour. Around 40% plan to have higher financial reserves and around 15% to shift to less sensitive sectors. The most affected group, households with negative expectations, are even more willing to change their financial behaviour. In each survey wave at least 70% of these households reported they plan to adjust their behaviour. In general, the share of these households planning to have higher financial reserves is lower than in case of other households. On the other hand, more such households plan to adjust their business model or move to less sensitive sector. This is probably caused by the fact that the share of such households with at least one family member losing its job/closing its business due to the crisis is higher than in case of other households (Chart 12). Overall, it seems that households hit the hardest by the crisis plan to react to the situation that can help avoiding similar impact in the future.

Chart 12 Share of households with at least one family member losing its job/closing business
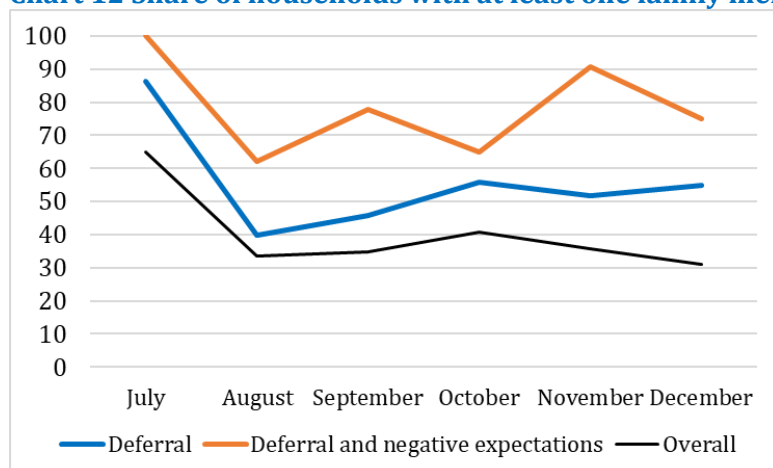
Source: Survey of Indebted Households, National Bank of Slovakia.

6 Conclusion

The share of households expecting serious difficulties with resuming payments after moratorium was relatively low across all survey waves. The share was higher in the early summer, when the future economic development was still highly uncertain, and then increased again somewhat in the last waves, when the second wave of pandemic caused renewed more stringent government measures.

Income change of indebted households was a key driver of the decision to opt for a deferral. Despite the overall improvement of income situation over the survey waves, average income of households with deferral was still more than 20 % below their pre-crisis level, noticeably lower than in case of households not asking for deferral. In addition to income change, another factor affecting the decision to opt for deferral is the pre-crisis level of DSTI. The same applies to the share of households with relatively high values of DSTI ratio. The level of education and the economic sector in which the respondent was working turned out to be important factors as well.

Indebted households most affected by the crisis are those opting for a deferral and having negative expectations, i.e. households that will probably not pay back their loans fully. In general, these households had higher pre-crisis DSTI and higher drops in income compared to the whole group of households with deferral. The importance of these factors, together with the negative change in the economic status, is confirmed also by econometric analysis.

From the panel of households participating in all waves we have investigated what determines their negative change in income. If both working members of the household have negative changes in employment, drop in their income is significantly larger than for households with no change in employment status. Similarly, for households that have utilized a deferral we can observe a significantly larger drop in income compared to the pre-crisis period. The impact of age on changes in income is U-shaped: younger families have a higher income drop than older households, who have been less affected by the crisis. We can also observe a larger drop in income for the self-employed households. On the other hand, the impact of university education and gender is positive and significant.

Overall, we confirmed the importance of the debt moratorium scheme, as many indebted households faced income and employment losses. Loan payment deferral was, however, used mainly at the beginning, and gradually households preferred individual agreement with their banks. The pandemic affected disproportionately households with already high debt burden before the crisis or with large drop in income. Economic sector of employment and level of education also played a role. The survey also uncovered possible shifts in household financial behaviour due to the pandemic.

References

Baker, S. R., Farrokhnia, R. A., Meyer, S., Pagel, M. & Yannelis, C. (2020). How Does Household Spending Respond to an Epidemic? Consumption During the 2020 COVID-19 Pandemic. *NBER Working Papers* (No. 26949). National Bureau of Economic Research

Brewer, M. & Gardiner, L. (2020). The Initial Impact of COVID-19 and Policy Responses on Household Incomes. *Oxford Review of Economic Policy, 36*(Supplement_1), pp. 187-199.

Cesnak, M., Cupák, A., Jurašeková Kucserová, J., Jurča, P., Klacso, J., Košútová, A., Moravčík, A. & Šuster, M. (2020a). Vplyv koronakrízy na finančnú situáciu a očakávania zadlžených domácností. *NBS Occasional paper, 3/2020*.

Cesnak, M., Cupák, A., Klacso, J. & Šuster, M. (2020b). Prieskum zadlžených domácností - výsledky druhej vlny. *NBS Discussion note, 90/2020*.

Cesnak, M., Cupák, A., Klacso, J. & Šuster, M. (2020c). Prieskum zadlžených domácností - výsledky tretej vlny. *NBS Discussion note, 91/2020*.

Cesnak, M., Cupák, A., Klacso, J. & Šuster, M. (2020d). Prieskum zadlžených domácností - výsledky štvrtej vlny. *NBS Discussion note, 93/2020*.

Cesnak, M., Cupák, A., Klacso, J. & Šuster, M. (2020e). Prieskum zadlžených domácností - výsledky piatej vlny. *NBS Discussion note, 96/2020*.

Cesnak, M., Cupák, A., Klacso, J. & Šuster, M. (2021a). Prieskum zadlžených domácností - výsledky šiestej vlny. *NBS Discussion note, 97/2020*.

Cesnak, M., Cupák, A., Klacso, J. & Šuster, M. (2021b). Prieskum zadlžených domácností: ako sa im darí po skončení moratória. *NBS Discussion note, 105/2020*.

Clark, A. & Lepinteur, A. (2021). Pandemic Policy and Life Satisfaction in Europe. *PSE Working Paper*(2021-23).

Clark, A., D'Ambrosio, C. & Lepinteur, A. (2020a). The Fall in Income Inequality during COVID-19 in Five European Countries. *ECINEQ, Society for the Economic Inequality*(No. 565).

Clark, R., Lusardi, A. & Mitchell, O. (2020b). Financial Fragility During the Covid-19 Pandemic. *Wharton Pension Research Council Working Paper*(2020-25).

Coibion, O., Gorodnichenko, Y. & Weber, M. (2020). How Did US Consumers Use Their Stimulus Payments? (No. 27693).

Cupák, A., Klacso, J. & Šuster, M. (2020a). Surveying the Impact of the Covid-19 Recession on the Financial Situation of Indebted Households. *NBS Working paper, 6/2020*.

Cupák, A., Jurča, P. & Klacso, J. (2020b). Kto rýchlo pomáha, dvakrát pomáha. *NBS Discussion note, 82/2020*.

Deville, J. & Särndal, C. (1992). Calibration estimators on survey sampling. *Journal of the American Statistical Association, 87*(418), 376-382.

Drescher, K., Fessler, P. & Lindner, P. (2020). Helicopter money in Europe: New evidence on the marginal propensity to consume across European households. *Economic Letters, 195*(109416).

European Statistical System. (2017). New Web-designed Tool for Calibration of Survey Weights.

Christelis, D., Georgarakos, D., Jappelli, T. & Kenny, G. (2020). The Covid-19 Crisis and Consumption: Survey Evidence from Six EU Countries. *CEPR Discussion Papers*(No. 15525).

Neri, A. & Zanichelli, F. (2020). Principali Risultati Dell'Indagine Straordinaria Sulle Famiglie Italiane NEL 2020. *Banca D'Italia Note*.

Statistical Office of the Slovak Republic (SOSR). (2018). Calif Manual v4.0. Available at: https://github.com/SO-SR/Calif/blob/master/Calif%20Manual%20v4.0.pdf.

Appendix A Survey questions

Question Number	Question
1	Region of the household's main residence
2	Respondent's gender
3	Respondent's age
4	Respondent's education
5 No. of household members	How many members live in your household?
6 No. of children	How many children live in your household?
7 Economic activity	What was your economic status as of 1 March; 2020? a) Employed b) Self-employed c) Pensioner d) Unemployed e) Economically inactive f) Other
7b Economic activity – partner	What was the economic status of your partner as of 1 March; 2020? a) Employed b) Self-employed c) Pensioner d) Unemployed e) Economically inactive f) Other
8 Main area of economic activity	In what sector did you work as of 1 March; 2020?
9 Income	What was the average total monthly income of your household before the outbreak of the pandemic? Please consider net income for the overall household.
10 Income change	As a result of the pandemic and the consequent lockdown, how has the monthly income of your household changed? Increased, decreased, or remained unchanged? How much € of monthly income has gained/lost your household? Please specify the change of household's net income compared to a typical month before the pandemic.
11 Change in expenses	As a result of the pandemic and the consequent lockdown, how have the monthly expenses of your household change? Compared to the situation before the pandemic, increased, decreased, or remained unchanged? Please specify the amount of change of your household's monthly expenses compared to a typical month before the pandemic.
12a Change in economic activity	Which of the following statements best describes your current working situation in comparison with the situation before the pandemic? Employees: a) You have become/are unemployed.

b) You have become/are temporarily unemployed.
c) You have remained/are formally employed but have worked/do not work and have received/receive less than 100% of the salary.
d) You have requested/received paid sick leave or paid care leave.
e) Your working hours and therefore wage have been reduced too.
f) Your working hours have remained unchanged, but the basic wage has been reduced.
g) Your working hours have remained unchanged, but non-wage benefits have been reduced.
h) You have found a new or another job.
i) You have founded a self-employment business.
j) No changes have occurred.
k) Other (SPECIFY)

Self-employed:
a) You have had to close self-employment business.
b) You have had to temporarily interrupt self-employment business.
c) The operation of your business has been temporarily closed.
d) You have requested/received paid sick leave or paid care leave.
e) Your business has continued/continues, but some orders have dropped out.
f) Your business has continued/continues, but revenues have declined.
g) You have found a job.
h) No changes have occurred.
i) Other (SPECIFY)

12b Change in economic activity of the partner	Which of the following statements best describes the current working situation of your partner in comparison with the situation before the pandemic?

Employees:
a) He/she has become/is unemployed.
b) He/she has become/is temporarily unemployed.
c) He/she has remained/is formally employed but has worked/do not work and has received/receive less than 100% of the salary.
d) He/she has requested/received paid sick leave or paid care leave.
e) His/her working hours and therefore wage have been reduced too.
f) His/her working hours have remained unchanged, but the basic wage has been reduced.
g) His/her working hours have remained unchanged, but non-wage benefits were reduced.
h) He/she has found a new or another job.
i) He/she has founded a self-employment business.
j) No changes have occurred.
k) Other (SPECIFY)

Self-employed:
a) He/she has had to close self-employment business.
b) He/she has had to temporarily interrupt self-employment business.
c) The operation of his/her business has been temporarily closed.
d) He/she has requested/received paid sick leave or paid care leave.

	e) His/her business has continued/continues, but some orders have dropped out. f) His/her business has continued/continues, but revenues have declined. g) He/she has found a job. h) No changes have occurred. i) Other (SPECIFY)
13a Monthly instalments	What was the standard total amount of monthly payments made on your loans before the pandemic? If you are repaying more than one loan, please sum up monthly payments of all loans your household was repaying that time.
13b Outstanding loan amount	What was the outstanding amount of loan of your household before the pandemic? That means, if your household would have decided to repay all loans at that time, how much would it be? If you had more than one loan, please sum up the outstanding amount of all loans, including leasing.
14 Loan repayment changes	Has your household deferred loan payments due to the crisis? Has your household made other changes to credit conditions or applied for new loans?
14a Planned loan repayment changes	Do you consider deferring loan payments due to the crisis? Do you consider making other changes to credit conditions or applying for new loans?
15a Payment deferral reasons	Is the answer provided to question 12a/12b the reason for the loan repayment changes/planned changes? a) Yes b) No, we have made changed to loan repayment/we plan to make changes to loan repayment preventively. c) Other (SPECIFY)
15b Number of deferred payments	Currently, what types of loans and how much loans do you have? Payments of which loans did you defer/reduce? // Payments of which loans do you plan to defer/reduce?
16 Stabilisation expectations	Do you expect to be able to work as before and/or your household income will return to the original level, even with the ability to properly pay the liabilities, after the end of the crisis? a) Yes. b) No. Household income will remain on lower levels and probably I won't be able to borrow for paying my liabilities. c) No, but I could get financial assistance from friends or relatives. d) No. However, I will be able to pay my liabilities even with lower income. e) Other (SPECIFY)
17 Planned changes in financial behaviour	Are you planning any changes in your financial behaviour after the end of the crisis? a) Yes, I plan to hold a higher financial reserve. b) [SELF-EMPLOYED ONLY:] Yes, I plan to better diversify my self-employment business. That means, I plan to focus on several areas/services/activities.

c) Yes. Securing income, I plan to change my job to a safer area (e.g. public sector, health service, education, etc.).
d) No.

Appendix B Summary table

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
Number of respondents	**991**	**995**	**1 004**	**1 007**	**1 007**	**1 004**
Of which: negative expectations	34	35	22	31	27	21
Of which: household with one adult	147	167	132	144	144	155
Of which: household with more adults	844	828	872	863	863	849
Of which: employed	563	563	586	639	632	640
Of which: self-employed	279	271	240	213	204	200
Respondents with deferral	**611**	**610**	**505**	**410**	**388**	**363**
Of which: negative expectations	30	31	20	25	25	16
Of which: household with one adult	98	112	73	67	61	60
Of which: household with more adults	513	498	432	343	327	303
Of which: employed	327	317	271	241	229	217
Of which: self-employed	185	187	141	101	86	81

Source: Survey of Indebted Households, National Bank of Slovakia.

Appendix C Survey weights

Weights represent an important and integral part of any survey. They make it possible to calculate more accurate estimates that are not distorted by the non-sampling error. They replace the information of respondents who are part of the target population but are not part of the sample. If we know only the distribution of the characteristics of the population, but not its size, the weights can be calculated as ratios expressing the significance of the selected group. Then they can take values starting at zero, with an average value of about 1. However, if we know the size of the population, a more efficient strategy is to calculate weights in the form of rational numbers bounded by 1 from below. Then the weight itself expresses the number of respondents whose given sample unit represents.

This survey was carried out in the form of quota selection with predetermined criteria. This is a non-probabilistic selection, where the initial weights are calculated in the form of shares of the population size to the number of corresponding units in the selected, for the final estimates and the design of the selection of the most relevant subsets.[13] If no additional ancillary information is present, these weights are also the final ones which are used to calculate estimates. However, if information on the totals of some variables in the population is available and these variables are part of the sample, this information can be used to further adjust the weights and refine the overall estimates.

Suppose we know J sums of certain variables from the population and denote them X_j. Then it follows that

$$X_j = \sum_{k \in U} x_{kj},$$

where U is the total population, while particular $x_{kj} \in U$ are not known. Only $x_{kj} \in S$ are known, where S denotes the selected sample. Values in X_j can be used for further adjustment of the initial weights.

For simplicity, let's estimate the total of a variable Y in a following manner:

$$\hat{Y} = \sum_{k \in S} d_k y_k,$$

where d_k represent the initial weights. The selected sample then consists of variables x_j, where the population totals are known as well as variables y_k with unknown population totals, but which are the main surveyed variables. It is assumed that for the estimation of total $\hat{X}$ for the variable x_j it holds that $\hat{X} \neq X_j$. While the values in X_j are known, the main idea is to modify the weights so that they reproduce the population totals and at the same time the change is minimal. In this procedure we try to find new weights w_k so that

$$\sum_{k \in S} w_k x_{kj} = X_j.$$

These weights are called calibration weights. Calibration weights are then used instead of the initial weights to compute approximate unbiased estimates:

---

[13] In the case of a probabilistic selection, the so-called design weights are inverse values of the probabilities of being selected. Ideally, if the sample was created at random and would not be affected by the degree of subjective non-response and other non-sampling errors, the design weights would be sufficient to calculate reliable estimates. However, as subjective non-response is always present in practice and in many cases more difficult to quantify, design weights must be adjusted for non-response rates to "compensate" for differences between selection and population. Weights adjusted in this way are also called primary (for the next calibration process).

$$\hat{Y} = \sum_{k \in S} w_k y_k.$$

This approach, proposed by Deville and Särndal (1992), increases the accuracy and consistency of the estimates, especially if the calibration criteria (population totals) correlate with the estimated survey variables.

There are several tools for calibrating weights, most of them in the form of macros in commercial tools. We used the freely available application Calif 4.0, which combines the state-of-the-art procedures used in the calibration of weights, while providing a clear user environment, with which it is possible to quickly and reliably find the most suitable solution. Calif 4.0 was created in statistical software R. Unlike many other tools, it also allows approximate solutions, has a strong computing core and can calibrate weights to several population totals simultaneously (ESS, 2017). An extensive manual is also available (SOSR, 2018). The calibration tool is freely available at: https://github.com/SO-SR/Calif.

The survey on the impact of coronavirus on the financial situation and expectations of households aims to collect information about the indebted households of the Slovak Republic with a monthly payment of over € 100, with the greatest attention being paid to mortgage loans, consumer loans and leases. It contains several variables, both at the level of the main debtor of the household and the household itself. We know the population totals from the loan register about some of them and they are suitable for calibration, as they correlate with the main variables of the survey (which are questions concerning the financial situation during the pandemic). These are: source of income, education, age of the respondent, the volume of instalments of the household in which the respondent lives, and the use of deferred payments. In order to capture enough information about households that requested deferral of payments, as well as on households with a large volume of loans, some categories were selected in the form of intentional oversampling. Thus, households with deferral and a larger volume of loans have a significantly higher share in the actual micro-data than in the population. Due to the characteristics of such households, the main debtors with a university degree and a source of income from entrepreneurial or self-employed activity also responded with a significantly higher share. Such a set households allows us to examine in more detail the impact of the coronavirus pandemic on indebted households, but on the other hand it does not represent the target population without prevalence. The weights of individual households compensate for the differences caused by oversampling and secure

representativeness of the sample with respect to the target population.

Proportional weights were used as primary weights for calibration, sorted according to the variable *Opting for a deferral*, as this represented the largest oversampling. Calibration of the weights then resulted in the reproduction of the population totals, making the sample representative of the entire population. Highly represented units (deferred payment, high loan, university education, self-employed) received very low weights, as they are represented in the sample in large numbers. On the other hand, under-represented units (non-deferred payment, lower loan, lower education, employees) were given high weights to cover the difference caused by oversampling.

Appendix D Probit regression estimates of households' negative expectations

Wave 1

	unweighted				weighted			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
University	-0.007	-0.010	-0.012	-0.012	-0.011	-0.020	-0.017	-0.020
	(0.014)	(0.014)	(0.017)	(0.016)	(0.011)	(0.016)	(0.018)	(0.020)
Age	-0.000	-0.000	-0.000	-0.000	0.001	0.001**	0.002*	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male	-0.006	-0.007	-0.007	-0.008	-0.000	-0.001	0.007	0.006
	(0.012)	(0.013)	(0.016)	(0.015)	(0.010)	(0.014)	(0.018)	(0.019)
Income change (IHS transformed)	-0.010***	-0.009***			-0.008***	-0.008***		
	(0.004)	(0.004)			(0.003)	(0.003)		
Self-employed (1st person)	0.032**	0.034**	0.058***	0.054***	0.002	0.002	0.022	0.019
	(0.015)	(0.014)	(0.016)	(0.015)	(0.009)	(0.012)	(0.016)	(0.016)
Self-employed (2nd person)	-0.025	-0.026	-0.028	-0.026	-0.016	-0.023	-0.013	-0.014
	(0.020)	(0.021)	(0.026)	(0.024)	(0.013)	(0.019)	(0.021)	(0.022)
One fam. member experienced change in emp. status			0.007	0.003			0.009	0.004
			(0.026)	(0.025)			(0.027)	(0.027)
Both fam. members experienced change in emp. status			0.007	0.000			-0.017	-0.025
			(0.025)	(0.025)			(0.029)	(0.028)
DSTI change		0.003*		0.004*		0.000		0.000
		(0.002)		(0.002)		(0.001)		(0.002)
Before-crisis DSTI (Arctangent)	0.030		0.020		0.027**		0.018	
	(0.021)		(0.025)		(0.011)		(0.018)	
Pseudo R2	0.10	0.10	0.06	0.07	0.16	0.10	0.07	0.06
N obs.	610	610	611	610	610	610	611	610

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. IHS denotes the inverse hyperbolic sine transformation. We transform DSTI by an arctangent function to scale down some very large values and stack originally negative values next. The transformed values are bounded on $(0, \pi)$ and the most frequent DSTI values up to 60% are mapped almost linearly.
Source: Survey of indebted households, National Bank of Slovakia.

Wave 2

	unweighted				weighted			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
University	-0.015	-0.016	-0.018	-0.019	-0.047	-0.044	-0.036	-0.034
	(0.017)	(0.016)	(0.017)	(0.017)	(0.030)	(0.029)	(0.023)	(0.024)
Age	0.001*	0.002**	0.002**	0.002**	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.006	0.006	0.003	0.003	-0.009	-0.010	-0.009	-0.012
	(0.015)	(0.016)	(0.016)	(0.016)	(0.028)	(0.032)	(0.026)	(0.029)
Income change (IHS transformed)	-0.005***	-0.005***			-0.001	-0.001		
	(0.002)	(0.002)			(0.003)	(0.003)		
Self-employed (1st person)	-0.003	-0.004	0.003	0.000	-0.030	-0.031	-0.029	-0.030
	(0.015)	(0.015)	(0.016)	(0.016)	(0.028)	(0.029)	(0.030)	(0.033)
Self-employed (2nd person)	-0.042	-0.044	-0.036	-0.038	-0.067*	-0.067*	-0.059*	-0.057
	(0.026)	(0.027)	(0.027)	(0.027)	(0.037)	(0.038)	(0.035)	(0.035)
One fam. member experienced change in emp. status			0.042**	0.041**			0.039	0.042
			(0.017)	(0.017)			(0.030)	(0.030)
Both fam. members experienced change in emp. status			0.046**	0.048**			-0.007	-0.003
			(0.019)	(0.020)			(0.024)	(0.026)
DSTI change		0.000		0.001		0.006		0.006
		(0.001)		(0.001)		(0.004)		(0.004)
Before-crisis DSTI (Arctangent)	0.035*		0.036*		-0.053		-0.053	
	(0.020)		(0.021)		(0.039)		(0.039)	
Pseudo R2	0.06	0.06	0.07	0.06	0.08	0.07	0.11	0.10
N obs.	610	610	610	610	610	610	610	610

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. IHS denotes the inverse hyperbolic sine transformation. We transform DSTI by an arctangent function to scale down some very large values and stack originally negative values next. The transformed values are bounded on $(0, \pi)$ and the most frequent DSTI values up to 60% are mapped almost linearly.
Source: Survey of indebted households, National Bank of Slovakia.

Wave 3

	unweighted				weighted			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
University	-0.012	-0.017	-0.013	-0.018	-0.010	-0.014	-0.025	-0.024
	(0.015)	(0.015)	(0.016)	(0.015)	(0.013)	(0.015)	(0.020)	(0.019)
Age	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male	-0.036***	-0.035***	-0.039***	-0.038***	-0.039**	-0.039*	-0.043*	-0.040*
	(0.014)	(0.013)	(0.015)	(0.014)	(0.017)	(0.020)	(0.024)	(0.022)
Income change (IHS transformed)	-0.004**	-0.003			-0.004**	-0.004**		
	(0.002)	(0.002)			(0.002)	(0.002)		
Self-employed (1st person)	-0.005	-0.010	-0.003	-0.007	-0.025	-0.023	-0.027	-0.025
	(0.019)	(0.019)	(0.021)	(0.020)	(0.020)	(0.021)	(0.027)	(0.026)
Self-employed (2nd person)	0.017	0.020	0.023	0.025	0.022	0.023	0.046**	0.044**
	(0.015)	(0.015)	(0.017)	(0.017)	(0.017)	(0.017)	(0.019)	(0.019)
One fam. member experienced change in emp. status			0.012	0.006			-0.040	-0.039
			(0.017)	(0.017)			(0.025)	(0.024)
Both fam. members experienced change in emp. status			-0.002	-0.003			-0.003	0.001
			(0.024)	(0.023)			(0.022)	(0.022)
DSTI change		0.005*		0.005**		0.002		0.003
		(0.003)		(0.002)		(0.002)		(0.002)
Before-crisis DSTI (Arctangent)	0.040*		0.038*		0.014		0.003	
	(0.021)		(0.022)		(0.011)		(0.015)	
Pseudo R2	0.10	0.11	0.08	0.08	0.21	0.21	0.17	0.18
N obs.	505	505	505	505	505	505	505	505

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. IHS denotes the inverse hyperbolic sine transformation. We transform DSTI by an arctangent function to scale down some very large values and stack originally negative values next. The transformed values are bounded on $(0, \pi)$ and the most frequent DSTI values up to 60% are mapped almost linearly.
Source: Survey of indebted households, National Bank of Slovakia.

Wave 4

	unweighted				weighted			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
University	0.025	0.025	0.025	0.025	0.035*	0.035*	0.036*	0.036*
	(0.021)	(0.021)	(0.022)	(0.021)	(0.019)	(0.019)	(0.020)	(0.020)
Age	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male	-0.038*	-0.038*	-0.038*	-0.036*	0.004	0.004	0.010	0.010
	(0.021)	(0.021)	(0.021)	(0.021)	(0.019)	(0.019)	(0.019)	(0.019)
Income change (IHS transformed)	-0.006**	-0.006**			-0.006**	-0.006**		
	(0.003)	(0.003)			(0.003)	(0.003)		
Self-employed (1st person)	0.014	0.014	0.025	0.024	0.014	0.014	0.021	0.021
	(0.027)	(0.027)	(0.027)	(0.026)	(0.024)	(0.024)	(0.024)	(0.024)
Self-employed (2nd person)	-0.026	-0.024	-0.020	-0.018	-0.040	-0.040	-0.040	-0.040
	(0.029)	(0.028)	(0.031)	(0.030)	(0.027)	(0.027)	(0.028)	(0.028)
One fam. member experienced change in emp. status			0.024	0.027			0.032	0.032
			(0.026)	(0.026)			(0.024)	(0.024)
Both fam. members experienced change in emp. status			0.025	0.030			0.037	0.038
			(0.028)	(0.029)			(0.032)	(0.032)
DSTI change		-0.001		-0.002		0.000		-0.000
		(0.002)		(0.002)		(0.001)		(0.001)
Before-crisis DSTI (Arctangent)	0.020		0.023		-0.006		-0.001	
	(0.027)		(0.028)		(0.012)		(0.016)	
Pseudo R2	0.05	0.05	0.04	0.04	0.08	0.08	0.06	0.06
N obs.	410	410	410	410	410	410	410	410

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. IHS denotes the inverse hyperbolic sine transformation. We transform DSTI by an arctangent function to scale down some very large values and stack originally negative values next. The transformed values are bounded on $(0, \pi)$ and the most frequent DSTI values up to 60% are mapped almost linearly.
Source: Survey of indebted households, National Bank of Slovakia.

Wave 5

	unweighted				weighted			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
University	-0.011	-0.014	-0.009	-0.013	-0.048	-0.055	-0.034	-0.045
	(0.024)	(0.024)	(0.025)	(0.024)	(0.054)	(0.057)	(0.047)	(0.054)
Age	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Male	-0.015	-0.016	-0.021	-0.021	-0.054	-0.056	-0.051	-0.056
	(0.022)	(0.022)	(0.022)	(0.022)	(0.050)	(0.052)	(0.047)	(0.051)
Income change (IHS transformed)	-0.010***	-0.009***			-0.009**	-0.008*		
	(0.003)	(0.003)			(0.005)	(0.005)		
Self-employed (1st person)	-0.006	-0.006	0.015	0.013	0.019	0.020	0.051	0.050
	(0.028)	(0.028)	(0.027)	(0.027)	(0.069)	(0.070)	(0.059)	(0.059)
Self-employed (2nd person)	-0.018	-0.020	-0.018	-0.021	0.017	0.010	0.009	0.000
	(0.031)	(0.032)	(0.031)	(0.031)	(0.060)	(0.061)	(0.053)	(0.056)
One fam. member experienced change in emp. status			0.081***	0.078***			0.113**	0.102**
			(0.025)	(0.025)			(0.048)	(0.048)
Both fam. members experienced change in emp. status			0.055*	0.050*			0.076*	0.062
			(0.030)	(0.029)			(0.042)	(0.046)
DSTI change		0.003		0.005		0.002		0.003
		(0.003)		(0.003)		(0.003)		(0.004)
Before-crisis DSTI (Arctangent)	0.028		0.031		0.033		0.049	
	(0.029)		(0.031)		(0.043)		(0.041)	
Pseudo R2	0.05	0.06	0.06	0.07	0.06	0.06	0.10	0.09
N obs.	388	388	388	388	388	388	388	388

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. IHS denotes the inverse hyperbolic sine transformation. We transform DSTI by an arctangent function to scale down some very large values and stack originally negative values next. The transformed values are bounded on $(0, \pi)$ and the most frequent DSTI values up to 60% are mapped almost linearly.
Source: Survey of indebted households, National Bank of Slovakia.

Wave 6

	unweighted				weighted			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
University	-0.003	-0.006	-0.002	-0.005	-0.042	-0.051	-0.032	-0.056
	(0.021)	(0.022)	(0.020)	(0.021)	(0.043)	(0.048)	(0.037)	(0.050)
Age	0.000	0.001	0.000	0.001	0.001	0.001	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Male	-0.018	-0.022	-0.018	-0.021	-0.062	-0.070	-0.046	-0.062
	(0.020)	(0.021)	(0.020)	(0.021)	(0.045)	(0.049)	(0.034)	(0.046)
Income change (IHS transformed)	-0.003	-0.002			0.002	0.003		
	(0.003)	(0.003)			(0.005)	(0.005)		
Self-employed (1st person)	-0.026	-0.028	-0.026	-0.028	-0.075	-0.079	-0.091*	-0.105*
	(0.029)	(0.029)	(0.029)	(0.029)	(0.056)	(0.057)	(0.049)	(0.057)
Self-employed (2nd person)	-0.003	-0.006	-0.001	-0.004	0.051	0.037	0.048	0.032
	(0.032)	(0.033)	(0.032)	(0.033)	(0.054)	(0.056)	(0.050)	(0.057)
One fam. member experienced change in emp. status			0.020	0.020			0.032	0.016
			(0.023)	(0.023)			(0.044)	(0.054)
Both fam. members experienced change in emp. status			0.031	0.029			0.084*	0.062
			(0.024)	(0.023)			(0.044)	(0.048)
DSTI change		-0.001		-0.001		0.003		0.001
		(0.002)		(0.002)		(0.004)		(0.003)
Before-crisis DSTI (Arctangent)	0.039*		0.040*		0.044		0.058*	
	(0.023)		(0.023)		(0.034)		(0.030)	
Pseudo R2	0.04	0.02	0.04	0.03	0.11	0.08	0.16	0.10
N obs.	363	363	363	363	363	363	363	363

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. IHS denotes the inverse hyperbolic sine transformation. We transform DSTI by an arctangent function to scale down some very large values and stack originally negative values next. The transformed values are bounded on $(0, \pi)$ and the most frequent DSTI values up to 60% are mapped almost linearly.
Source: Survey of indebted households, National Bank of Slovakia.