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Mariella Nenova[1]

HOUSEHOLDS' CONSUMPTION PATTERN AND SAVING – EVIDENCE FOR THE FIRST YEAR OF THE COVID-19 PANDEMIC IN BULGARIA[2]

Households' saving jumped up in 2020 as a response to the outburst of the Covid-19 pandemic. The objective of the paper is to analyse the mechanism behind the hike in households' saving through the changes in their consumption pattern. The analysis makes use of the households' budget survey annual data for the period 2008-2020 for Bulgaria. Households' downward adjustment in spending in 2020 followed the pattern of 2009-2010, but the reduction was more pronounced in expenditures on recreation, culture, and education (related both to the Covid-19 restrictive government measures and self-restrain from consumption caused by enhanced health risk) and spending on health (self-restraint). A supposition may be drawn that the enhanced health risk perception and self-restraint might contribute to a relatively elevated saving rate. Subdued consumption of services, most affected by Covid-19 restrictive measures, might sustain at least in the near future and slow down the overall growth rate. Policy measures to boost consumption, particularly of services, may be ineffective.
Keywords: Covid-19; disposable income; consumption; saving; income elasticity of demand
JEL: E21; E44; E52; I12; I18

1. Introduction

Disasters are part of the human being. They disrupt economic activity and the accustomed pattern of everyday life and induce resource reallocation. The unique nature of the Covid-19 disaster is that, contrary to most other catastrophes, it spread all around the world in a short time. The World Health Organization (WHO) received the first information about Covid-19 on December 31, 2019. On January 30, 2020, WHO declared the Covid-19 outbreak a Public

[1] *Mariella Nenova, Associate Professor, PhD, Sofia University "St. Kliment Ohridski", Faculty of Economics and Business Administration, 0889505091, e-mail: nenova.m@feb.uni-sofia.bg.*
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Health Emergency of International Concern and invited authorities around the world to take notice and act immediately. And they did.

The restrictive measures undertaken by many governments to contain the spread of the disease caused a severe negative shock on the economy. The ups and downs in the Covid-19 progression and the corresponding tightening and softening of government measures to slow down the speed of infection transmission can be interpreted as a multi-period shock on the world economy (Ludvigson, 2021). The longer the Covid-19 pandemic lasts, the higher the accumulated costs (Ludvigson, 2021) and the short-term effects on the economy may have long-term consequences. To study the perceptions about the long-term effects of Covid-19 the European Central Bank (ECB) conducted an ad-hoc survey of leading euro area corporations. According to the summary of the results (Maqui, 2020), a significant share of respondents presumed persistent lower demand in the future. Data confirmed those expectations as household consumption shrank at the beginning of the pandemic and if the pessimistic expectations of the leading companies are realised, the high saving rate will persist.

The objective of the study is to outline the mechanism behind the hike in household saving through the changes in their consumption pattern. For that purpose, the empirical analysis utilises annual data on household consumption by the reported in the household budget survey for Bulgaria's ten expenditure groups. To judge about the specific impact of Covid-19 on saving and consumption pattern a comparison is made between changes in household consumption behaviour during the global economic crisis of 2008-2009 and the global health crisis in 2020. Recent academic literature distinguishes three layers embracing a hike in saving – precautionary saving due to growing job and income uncertainty present in every economic crisis period, and two Covid-19 pandemic specific layers, namely forced saving caused by restrictive government measures to contain the spread of infection and saving related to health risk-avoiding behaviour by consumers. The first task of the study is to relate changes in consumption by expenditure groups to any of the three layers of saving. The second task is to reveal changes in consumption pattern by income groups and to try to confirm a finding in the literature that it is higher-income households that increase their savings in the event of a negative shock by curtailing non-essential expenditures. The applied methodology is constrained by the time span of the available household budget survey data.

The next section of the paper presents a brief overview of recent publications on Covid-19 saving and consumption household behaviour. Section three provides a description of the household budget survey data for Bulgaria. Section four depicts the methodology applied in the study. Section five contains the core of the study – the estimation of a counterfactual consumption growth rate by each expenditure group. The empirical analysis of the differences between the reported and the counterfactual expenditure growth rates exposes in what if terms of the structural changes in consumption pattern in 2009-2010 and in 2020. Section six combines data by decile income groups and by expenditures to provide an aggregate portrayal of changes in consumption patterns by income groups in the two crisis periods. The last section summarises the findings and contemplates on possible policy implications.

2. Household Saving and the Covid-19 Pandemic – Overview of Recent Literature

Studies of saving behaviour determinants in the period after the global financial and economic crisis of 2008-2009 and before the outbreak of the Covid-19 pandemic revealed a wide set of factors affecting saving (Loayza, 2000a; Loyaza, 2000b; Carroll, 2009; Caroll, 2019; Mody, 2012). Two of those factors are persistently present in most papers – the saving inertia and uncertainty.

The behaviour of households in the wake of the Great Recession exemplifies the strength of saving inertia. The jump in the household saving rate, triggered by the global economic and financial crisis of 2008-2009, was a response to the rise in job and income uncertainty augmented by the financial losses after the collapse of financial markets (Mody, 2012). Data confirms that the unemployment rate, usually taken as an indication of job uncertainty, increased substantially in 2009, enforcing the households' pessimism. In the European Union (EU), the unemployment rate soared from 7.2% in 2008 to 9.1% in 2009 and 9.8% in 2010. The reaction of monetary and fiscal authorities to the economic and financial crisis was targeted at stimulating demand by generous social transfers and loosening to extremity the financial conditions. In the wake of the 2008-2009 crisis and up to now, the financial conditions have remained lax and interest rates on deposits have fallen to the lower zero bound or even more – to negative numbers. From a theoretical point of view, the abundant liquidity and low deposit interest rates should have driven the saving rate down. However, the decline of the saving rate was quite moderate, in the EU from 13.5% in 2009 to 12.2% in 2019, being 12.2% in 2008. The interest rates in 2008 were higher by a multitude compared to their level in 2019. The weak downward trend in household saving was discontinued by the Covid-19 pandemic and in 2020 saving rate reached an unprecedented level of 18.6%.[3] It is arguable whether saving inertia might cause a persistence of an enhanced saving rate long after the end of the Covid-19 pandemic whenever it happens.

Income and job uncertainty, activated especially in times of disasters and economic crisis, has been considered an important cause for precautionary saving. Mody, Ohnsborge and Sandri (2012) provide a brief but quite comprehensive overview of the theoretical literature on precautionary saving, observed in the event of rising uncertainty about future economic activity and household future income. The concept of uncertainty is quite an ambiguous one, subjected to interpretation. Different measures of uncertainty are introduced in models of precautionary saving. In their study Loayza, Schmidt-Hebbel and Luis Serven (2002b) use inflation as a measure of uncertainty. Studies during and after the Great Recession relate uncertainty to unemployment growth, deterioration in unemployment expectations and volatility of financial markets (Mody, 2012). The interest in the concept and measures of uncertainty swelled in the wake of the global crisis of 2008-2009 (Bloom, 2014). In the first year and a half of the Covid-19 pandemic research papers also focused on the concept of uncertainty and precautionary saving (Coibion, 2021).

Bloom (2014) summarises four mechanisms through which recessions might increase uncertainty. All four can be traced in the first year of the Covid-19 pandemic, although the rationale behind them differs compared to the rationale in Bloom. The first mechanism is

[3] Eurostat data on household saving rate in EU.

through the slowdown in economic activity and the related reduction in the stream of information to producers, which increases the uncertainty about future economic developments. In the case of the Covid-19 pandemics, it was the government's restrictive measures and lockdowns that disrupted the normal stream of products and market information and pushed up uncertainty. Firms operating in sectors like tourism, restaurants and bars, recreational and sport facilities, air transport and other contact industries suffered an abrupt closure of business with a negative impact on all other dependent sectors. Second, forecasters face high forecast uncertainty in recessions. In 2020 forecasters at macro and micro levels were absolutely perplexed about what might happen in the future based on the limited knowledge about the Covid-19 disease, the unclear path of government measures, the unpreparedness of the health systems to absorb a rising number of infected people and the unanswered question about when a vaccine or medicine can be invented and applied. Third, ambiguous public policy, which is hyperactive in recessions, also increases uncertainty. In 2020 government policy fuelled uncertainty because it was hesitant, based on trials and errors, badly explained to the public, and surrounded by controversial opinions of medical experts. Fourth, recessions motivate research and prepare the ground for the reallocation of resources through innovations. Covid-19 introduced a delineation between essential and non-essential businesses. A fight for survival on the side of non-essential businesses might induce innovations in services and other contact industries accompanied by reallocation of resources and rising uncertainty about the future of the sectors.

The hesitant government policy and inadequate communication with the public contributed to the enhanced job, income, and health uncertainty in 2020. A paper by Dave, Sabia and Safford (2021) elaborates on the government measures applied in the USA to contain the spread of the disease. Similar measures with a different degree of severity were applied in the EU, too – stay-at-home orders, non-essential businesses closures, limits on in-person gatherings and capacity constraints at business venues. Most of the measures resulted in severe restrictions on citizens' mobility. Periodically the access to sectors like tourism, restaurants, sport facilities, and recreational facilities was absolutely forbidden.

The negative impact of government restrictions on economic activity was augmented by the enhanced sensitivity to health risk and self-restraining behaviour. In their study Dave, Sabia and Safford (2021) conclude that the relief of Covid-19 government restrictive measures in Texas in March 2021 did not change the cautious and self-restraining behaviour of people – a situation which hints at a longer-term subdued consumption growth rate and weaker than expected impact on the economic activity of the abolition of the restrictive government measures. The study of Goolsbee and Syverson (2021), based on cellular phone records data on customer visits in the USA, concludes that only 7% of the contraction in consumer traffic was explained by the legal restrictions, while fear of infection explains the rest. In their study on the macroeconomic effects of Covid-19, Fernandes-Villaverde and Jones (2020) comment that self-protecting measures and voluntary changes and restrain from consumption played a crucial role in the slowdown of economic activity. However, a study by Dossche and Zlatanos (2020) concludes that forced saving due to the lockdown was the main driver in the household jump in savings in the second quarter of 2020, but they also expect that households will preserve the higher saving rate in the near future.

The enhanced health anxiety was caused by the confusion about how contagious and lethal the Covid-19 is. There was a spontaneous outburst of controversial theories and misguiding advice to the population. The heterogeneity in the response of people to Covid-19 is studied by Papageorge (2021). He provides brief information of research on other epidemic diseases (Mad cow, AIDS), stressing on the importance of susceptibility to the disease. People with low and high susceptibility do not change their behaviour, while people with medium susceptibility become more cautious and try to avoid the risk of infection. I would interpret those results in terms of the Covid-19 pandemic in the following way: people with low susceptibility to health risk (usually young, healthy people) may ignore warnings about the potential negative consequences of the disease on their own health. Those people do not want to change their usual way of living, they protest the government measures or do not obey them. People with high susceptibility to health risks are always cautious and accustomed to self-protection measures. The change in their behaviour will not be substantial. People with medium susceptibility to health risk may increase their self-protection measures against Covid-19 infection and start avoiding the consumption of goods and services, which may endanger their health safety. On overall, consumers might become more cautious and change their consumption pattern.

In summary, the hike in saving in 2020 can be decomposed into three layers – pure precautionary saving due to job, income, and wealth uncertainty (Levine, 2021), forced saving due to government measures to contain the spread of the infection (Dosshe, 2020), and health risk-avoiding behaviour (Goolsbee, 2021; Fernandez-Villaverde, 2020). All these determinants of saving in 2020 led to changes in the household consumption pattern.

3. Data

The household budget survey for Bulgaria is conducted by the National Statistical Institute (NSI) on a quarterly and annual basis, following the methodology applied in the EU member states[4]. The unit of observation is every randomly chosen ordinary household irrespective of the number of members and their material and personal status. Since 2010 the sample has consisted of 3060 households each quarter out of a population of around 2 million households.

The survey provides data about the income and expenditures of households. On the side of income, the survey presents the overall household regular income and its main sources – labour, entrepreneurship, property, social transfers (pensions, social benefits), regular inter-household transfers, as well as the sale of property and other irregular receipts. The expenditures are categorised according to the harmonised classification of individual consumption by purpose (COICOP). Consumption expenditures are presented in ten groups: foods and non-alcoholic beverages (excluding catering); alcoholic beverages and tobacco; clothing and footwear; housing, water, electricity, gas and other fuels; furnishing and maintenance of the house; health (excluding products and services covered by the state

[4] Household Budget Surveys in EU Methodology, https://ec.europa.eu/eurostat/documents/3859598/5875361/KS-BF-03-003-EN.PDF.pdf/42a95cc0-cb48-48c7-8d3a-dfc5fa265eff?t=1414781029000.

health-insurance system); transport (includes car purchases); communication; recreation, culture and education; miscellaneous goods and services. The annual data provides additional information about different breakdowns of income and expenditures, e.g., by decile income groups, size of the household, occupation of the reference person, socio-economic status of the reference person, number of employed members, number of children.

Although the household budget survey has been conducted in Bulgaria on a regular basis since 1953, there was a series of methodological changes and breaks in the data, the latest being undertaken in 2008. For that reason, the study is constrained to analyse the annual data for the period 2008-2020.

Since the NSI does not publish data about household disposable income and saving the two indicators are calculated here in the following way: disposable income equals total income minus expenditures on taxes, social insurance contributions, regular transfers to other households and other non-consumption expenditures; saving is calculated by subtracting from disposable income consumption expenditures. The calculations are based on annual data per member of the household, published by the NSI.[5]

The focus of the study is on data for 2009-2010 (the two years after the outbreak of the global financial crisis) and in 2020 (the first year of the Covid-19 pandemic) to identify similarities and differences in changes in consumption pattern in the two crisis periods.

A sketch of the key macroeconomic indicators for 2009-2010 and 2020 may shed light on the macroeconomic underpinning of changes in household saving and consumption. In both periods, the economy was hit by unexpected and extremely strong negative shocks.

The global collapse of financial markets liquidity after the financial corporation Lehman Brothers' failure in September 2008 triggered: a downfall in the global economic activity and trade; a fast decline in international commodity prices and a rise in the unemployment rate in most countries. In Bulgaria, the decline of real GDP was by 3.3% in 2009, followed by meagre growth of 1.5% in 2010; inflation decelerated from 12.0% in 2008 to 2.5% and 3.1% in 2009 and 2010, respectively. The unemployment rate soared from 5.6% in 2008 up to 6.8% in 2009 and 10.3% in 2010.

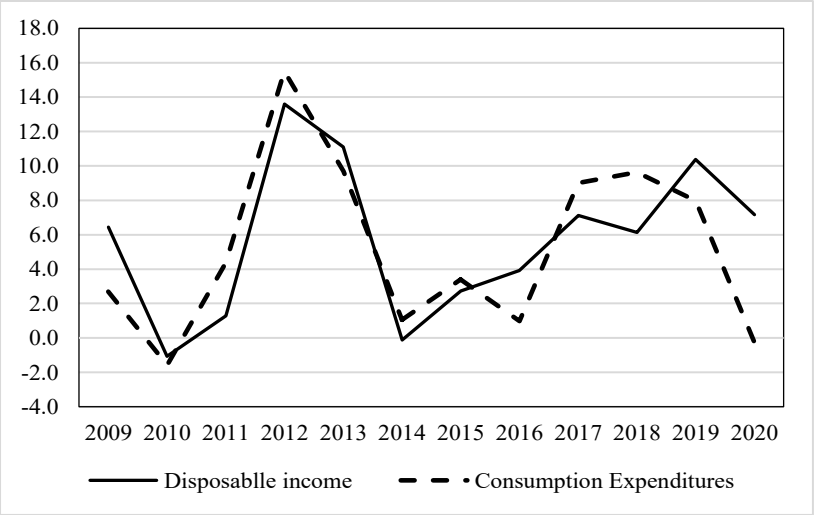
In 2020 the negative economic shock was generated by the Covid-19 restrictive measures of governments all over the world. The impact of those measures on economic activity, inflation and unemployment rate was alike to the shock of the global financial crisis of 2008 – 2009. Yotzov, Bobeva, Loukanova, Nestorov (2020) provide a thorough elaboration of the types of measures imposed by governments, the Bulgarian government included, to contain the spread of the Covid-19 pandemic. The authors assessed the possible decline of real GDP in Bulgaria in 2020 at between 2.4% and 5.7%. According to recent preliminary NSI data, the real GDP of Bulgaria declined by 4.4% in 2020 and despite the increase by 4.2% in 2021, it remained in 2021 at 99.6% of its pre-crisis level. Annual inflation remained low at 2.5% in 2020 and 1.2% in 2021, notwithstanding the acceleration of the inflation rate at the end of 2021. Contrary to 2009-2010, the unemployment rate increased modestly – from 4.2% in 2019 to 5.1% in 2020 and 5.3% in 2021.

[5] https://infostat.nsi.bg/infostat/pages/module.jsf?x_2=27.

In the background of adverse macroeconomic developments data reveals that in 2009-2010 both disposable income and consumption expenditures in nominal terms plummeted, while in 2020 at the background of a continuing significant positive growth rate of disposable income, expenditures remained at the level of the previous year with a close to zero annual growth rate. An overview of disposable income, consumption expenditure and saving dynamics is provided in Figure 1 and Figure 2.

Figure 1

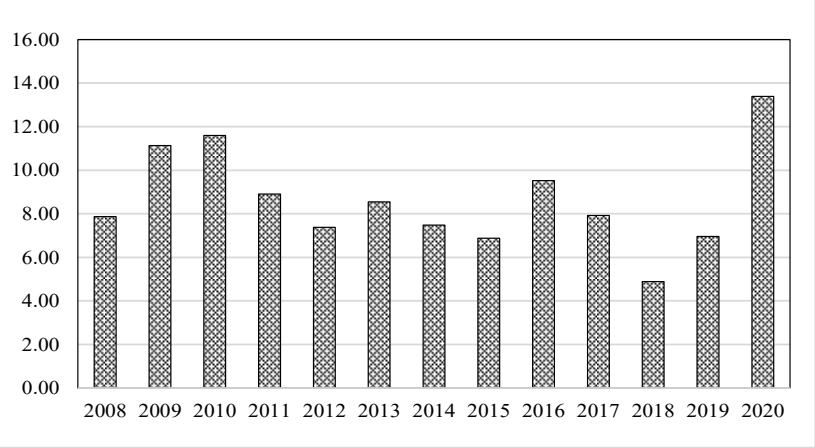
Bulgaria: Annual Growth Rate of Disposable Income and Consumption Expenditure of Households for 2009-2020 (%)



Source: NSI (Bulgaria), Household Budget Survey Data. Author's calculations.

Figure 2

Bulgaria: Saving to Disposable Income in 2008-2020 (%)



Source: NSI, Household Budget Survey Data. Author's calculations.

The different dynamics of household income and expenditure between the two periods of the analysis is obvious: in the Great Recession, the downward adjustment of consumption expenditure paralleled the slowdown in the growth rate of disposable income, both going negative in 2010. As the focus of the study is saving and changes in consumption pattern, data reveals that a substantial decrease in expenditures took place in both years 2009 and 2010, maintaining high saving rate despite the economic recovery, observable since the middle of 2009. A decline in the saving rate started in 2011. Because of those findings, household data for 2009 and 2010 are averaged and treated as one year, named 2009-2010.

In 2020 there was a mild deceleration of the disposable income growth rate while consumption remained frozen at the level of 2019. The hike in the saving rate in 2020 reached 13.4% from 7% in 2019.

For the purpose of the analysis, the average data for the period 2011-2019, considered a period undisturbed by a severe crisis, is used as a benchmark in the study. The average saving to disposable income ratio for the period 2011-2019 is 9.5%.

The structure of consumption expenditures hints at common trends in the change of consumption pattern during the two crisis periods in comparison to the previous year, namely a slight loss in the share of clothing and footwear and transport (Table 1).

Table 1

Bulgaria: Structure of Household Consumption Expenditure (%)

	2008	2009-2010	2019	2020
Consumption expenditure	100.0	100.0	100.0	100.0
Food and non-alcoholic beverages	42.9	42.9	36.2	37.0
Alcoholic beverages and tobacco	5.1	5.4	5.2	5.2
Clothing and footwear	4.1	3.4	4.0	3.7
Housing, water, electricity, gas and other fuels	15.9	16.8	16.5	17.0
Furnishing and maintenance of the house	4.4	4.1	4.6	5.1
Health	5.6	6.3	7.6	7.7
Transport	8.2	7.1	9.2	8.2
Communication	5.2	5.3	5.2	5.6
Recreation, culture and education	4.3	4.3	6.4	4.9
Miscellaneous goods and services	4.3	4.3	5.2	5.3

Source: NSI (Bulgaria), Household Budget Survey Data. Author's calculations.

What is not observed for 2009-2010 but is discernible in 2020 is the increase in the share of furnishing and maintenance of housing and a substantial decline in the share of recreation, culture, and education (Table 1). Although the latter might be related to the government measures against the spread of the Covid-19 infection and self-restraint, the conclusions made on the basis only of the structure might be superficial and misleading.

4. Methodological Notes

As the objective of the research is to analyse the mechanism behind the hike in household saving through the changes in their consumption pattern, a counterfactual estimation of households' consumption of goods and services is constructed based on estimated income

elasticities of demand by expenditure groups and the reported growth rate of disposable income. The analysis is complemented by an evaluation of changes in consumption pattern by income groups. Data on decile income groups is aggregated into three broader income groups, while the ten expenditures groups are categorised into three groups based on the elasticities of demand.

Theoretical and empirical models of consumption include as explanatory variables income, inflation, relative prices, wealth, and interest rates. In the academic literature, income is recognised as the main factor determining consumption. Empirical studies for Bulgaria (Georgiev, 1997; Chukalev, 2010; Peykov, 2021) have confirmed that income is the most significant explanatory factor in the consumption function, overwhelming the importance of other variables like inflation, relative prices, wealth, and interest rates. The very low inflation rates in the two crisis periods under study allow for ignoring the price elasticity of demand in our regression.[6] Based on these findings, we have applied a simple OLS regression to calculate the income elasticities of demand.

So, the first step in the analysis was to calculate the income elasticities of consumption β_i by the ten expenditure groups (E_i). The elasticities β_i are calculated from annual data for the period 2011-2019, which is used as a benchmark period characterised by relatively smooth economic development. An OLS regression is applied following Gudjarati (1995, pp. 165-166).

$$ln(E_i) = \alpha_i + \beta_i . ln(Ydisp) \quad (1)$$

where:

E_i is expenditures by groups i, i=1,2,3…,10;

$Ydisp$ – disposable income.

The calculated income elasticities represent the degree of each expenditure group importance (Table 2). It should be expected that very important expenditure groups have the smallest elasticity (below 1), they should be less sensitive to income fluctuations and will stay stable during downward consumption adjustment periods. Expenditure groups with a high degree of elasticity (above 1) should be the first to shrink in a crisis period.

As might be expected, the demand for food and non-alcoholic beverages is inelastic to changes in disposable income (the income elasticity is less than 1). If disposable income goes down, the consumption of inelastic products might also go down but at a lower rate than the income rate of change. While the income elasticity of expenditures on communication may surprise being close to but below 1, most probably it is due to the fact that the wide distribution of internet and individual electronic devices makes communication an essential service needed by households. The unit elasticity of alcoholic beverages and housing, water, gas and fuels means that households are able to adjust the corresponding consumption expenditures in line with the changes in disposable income.

[6] The gradual soar of international fuel prices since the middle of 2021 was further exacerbated in February 2022. Most likely inflation would continue accelerating in 2022. If inflation acceleration is perceived by households as a long-term trend, it might trigger new expenditure restructuring. That might blur the potential long-term impact of Covid-19 on the consumption pattern of households.

Table 2

Bulgaria: Disposable Income Elasticity of Demand by the Ten Consumption Expenditure Groups (ordered from inelastic to most elastic groups)

	2011-2019
Food and non-alcoholic beverages	0.71
Communication	0.97
Alcoholic beverages and tobacco	1.00
Housing, water, electricity, gas and other fuels	1.00
Health	1.29
Clothing and footwear	1.29
Miscellaneous goods and services	1.39
Transport	1.51
Recreation, culture and education	1.77
Furnishing and maintenance of the house	1.78

Source: NSI, Households' Budget Survey Data. Author's calculations. The income elasticities b are calculated according to the OLS regression log (consumption expenditure by group) = a + b . log (disposable income). (See Gujarati, D., Basic Econometrics, 3rd edition, 1995, McGraw Hill, 1995, pp 165-166).

The income elasticity of the remaining six expenditure groups is greater than 1 (see Table 2*Table* 2

Bulgaria: Disposable Income Elasticity of Demand by the Ten Consumption Expenditure Groups (ordered from inelastic to most elastic groups). Elastic products are subjected to a higher rate of change compared to the disposable income rate of change. In the case of a reduction in disposable income, households reduce disproportionately more consumption of those expenditure groups.

However, the elasticity of 1.5 for expenditures on transport might be confusing. Transport is as vital for the modern household as communication and its elasticity of demand should be expected to be close to one. The reason behind the higher than 1 elasticity of transport expenditure can be explained by the fact that this group includes a diversified set of goods and services, the most volatile of which is the purchase of automobiles, which usually drops considerably in the event of a recession. The purchase of cars might be easily postponed (Bloom, 2014). In April 2020, the real annual drop in car purchases was by 44.8%. At the end of 2020, the real decline in car purchases was partially recovered and amounted to 23%. The drop in car purchases in 2020 was so prominent that the weight of this group in the consumption basket, applied in calculating the harmonised index of consumer prices (HICP), fell from 19.52‰ to 15.62‰.[7] In 2021 there were huge fluctuations in car purchases in real terms.

Two expenditure groups are characterised by the highest income elasticity of demand – the complex group called recreation, culture and education and the group covering furnishing and maintenance of the house. Those groups exhibit an interesting dynamic during the two crisis periods. We will elaborate more in the analysis below.

[7] Eurostat. Data on weights by products in the consumption basket, applied for the calculation of HICP.

The next step in the empirical analysis is the calculation of a counterfactual consumption for each expenditure group answering the following question – what would have been the growth rate of consumption of each of the ten expenditure groups if the disposable income changed at the reported rate and there was no economic or health crisis? For that purpose, we multiply the estimated income elasticities of demand to the reported disposable income growth rate in 2009-2010 and correspondingly in 2020.

$$\frac{\Delta E_i^c}{E_i^c} = \beta_i . \frac{\Delta Ydisp}{Ydisp} \quad (2)$$

where:

$\frac{\Delta E_i^c}{E_i^c}$ is the estimated (counterfactual) expenditure growth rate;

β_i – the income elasticities of consumption by each expenditure group for 2001-2019 period;

$\frac{\Delta Ydisp}{Ydisp}$ – the reported growth rate of disposable income.

The estimated and the reported growth rates of consumption by the ten consumption expenditure groups are presented in Table 3.

Table 3

Bulgaria: Estimated (counterfactual) and Reported Annual Growth Rates of Consumption by the Ten Household Consumption Expenditure Groups (%)

	2009-2010 to 2008		2020 to 2019	
	Estimated growth rates of demand (%)	Reported growth rates of demand (%)	Estimated growth rates of demand (%)	Reported growth rates of demand (%)
Consumption expenditure	6.2	1.9	7.5	-0.2
Food and non-alcoholic beverages	4.2	2.0	5.1	2.1
Alcoholic beverages and tobacco	5.9	8.1	7.2	1.5
Clothing and footwear	7.6	-13.3	9.2	-6.9
Housing, water, electricity, gas and other fuels	5.9	7.7	7.2	3.0
Furnishing and maintenance of house	10.5	-4.1	12.7	12.6
Health	7.6	15.5	9.2	0.5
Transport	8.9	-12.1	10.8	-11.1
Communication	5.7	4.5	6.9	8.4
Recreation, culture and education	10.4	1.3	12.7	-22.4
Miscellaneous goods and services	8.2	0.4	9.9	2.3

Source: Author's calculations.

The magnitude of the adjustment is more pronounced when we make the difference between the reported and the estimated annual growth rate of consumption. It reveals those expenditure groups that have been curtailed the most by the households in their effort to respond to the uncertainty generated by both crises.

$$\frac{\Delta E_i}{E_i} - \frac{\Delta E_i^c}{E_i^c} < 0 \; or \; \frac{\Delta E_i}{E_i} - \frac{\Delta E_i^c}{E_i^c} \geq 0 \quad (3)$$

where:

$\frac{\Delta E_i}{E_i}$ is the reported growth rate by expenditure groups;

$\frac{\Delta E_i^C}{E_i^C}$ – estimated (counterfactual) growth rate by expenditure groups.

To assess the changes in consumption pattern by income groups, data by decile income groups and the corresponding expenditures on the ten expenditure groups can be employed. To gain better visibility of the results, income deciles data are aggregated into three income groups. The applied criterion is the average saving to disposable income ratio for the period 2011-2019, which is 9.5%. The first income group, low-income households, consists of the first three decile groups, which in the 2011-2019 period are characterised by dissaving or zero saving. The second income group, mid-income households, combines deciles from 4 to 7, characterised by a positive but below the average of 9.5% saving rate for the period 2011-2019. The third income group, high-income households, includes the last three deciles with a saving rate above the average of 9.5%.

5. Counterfactual and Reported Consumption of Goods and Services by Ten Expenditure Groups

The difference between the reported and the counterfactual (estimated) annual growth rate of consumption by expenditure groups is presented in Table 4. The shock generated by the Covid-19 pandemic in 2020 initiated a stronger downward adjustment in household consumption expenditure compared to the shock of September 2008 and the Great Recession. Hence, the downward adjustment of consumption expenditures is more pronounced in 2020 compared to the average for 2009-2010 (Table 4).

Table 4

Bulgaria: Difference between Reported and Estimated (counterfactual) Consumption Expenditures Growth Rate (percentage points), sorted by the similarity of magnitude of adjustment

	2009-2010 to 2008	2020 to 2019
Consumption expenditure	-4.3	-7.7
Similar or close to similar magnitude of adjustment		
Transport	-21.0	-21.9
Clothing and footwear	-20.9	-16.2
Miscellaneous goods and services	-7.7	-7.7
Food and non-alcoholic beverages	-2.2	-2.9
Significant difference in the magnitude of adjustment		
Furnishing and maintenance of the house	-14.6	-0.2
Recreation, culture and education	-9.2	-35.0
Communication	-1.2	1.4
Housing, water, electricity, gas and other fuels	1.8	-4.2
Alcoholic beverages and tobacco	2.2	-5.6
Health	7.9	-8.7

Source: Author's calculations.

Based on the difference between the reported and the estimated growth rate of consumption expenditures, two sets of expenditures can be distinguished. The first set contains those expenditure items which underwent a similar magnitude of change in the two crisis periods, namely transport (in particular the drop in automobile purchases), clothing and footwear, miscellaneous goods and services, and the smallest adjustment was in the group of food and non-alcoholic beverages. It is assumed that the adjustment of these expenditure groups is related to job and income uncertainty. A similar pattern of consumption adjustments might be observed in any economic and financial crisis and can be related to the precautionary motive for saving.

The second set consists of expenditure groups that exhibit significant divergence in the magnitude of adjustment between the two crisis periods. Two expenditure groups within the second set underwent significant downward adjustment in 2020, namely recreation, culture and education and health. The changes in their consumption can be explained almost entirely by the specific impact of the Covid-19 pandemic on household behaviour.

Household spending on recreation, culture and education includes audio-visual, photographic and information processing equipment; other major durables for recreation and culture; other recreational items and equipment, gardens, and pets; recreational and cultural services; newspapers, books, and stationery; package holidays. Consumption of goods included in this group can easily be postponed for better times, while the consumption of services can just be cancelled, which explains the reduction of spending in 2009-2010. As Bloom (2014) states, it is more difficult to postpone the consumption of entertainment, but in 2020 the group suffered the deepest recession because of the Covid-19 government restrictive measures. To magnify the impact of government measures, some households gave up the consumption of items included in this expenditure group because of enhanced health anxiety and self-imposed protection measures (Goolsbee, 2021). When the pandemic is contained and the government restrictive measures abolished, consumption of recreational, entertainment and cultural services might remain subdued because of the already enhanced health risk alert.

Household behaviour vis-à-vis health expenditure is quite peculiar in 2020. The group includes spending on medical products, appliances, and equipment; out-patient services; hospital services, which are covered by individuals at the expense of their own income (i.e. not financed by the state health-insurance system). In 2009-2010 the spending on items of this group went up considerably, well above the estimated counterfactual health consumption growth rate, while in 2020, reported consumption growth was quite below the estimated one. Why did households abstain from consuming self-financed medical services in accordance with disposable income growth? It is possible that households avoided visits to medical establishments because of fear from being infected by the personnel, as it was well known that in 2020 the number of infected medical staff went up considerably. Perhaps, the relative downward adjustment of health expenditures is an argument in support of the understanding that the Covid-19 pandemic alerted people about the importance of health self-protection measures and their behaviour changed to a more cautious one.

The expenditure group of furnishing and maintenance underwent a sizable downward adjustment in 2009-2010. The longer name of the group is furnishing, household equipment, and routine household maintenance, and it covers expenditures on furniture and furnishings, carpets, and other floor coverings; household textiles; household appliances; glassware,

tableware, and household utensils; tools and equipment for house and garden; goods and services for routine household maintenance. One can easily postpone or temporarily give up their consumption in hard and uncertain times. Although spending on furnishing and maintenance grew up sizably in 2020 compared to other expenditure items, its reported growth rate was very close to the counterfactual estimate, contrary to the substantial downward adjustment in 2009-2010. One possible explanation of the difference in the behaviour of households concerning expenditures on furnishing and maintenance in the two crisis periods can be in the degree of uncertainty perception. Perhaps the fear of job or income loss was not a dominant factor affecting household behaviour in 2020. In Bulgaria, as well as in other EU countries, the government announced a set of measures to preserve jobs and compensate for income loss in companies affected by temporary closures or enforced reduction in capacity utilisation. Compared to 2009-2010, when the unemployment rate peaked up from 5% in the fourth quarter of 2008 to 10.0% in the second quarter of 2010, in 2020, a temporary increase in the unemployment rate in the second quarter of 2020 to 5.9% from 4.6% in the first quarter then subsided to 5.2% at the end of the year, twice lower compared to the hike in the unemployment rate in 2009-2010[8]. Moreover, the stay at home and work at home policy may motivate households to take the opportunity and repair or refurnish their houses, another way to avoid the accumulation of undesirable high levels of savings.

Communication expenditures changed in the opposite direction in the two crisis periods. In 2009-2010 the spending for communication services was weaker compared to the estimated counterfactual expenditure, while in 2020, it was higher than the counterfactual. The explanation might be quite straightforward. Communication expenditures are gaining more and more importance. In 2020 when physical contacts were constrained and the home office was recommended for all companies that can apply it, communication spending normally went up. According to an ECB ad-hoc survey of leading euro area corporations, the expectations for more teleworking and digitalisation of operations are expected to stimulate the consumption of communication services in the future (Maqui, 2020). The relative increase in expenditures on communication in 2020 can also be explained by the fear of social contacts induced by the disease, which spurred contacts via electronic devices.

Health risk anxiety most probably negatively affected all expenditure groups where consumption is accompanied by physical contacts, like in retail trade and services establishments. Part of the downward adjustment in 2020 of food and non-alcoholic beverages, clothing and footwear, and alcoholic beverages is most probably due to self-restraint from visiting shopping premises.

To conclude this section, the empirical analysis alerts that three sectors of the economy, those producing and/or trading vehicles, clothing and footwear, miscellaneous goods and services, are vulnerable to shocks generated by an economic downturn. The negative impact of Covid-19 in relative terms was concentrated on two expenditure groups – recreation, culture and education, and health.

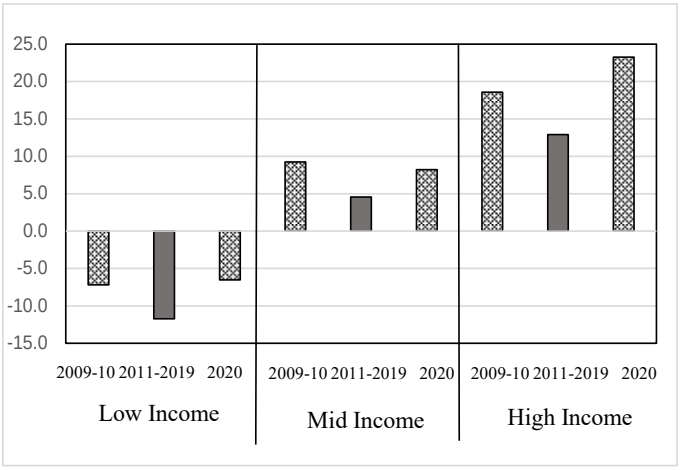
[8] NSI, https://infostat.nsi.bg/infostat/pages/reports/result.jsf?x_2=1016.

6. Changes in Saving and Consumption Pattern by Income Groups

Although the positive relationship between saving rate and income might seem trivial, data reveals that the three income groups are saving more or dissaving less in the crisis periods, with the high-income group increasing its saving rate the most (Figure 3).

Figure 3

Saving to Disposable Income Ratio by the Three Income Groups (%)

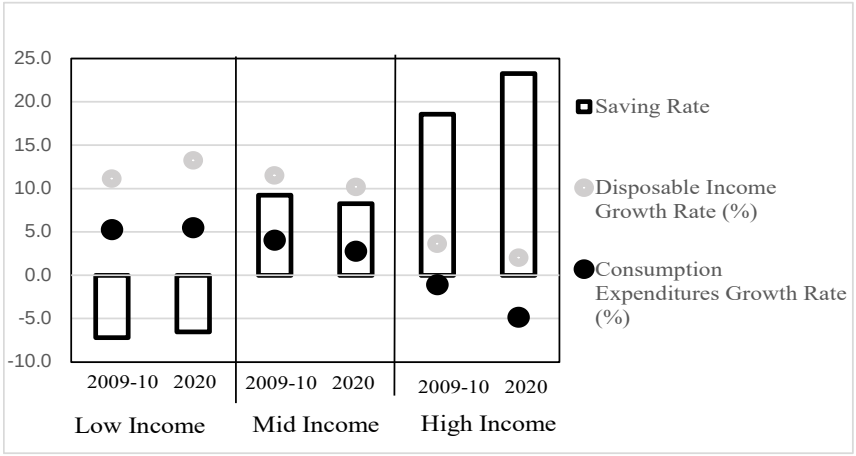


Source: NSI (Bulgaria), Household Budget Survey Data. Author's calculations.

Considerable differences in behaviour are observed by income groups in terms of disposable income and consumption growth rates in each of the two crisis periods (Figure 4).

Figure 4

Bulgaria: Consumption Expenditures Growth Rate, Disposable Income Growth Rate and Saving to Disposable Income Ratio by Three Income Groups (%)



Source: NSI (Bulgaria), Household Budget Survey Data. Author's calculations.

Common for the three income groups is that the disposable income registered positive growth in the two crisis periods, the highest rate registered by the low-income group and the lowest by the high-income group. The consumption growth rate of the low- and mid-income groups decelerated relative to the strong disposable income rate of increase, while the largest downward adjustment in consumption was undertaken by the high-income households. For the latter, the reduction in consumption took place in each of the two crisis periods, being particularly prominent in 2020. On average, the hike in the saving of the high-income group determined the overall hike in the household saving rate in both crisis periods. A similar conclusion is attained by Attinasi, Grazia, Bobasu and Manu (2021).

The ten expenditure groups can also be aggregated into three categories - essential goods and services, moderately essential goods and services, and non-essential goods and services. The choice of criterion for the classification is difficult. One criterion is to make use of the already calculated income elasticity of demand by the ten expenditure groups with the understanding that inelastic expenditures groups are the most important (essential) while the highly elastic expenditure groups are the least important (non-essential). A classification, according to the income elasticity of expenditures, allows to contemplate on the potential speed at which households may respond to unfavourable economic shocks without resorting to the government social safety net.

Another criterion is to calculate the ratio of consumption expenditure of the mid- and high-income category to the corresponding consumption expenditure by the low-income category. The smallest the ratio, the higher the importance of the corresponding expenditure group for all households; the highest the ratio, the least important is the expenditure group for the subsistence of a household. It can be expected that during a recession, the level of essential expenditures of higher-income groups converges to the corresponding level for the low-income group, reducing consumption inequality.

Although the aspect of consumption inequality is important, the aim of this study is to reveal changes in consumption pattern that allowed households to quickly respond to a sudden and substantial negative shock – like the outburst of the global financial and economic crisis of 2008 and the Covid-19 pandemic of 2020. The income elasticities of demand for each of the ten expenditure groups can supply information about the potential speed of response. Households cannot easily and fast curb consumption of inelastic expenditures.

A quantitative criterion to classify the ten expenditure groups into three broad categories – essential, moderately essential, and non-essential goods and services, based on the income elasticities of demand is as follows: expenditure group with an income elasticity of 1 and below 1 is classified as essential; expenditure group with income elasticity of demand above 1 and around 1.5 is considered moderately essential; expenditure group with income elasticity above 1.5 is considered non-essential. Table 5 exhibits the results for the new three groups.

The share of essential goods and services is relatively high, indicating that households may face financial difficulties in a recession since they cannot quickly reduce consumption in response to the possible negative income shocks. By income groups, as expected, the share of essential goods and services is high for the low-income group, and the difference with the high-income group is 13.8 percentage points (Table 6).

Table 5

Expenditure Groups Classified by Income Elasticity of Demand

	Income elasticity of demand for 2011-2019	Share in consumption expenditure for 2011-2019 (%)
Essential goods and services		70.4
Food and non-alcoholic beverages	0.7	38.1
Communication	1.0	5.3
Alcoholic beverages and tobacco	1.0	5.1
Housing, water, electricity, gas and other fuels	1.0	17.1
Moderately essential goods and services		14.0
Health	1.3	6.6
Clothing and footwear	1.3	4.1
Miscellaneous goods and services	1.4	5.2
Non-essential goods and services		16.9
Transport	1.5	8.4
Recreation, culture and education	1.8	5.6
Furnishing and maintenance of the house	1.8	4.4

Source: Author's calculations.

Table 6

Bulgaria: Share of Essential, Moderately Essential, and Non-essential Goods and Services by the Three Income Categories (average for 2011-2019) (%)

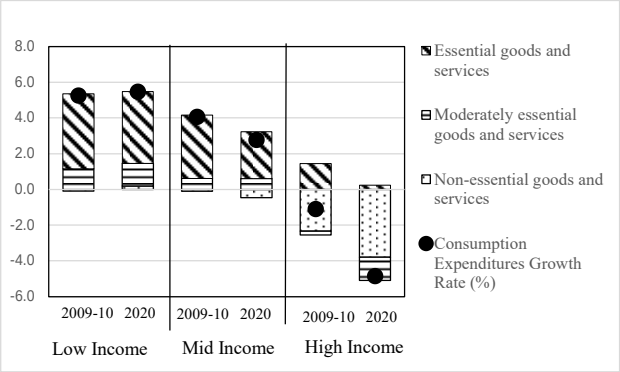
	Low Income Group	Mid Income Group	High Income Group
Essential goods and services	74.2	68.1	60.4
Moderately essential goods and services	14.2	15.9	16.7
Non-essential goods and services	11.5	16.0	22.9

Source: NSI (Bulgaria), Household Budget Survey Data. Author's calculations.

As expected, it is the non-essential goods and services, the most elastic ones, that contribute the most to the downward adjustment in consumption expenditures (Attinasi, 2021; Coibion, 2021; Maqui, 2020) (Figure 5).

Figure 5

Bulgaria: Contribution to the Growth Rate of Consumption Expenditures by Three Income and Three Expenditure Groups (percentage points)



Source: NSI (Bulgaria), Household Budget Survey Data. Author's calculations.

The high-income households reduced their consumption of moderately essential and non-essential goods and services – clothing and footwear, transport (especially automobile purchases), recreation, culture and education in the two crisis periods. The magnitude of adjustment was almost doubled by the specific factors of the Covid-19 pandemic – the government restrictive measures which reduced mobility and constrained the access to the service sector and the enhanced health risk alert. It is possible that the notion of human capital is better understood by high-income households, whose members are usually with higher education and prestigious job positions. In the future, they might preserve the newly acquired sensitivity to health-threatening factors and impose self-restraint in the consumption of services.

To summarise the findings in this section, the overall increase in the household saving rate in the two crisis periods can be explained by the behaviour of the high-income group and the considerable reduction of moderately essential and non-essential goods and services consumption by that income group.

7. Conclusions

The objective of the study was to outline the mechanism behind the hike in household saving in 2020 through the changes in their consumption pattern in comparison to 2009-2010, the two years after the outbreak of the global financial and economic crisis. The Covid-19 health crisis added new dimensions to the set of factors influencing uncertainty and, therefore, household saving rate. The government measures to contain the spread of Covid-19 affected all businesses in the services sector and contributed to the reduction both of supply and demand. The jump in uncertainty due to business closures and expectations of job and income losses was further pushed up by the enhanced perception of a health risk – something new in the recent experience of people. The hike in saving in 2020 can be decomposed into three layers – pure precautionary saving due to job, income, wealth uncertainty, forced saving due to government measures to contain the spread of the infection, and health risk-avoiding behaviour via self-restraining behaviour of consumers of certain goods and mostly of services. All these determinants of saving in 2020 led to changes in the household consumption pattern.

The shock generated by the Covid-19 pandemic in 2020 initiated a stronger downward adjustment in household consumption expenditure compared to the global liquidity shock of September 2008. However, there are differences in the magnitude of adjustment by expenditure groups. The empirical analysis, based on annual household budget survey data for Bulgaria for the period 2008-2020, alerts that three sectors, those producing and/or trading with vehicles, clothing and footwear, miscellaneous goods and services, are vulnerable to negative shocks generated by any economic downturn. The specific negative impact of Covid-19 in relative terms was concentrated on two expenditure groups – recreation, culture and education, and health. Likely, the heightened vigilance with respect to health risk factors restrained households from consumption of all ten expenditure groups and might have long-term negative consequences on consumption growth but especially of services.

The overall increase in household saving rate in the two crisis periods – after the global financial and economic crisis of 2008 and the Covid-19 pandemic in 2020, can be explained by the behaviour of high-income groups. They experienced in both crisis periods an insignificant, close to zero, increase in disposable income, contrary to the substantial income growth rate of low- and mid-income groups, and they undertook the largest reduction in consumption which affected to a great extent some moderately essential and all non-essential goods and services. The hike in saving (and the reduction in consumption) of high-income households was most prominent in 2020. A changed consumption pattern, characterised by falling share of non-essential goods and services in consumption expenditures, might persist longer after the government abolish all restrictive measures because of an enhanced health risk alert.[9] Preliminary NSI GDP data for 2021 can be used to assess the level of recovery in sectors most negatively affected by Covid-19. The real value added of arts, entertainment and recreation, repair of household goods and other services in 2021 is at 84.9% compared to its 2019 level. In 2021 the level of the real value added of the wholesale and retail trade, a group that also includes repair of motor vehicles and motorcycles, transportation and storage, accommodation and food service activities was at 91.2% of its 2019 level.

Based on the above findings, a conclusion might be drawn that changed households' behaviour would have negative long-term implications on the operation of the service sector. Government measures to boost demand for products of those sectors or provide direct transfers to support financially service sector firms might be ineffective. Instead, efforts on the side of the authorities and the business to build up stronger health-safety provisions may be more efficient to motivate the demand for services. Harchandani and Shome (2022), in a concise and yet exhaustive way, recommend a number of anti-Covid-19 measures for tourism, e.g. maintain a high level of hygiene and sanitation facilities, use of automation technology, artificial intelligence, and ease of digital devices. Similar measures can be advanced in other service sectors.

At a national level, based on the best practices for resolving the Covid-19 pandemic crisis, a clear-cut strategy and flexible organisational framework may be drawn for timely and effectively counteraction to possible contagious disease outbursts in the future. The key component of the strategy should be a set of measures to improve the public's knowledge about the cons and pros of vaccination. The public should be well informed and aware of the practical measures undertaken by the government and the business to reduce consumers' health risks.

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