3 COVID-19 EFFECTS ON INCOME, CONSUMPTION AND SAVINGS: EVIDENCE FROM THE LUXEMBOURG HOUSEHOLD FINANCE AND CONSUMPTION SURVEY[1]

We examine the impact of the COVID-19 pandemic on household income, consumption and savings in Luxembourg, revealing substantial heterogeneity across income and wealth distributions. More specifically, poorer households were more likely to experience negative effects than households with higher income or wealth. In particular, poorer households were more likely to report a decline in income and in savings.

3.1 INTRODUCTION

This analysis explores the impact of the COVID-19 pandemic on the financial situation of households using data from the Luxembourg Household Finance and Consumption Survey (LU-HFCS). This survey collects data on assets and liabilities of individual households, as well as on their income and consumption expenditure. In 2021, the LU-HFCS included a separate section dedicated to the COVID-19 pandemic. More specifically, the survey asked households how the pandemic affected their work status, income, consumption patterns, savings and financial wealth in 2020.

About 20% of households experienced changes to their income due to COVID-19, while around 50% reported significant changes in their consumption and savings patterns. This may be a direct reflection of the lockdown measures, but may also suggest a shift in financial priorities and an increased sense of financial prudence in the face of uncertainty (Dossche et al., 2021). Moreover, around 25% reported changes in the value of their financial assets, signalling a potential impact on their wealth, savings and financial stability.

More importantly, our analysis finds that the economic impact of the COVID-19 pandemic varied significantly across the Luxembourg population. Although most households maintained stable incomes throughout the pandemic, poorer households were more likely to experience a decline in income. However, the average change for households at the bottom of the income distribution was only about -1% of gross income. Although consumption expenditure declined across income groups, the impact was less pronounced for low-income households, which may explain why they were also more likely to report a decline in their savings. Low-income households were also more likely report a decline in the value of their financial assets (including bank deposits). This suggests that the pandemic was more of a burden for poorer households, emphasizing the challenges they faced in preserving their financial situation and possible effects on long-term financial stability. These findings collectively highlight the complex and heterogeneous nature of the pandemic's influence on the economy and its implications for households' economic and financial behaviour.

3.2 CONTEXT AND A BRIEF REVIEW

On May 5th 2023, the UN World Health Organization (WHO) declared an end to the COVID-19 public health emergency. Cumulative confirmed COVID-19 cases worldwide amount to 765 million, including

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an estimated 7 to 20 million deaths. By end-March 2023, Luxembourg had reported 320,000 cumulative confirmed COVID-19 cases.[2] Of these, 3.4% were hospitalised and 0.4% died.[3]

In mid-March 2020, the Luxembourg government put in place several lockdown measures to contain the spread of the virus. These contributed to a 6.3% contraction of real gross domestic product in 2020 Q2, compared to the same quarter in 2019.[4] Over the whole of 2020, total hours worked shrank by 4.0%, particularly in "accommodation and food service activities", where they fell dramatically by 31%, and in manufacturing, where they dropped by 9%. Annual growth in total employment declined from 3.3% in 2019 to 1.7% in 2020, the slowest growth since the 2009 Great Recession (1.0%). The unemployment rate increased rapidly from 5.5% in February 2020 to 7.0% in June 2020.[5]

The Luxembourg government launched a comprehensive stabilization and recovery plan in 2020, which included i. additional expenditure, targeted especially at small and medium-sized enterprises, as well as start-ups and self-employed businesses; ii. delay and carry-over of tax payments; iii. guarantees or loans to companies; iv. other forms of assistance to households, such as support for extraordinary leave for family reasons, sickness benefits, or social assistance. In total, this expenditure amounted to an estimated 2.6% of Luxembourg GDP, of which one percentage point was for short-time work measures (*chômage partiel*), and 0.4 percentage points were allocated to extraordinary leave for family reasons (BCL, 2022).[6]

In 2021, Luxembourg's economy rebounded strongly. By Q2, annual growth in real GDP had recovered to 10.6%. Annual hours worked rose by 7.3%, and annual employment growth bounced back to 3.0%. By October 2021, the unemployment rate had receded to pre-COVID-19 levels, suggesting that the effect of COVID-19 on the Luxembourg labour market was mostly temporary in nature.

3.3 CHANGES IN INCOME

Results from the LU-HFCS suggest that during 2020 about 16% of households in Luxembourg reported that at least one member left their job voluntarily, was laid off, or closed their business due to COVID-19 (see Table A1 in the Appendix). Job losses would have been greater without the widespread introduction of remote work arrangements and the extension of short-time work (*chômage partiel*) to most economic sectors. According to Luxembourg's National Institute of Statistics and Economic Studies (STATEC, 2022b), nearly 52% of employees (full-time or part-time) were working from home in 2020 Q2. Economy-wide, the use of "short-time work" schemes reached almost 35% of total employment by April 2020 (in full-time equivalent terms) (STATEC, 2022c).

Individuals on short-time work faced a reduction in their gross income, since the scheme generally provides partial coverage. A STATEC survey shows that about 13% of Luxembourg's residents reported a reduction in their income during the early stages of the COVID-19 pandemic (STATEC, 2020). This is consistent with results from the LU-HFCS, which indicate that in 2020 nearly 12% of households reported a reduction in total gross income due to COVID-19. However, most households reported stable incomes during the period (82%), and 6% even reported gains in income.

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2   Data retrieved from https://covid19.public.lu/fr/graph.html, accessed 24/05/2023. In December 2021, Luxembourg had a total population of 645,397 (STATEC, 2022a).

3   Data retrieved from https://covid19.public.lu/fr/graph.html, accessed 24/05/2023

4   See https://lustat.statec.lu/, accessed 24/05/2023.

5   Data retrieved from https://lustat.statec.lu/, accessed 24/05/2023.

6   Businesses in Luxembourg that could not operate normally during lockdown could apply for the short-time working scheme under which the government paid up to 80% of employees' salary or at least the minimum wage.

Figure 1
Share of households reporting changes to their gross income in 2019-2020,
by net income quintile and by net wealth quintile, (in percent)

Net income quintiles

Net wealth quintiles

Income decline   Income gain   Net balance   Linear fit (net balance)
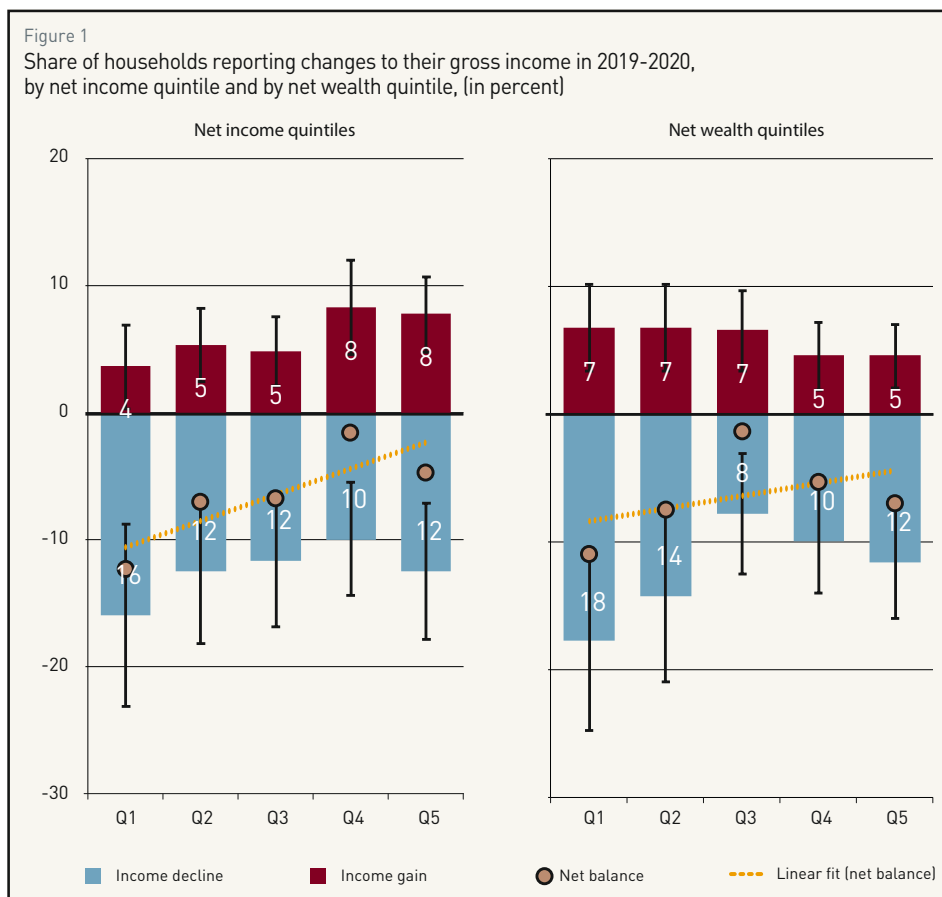
Note: The question was: "As a result of the crisis, how did the total gross income (including any subsidies the household received) of your household change in 2020 compared to a similar period in 2019?" The net balance is the difference between the share reporting increases and the share reporting declines.
Source: Own calculations based on the LU-HFCS wave 2021; data are multiply imputed and weighted; variance estimation based on 1,000 replicate weights. Error bars denote 95% confidence interval.

HFCS results confirm that gains and losses in gross income were not equally distributed across the population. Figure 1 depicts the share of households reporting gains or losses in the different parts of the distribution of net income or net wealth. Households are divided into five equal groups (quintiles) based on their position within the respective distribution.

Figure 1 suggests several conclusions. First, in all quintiles (net income or net wealth), more households declared income declines than gains. Second, low-income and low-wealth households were more likely to report income declines (upward-sloping line through net balances). The share reporting declines was largest in the bottom net income quintile Q1 (16%) while the share reporting income gains was largest in the top two net income quintiles.

Regarding the size of income changes, for those households reporting an income decline, the mean decrease was 9% (median 5%). For those reporting income gains, the mean increase was 22% (median 5.4%). Nonetheless, 82% of all households did not report any change, consequently, the average difference in households' income between 2019 and 2020 was negligible.

Figure 2 indicates the average size of the change in gross income between 2019 and 2020 for each net income quintile, as well as separately for households within each quintile reporting declines or gains. Among households reporting declines, the largest occurred in net income quintiles Q1-Q3, with an average around 10%. Meanwhile, for the top quintile Q5, the average decline was less than 6%. Among households reporting gains, those in the bottom quintile reported lower gains (6%) than those in the top quintile (20%).

Considering all households within each quintile, the average change in gross income was always less than 2% in absolute terms. However, in the bottom quintile there was a 1.3% decline on average, while in the top quintile there was a 0.9% gain on average. This difference between quintiles Q5 and Q1 is statistically significant at the 90% level.

Results for other countries also suggest unequal income effects across different income groups (Adams-Prassl et al., 2020; Chetty et al., 2020; Hacıoğlu-Hoke et al., 2021; Crossley et al., 2021). For example, using transaction data from the UK Money Dashboard (MDB), Hacıoğlu-Hoke et al. (2021) find that the bottom of the income distribution experienced the largest declines in earnings in spring of 2020.

3.4 CHANGES IN CONSUMPTION

Based on the survey results, 45% of households in Luxembourg changed their consumption habits due to the pandemic and related lockdown measures. Expenditure decreased in 27% of households and increased in 18% (Table A1).
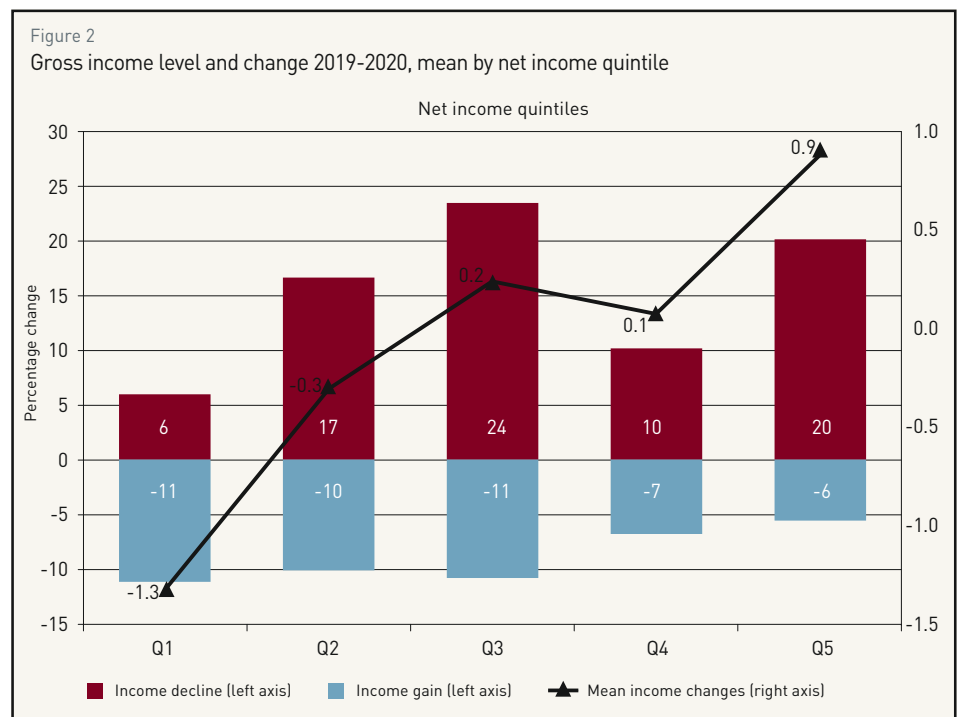
According to a study by STATEC, Luxembourg households modified their spending patterns in 2020 (STATEC, 2021). According to this study, expenditure on restaurants, cafes, and canteens decreased by 43%, while cultural and sports services saw a reduction of 22%. Conversely, expenditure on food and beverages at home increased by 23%, food deliveries rose by 25%, and there was a notable surge in purchases of computers (36%) and home maintenance and repair products (34%).

Figure 2

Gross income level and change 2019-2020, mean by net income quintile

Note: The question was, "Could you please provide us with your best estimates of the increase (decrease) in your total gross income in absolute terms in 2020 compared to a similar period in 2019?"
Source: Own calculations based on the LU-HFCS wave 2021; data are multiply imputed and weighted.

Several international studies show that the effects of COVID-19 on household consumption vary substantially across sub-groups (e.g., Baker et al., 2020; Carvalho et al., 2021; Hacıoğlu-Hoke et al., 2021; Chetty et al., 2020; Cox et al., 2020; Bounie et al., 2020; Chronopoulos et al., 2020). Some of these studies provide evidence that the aggregate decrease in household consumption is driven by a reduction in expenditure among high-income households.

For example, Carvalho et al. (2021) identified a large decrease in Spanish household expenditure during the days following the lockdown measures. The most affluent households reported the largest declines, citing reduced opportunities to buy luxury goods and services (e.g. travel, hotels, restaurants, etc.).

Similarly, Hacıoğlu-Hoke et al. (2021) used UK transaction data from a mobile app and found that the most affluent users reduced expenditure the most (around 35% in June 2020 compared to June 2019). In contrast, low-income users reported the smallest reductions, while facing the largest declines in their earnings. The weaker impact on low-income users may reflect the higher share of basic goods in their consumption bundle.

Chetty et al. (2020) used highly detailed US transactions data to show that the reduction in expenditure among high-income households mostly concerned in-person contact services (restaurants, beauty shops and airlines). Other luxury expenditure actually increased during the COVID-19 crisis, such as the installation of private pools or demand for landscaping services.

Figure 3

Share of households reporting changes to their gross income in 2019-2020,
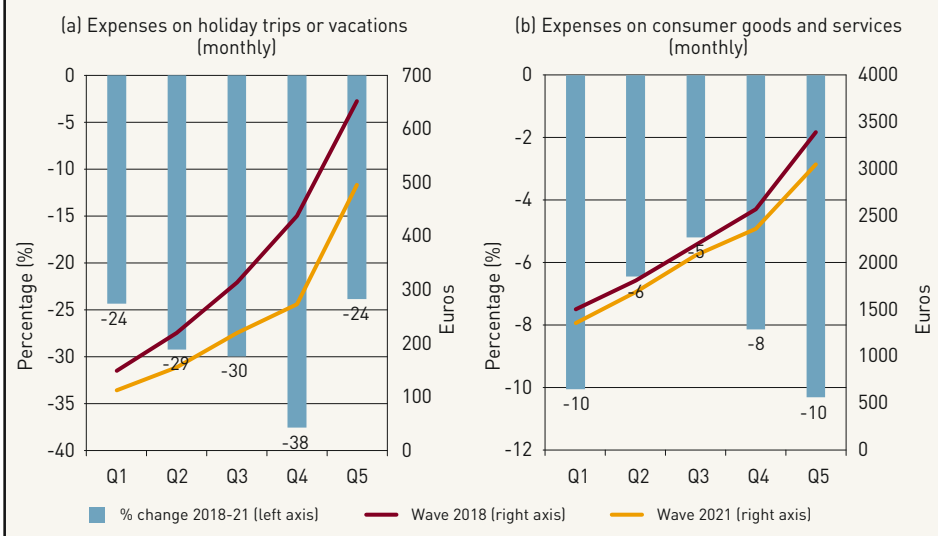by net income quintile and by net wealth quintile, (in percent)
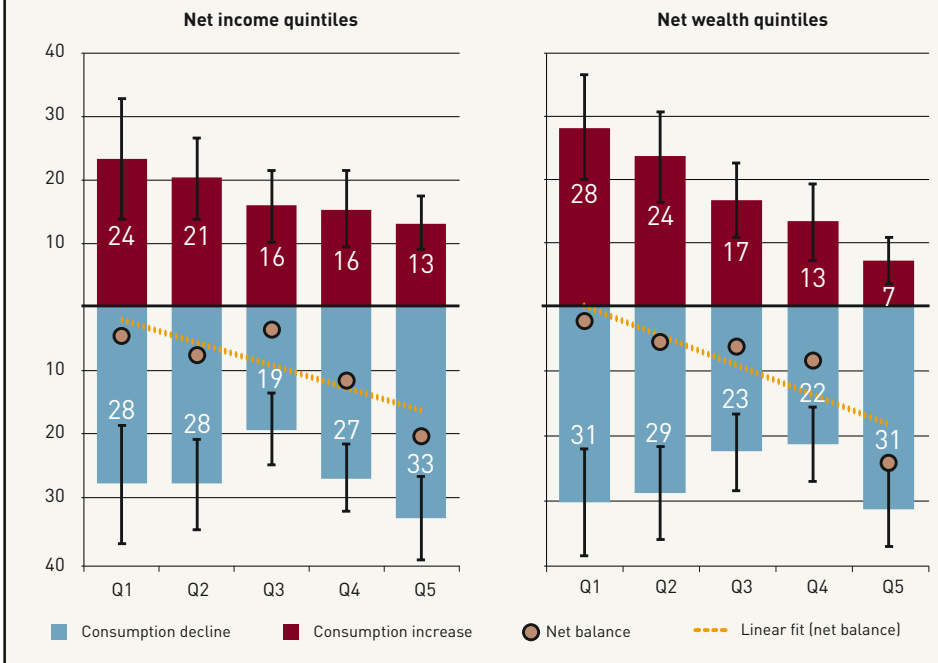
Note: The question was: "How did your consumption of goods and services change in 2020 compared to a
similar period in 2019?" The net balance is the difference between the share reporting gains and the share
reporting losses.
Source: Own calculations based on the LU-HFCS wave 2021; data are multiply imputed and weighted;
variance estimation based on 1,000 replicate weights.

Figure 4

Consumption expenditure in waves 2018 and 2021, average level and percent change by net income quintile

Note: Left axis: relative change in percentage (bar chart). Right axis: Average expenditure in euro (line charts).
The questions were: 1) "In 2020, about how much did (you/your household) spend on holiday trips or vacations?
Please include transport, accommodation, meals, package tours, entertainment and any other related expenses";
and 2) "Overall, about how much does your household spend on average per month on all consumer goods and
services? Consider all household expenses including food, utilities, etc., but excluding consumer durables
(e.g. cars, household appliances, etc.), rent, loan repayments, insurance policies, renovation, etc."
Source: Own calculations based on the LU-HFCS waves 2018 and 2021; data are multiply imputed and weighted.

Figure 3 depicts the share of households reporting changes to their consumption expenditure in different parts of the distribution of net income or net wealth. In the top quintiles, fewer households reported increases and more reported decreases. For example, in the net wealth distribution, the share reporting decreases was similar in quintiles Q5 and Q1, but the share reporting increases was 7% in Q5 and 28% in Q1.

The impact of COVID-19 can be analysed separately for expenditure on consumer goods and expenditure on holiday trips or vacations (Figure 4). While average expenditure on holidays decreased in all net income quintiles, it decreased considerably less for low-income households. The most marked decline (-38%) was observed for households in the fourth net income quintile (see Figure 4, panel a), while in the bottom and top quintile the decrease was comparable in relative terms (-24%). Variation across net income quintiles was less for consumer goods and services than for holiday expenditure. Consumption expenditure decreased most for households in the bottom and top quintiles (by 10%), and least for households in Q3 (see Figure 4, panel b).

3.5 CHANGES IN FINANCIAL WEALTH

COVID-19 also had an impact on financial assets held by households (including bank deposits, stocks and mutual funds). Overall, 11% of households reported a reduction in the value of their financial assets, while 14% reported gains. Note that a household reporting a decline in its

financial assets may be thinking of the balance on their savings account at the bank, as well as the market value of any stocks or mutual funds they own. Differences between top and bottom quintiles were similar for the net income distribution and the net wealth distribution. In the net income distribution, the share of households reporting a decline in the value of their financial assets was larger in the bottom quintile (13%) than in the top quintile (8%). However, the share of households reporting gains in the value of their financial assets was larger in the top quintile (22%) than in the bottom quintile (11%). In the net wealth distribution, the share reporting a decline was also larger in the bottom quintile (16%) than in the top quintile (8%). However, the share reporting gains was larger in the top quintile (18%) than in the bottom quintile (10%). This suggests that, on balance, poorer households were more likely to report declines and less likely to report gains in the value of their financial assets.
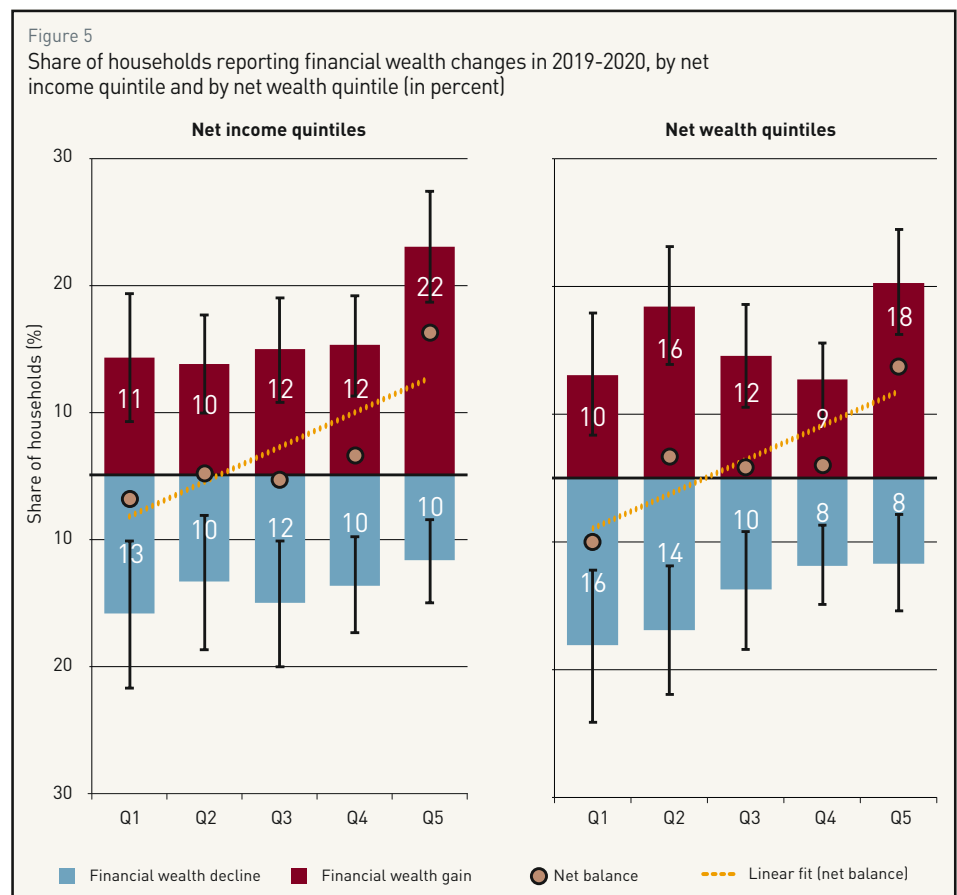

Figure 5
Share of households reporting financial wealth changes in 2019-2020, by net income quintile and by net wealth quintile (in percent)

Note: The question was: "As a result of the crisis, how did the value of your household's financial assets (that is, deposits, stocks, mutual funds and other financial assets) change in 2020?" The net balance is the difference between the share reporting gains and the share reporting declines.
Source: Own calculations based on the LU-HFCS wave 2021; data are multiply imputed and weighted; variance estimation based on 1,000 replicate weights. Error bars denote 95% confidence interval.

3.6 CHANGES IN SAVINGS

In principle, changes in income and changes in consumption jointly led to changes in savings.[7] Across Luxembourg households, 33% reported an increase in their overall savings between 2019 and 2020, while 19% reported a decline. Figure 6 indicates these shares for different quintiles of net income or net wealth. For the net income distribution, 32% of households in the bottom quintile reported that their savings declined, while 17% reported an increase. In the top quintile, 11% reported a decline and 41% reported an increase.

In general, poorer households were more likely to report a savings decline and less likely to report a savings increase. Differences between top and bottom quintiles are statistically significant for both distributions. These findings are similar to those reported by Dossche et al. (2021) using data from the European Commission.[8] In addition, changes in savings also vary across other household characteristics, such as age or education of the reference person, with older and more educated people being more likely to report an increase in savings and less likely to report a decline (Table A1).

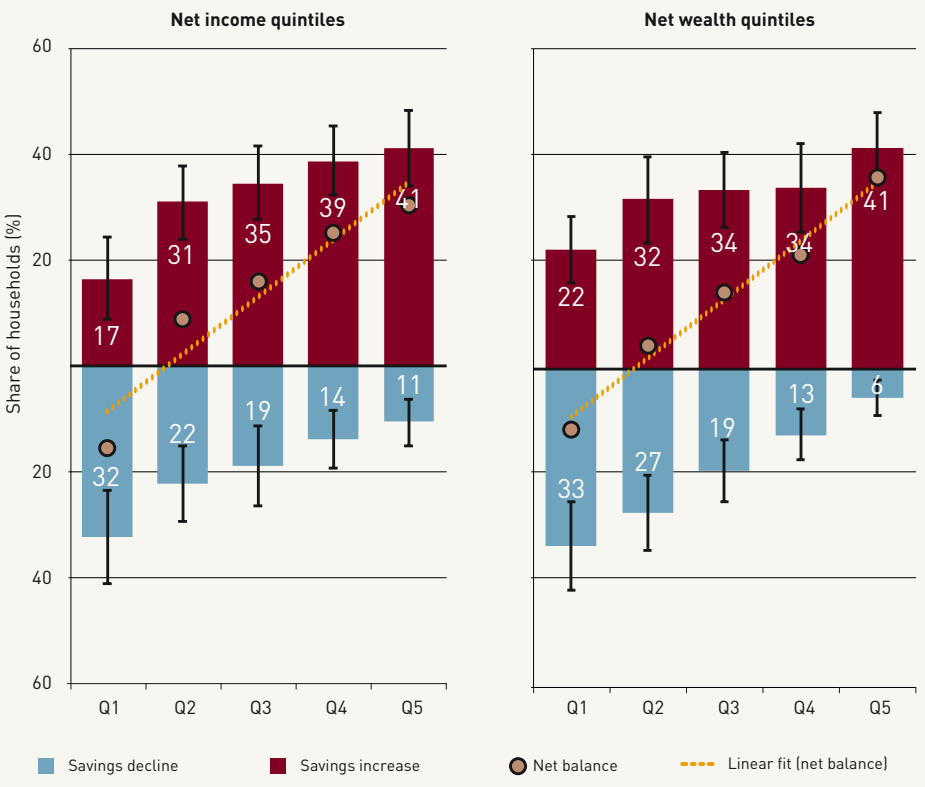7   However, the accounting identity only holds approximately in the survey due to the formulation of the questions.

8   Directorate-General Economic and Financial Affairs (ECFIN)

Figure 6
Share of households reporting changes to their savings in 2019-2020, by net income quintiles and by net wealth quintiles (in percent)

Note: The question was: "Have your household savings changed as a result of the COVID-19 crisis in 2020 compared to a similar period in 2019?" The net balance is the difference between the share reporting increases and the share reporting declines.
Source: Own calculations based on the LU-HFCS wave 2021; data are multiply imputed and weighted; variance estimation based on 1,000 replicate weights. Error bars denote 95% confidence interval.

In Figure 7, the reported savings rate is higher in the top quintile, which is consistent with the decline in consumption reported in Figure 4 and the increase in income reported in Figure 2. On average, households in the top income quintile reported that they saved 17% of their annual net income in 2020. For households in the bottom quintile, the average annual savings rate was only 4.1%.

Since most households reported that their gross income was unchanged between 2019 and 2020, the reported changes in annual savings likely result from the decline in consumption expenditure requiring social contact (see Chetty et al. 2020). In particular, the level of expenditure on holidays declined more in the top income quintiles, allowing these households to save more. According to Chetty et al. (2020), this is because goods and services requiring social contact represent a higher share of total expenditure for high-income households. Therefore, the pandemic increased the existing heterogeneity in savings across the income distribution.

3.7 CONCLUDING REMARKS

Using data from the Luxembourg Household Finance and Consumption Survey, this analysis provides evidence that the COVID-19 pandemic strongly affected household consumption and savings during 2020, while gross income remained largely stable. Only 12% of households reported a decline in their gross income (averaging nearly 9%). With regard to consumption, 27% of households reported a decline and 18% reported an increase. For 33% of households, savings increased and for 19% they declined.

The effects of the pandemic differed according to the household's position in the distribution of net income or net wealth. Income declines were less frequent among richer households than among poorer households. On average, consumption expenditure decreased at across income or wealth levels. However, it decreased less for low-income households. As a result, poorer households were more likely to report a decline in their savings.

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Figure 7

Annual savings in 2020, average level and savings rate by net income quintiles
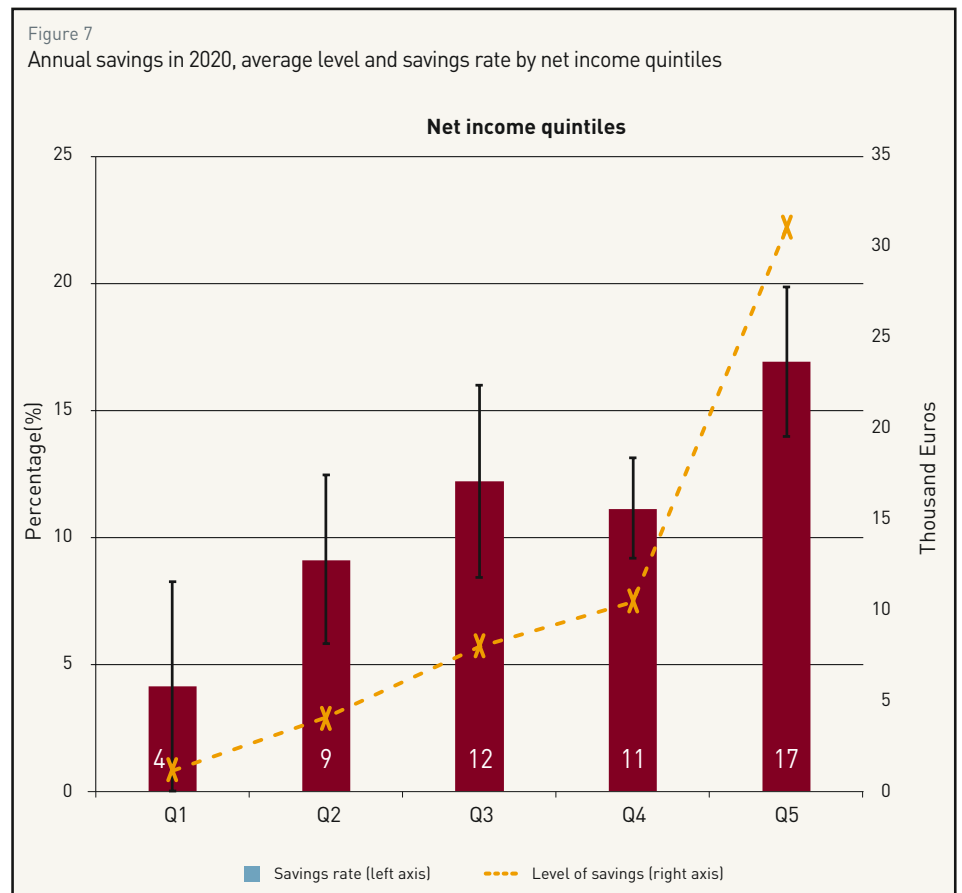
Note: Total savings were calculated using the questions: "How much were you able to save out of your net income in 2020? Or could you quantify by how much your expenses exceeded your net income in 2020?" Source: Own calculations based on the LU-HFCS wave 2021; data are multiply imputed and weighted; variance estimation based on 1,000 replicate weights. Error bars denote 95% confidence interval.

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4.9 APPENDIX

Table A1 :

Impact of COVID-19 for various household groups

Variable	Job		Income			Financial wealth			Savings			Consumption		
	Loss	Stable	Decline	Stable	Gains	Decline	Stable	Gains	Decline	Stable	Increase	Decline	Stable	Increase
All households	16	84	12	82	6	11	75	14	19	48	33	27	55	18
Gender of reference person														
Male	15	85	12	82	6	10	74	16	18	50	33	28	55	17
Female	17	83	13	80	6	12	77	11	22	45	21	21	58	22
Age of reference person														
16-34	21	79	12	76	13	13	74	12	27	37	36	27	43	30
35-44	19	81	11	81	8	9	72	19	26	46	28	30	47	23
45-54	19	81	16	78	5	10	79	11	19	55	26	25	58	17
55-64	12	88	13	84	3	11	77	12	13	49	38	29	61	10
65+	7	93	10	88	1	12	75	13	12	52	36	22	68	10
Education level														
Low (ISCED=0,2)	11	89	15	83	2	9	80	11	23	56	21	21	58	22
Middle (ISCED=3,4)	16	84	12	85	4	10	81	8	17	56	27	19	61	20
High (ISCED=5-8)	17	83	12	79	9	12	70	18	19	41	40	33	51	15
Net Income Quintiles														
Q1	16	84	16	80	4	13	76	11	32	51	17	28	49	24
Q2	16	84	12	82	5	10	79	10	22	47	31	28	52	21
Q3	14	86	11	84	5	12	75	13	17	47	36	18	66	17
Q4	15	85	12	80	8	10	76	13	14	46	39	27	57	16
Q5	16	84	11	81	8	9	69	22	10	49	41	34	53	13
Net Wealth Quintiles														
Q1	21	79	18	75	7	16	75	10	33	44	22	31	41	28
Q2	18	82	14	79	7	14	69	16	27	41	32	29	47	24
Q3	14	86	9	84	7	10	78	12	20	46	34	22	62	17
Q4	16	84	9	87	4	7	81	11	11	55	33	21	65	14
Q5	9	91	12	83	5	7	74	19	5	53	42	32	61	8

Source: Own calculations based on the LU-HFCS wave 2021; data are multiply imputed and weighted.