Politecnico di Torino

Management Engineering

A.a. 2024/2025

Sessione di Laurea Novembre 2025

How has Covid-19 reshaped consumers' purchasing behaviour of durable goods?

Relatori:
Francesco Nicoli

Candidati:
Bevilacqua David

Abstract

This thesis investigates how consumers purchase behaviour of durable goods (housing, vehicles and big tickets items) has been reshaped by the Covid-19 pandemic. The study is conducted considering a database of 7501 respondents from five European countries (Italy, Germany, France, Spain and Netherlands) of whom 2053 reported a pre-pandemic intention to buy a durable good within 12 months. Linear regression models have been adopted as instruments to study the relationship between Covid variable, treated as an exogeneous variable, and several control variables that have been introduced to the model. These control variables consider demographic and socio-economic aspects such as gender, age, income, education but they also capture more psychological features as fear of job loss and financial concerns. It emerges that Covid-19 exposure is related to a higher likelihood of changing purchasing plans, but once fear variables are introduced the effect turns to be statistically insignificant underlining how perceived risk drive behaviours rather that infection per se. Fear of job loss is the highest determinant of postponement and, financial concerns also raise the probability to change plans. However, the effects are heterogeneous across goods in fact the housing postponement is primarily linked to perceived unemployment risk while vehicle purchases are sensitive to Covid-related fears as individuals would perceive a decrease in the good utility as a consequence. As concerns income variable it emerges that higher-income households are less likely to revise plans whereas gender differences persist as women are more prone to change plans. Additionally, the findings underline that durable good purchasing decision has been influenced by the psychological factors and not directly by the virus experience.

Overall, the pandemic affected not only the macroeconomic environment, but it had influenced also consumers' time preference and risk perceptions as uncertainty and fear became the main drivers for durable goods purchasing decisions and the psychological side turned into the principal determinant factor.

Contents

1 Introduction

1.1 Context: The spread of COVID-19

The first case of infection by SARS-CoV-2 virus has been recorded in Wuhan, China at the end of 2019 and it expanded rapidly evolving into one of the most disruptive global crises of the 21st century. In the early months of 2020, the World Health Organization declared Covid-19 a global pandemic, due to the high human-to-human transmission rate and the absence of vaccines or drugs to control its spread.

Italy was one of the firsts European countries to experience a large-scale transmission of the disease. The first official case was registered in Codogno on February 21, 2020 and within a matter of few weeks the infection spread across all the Italian regions. After just 1 month, on March 9, the Italian government had imposed a full national lockdown, closing the non-essential businesses to contain the infections. Shortly after, one by one all the European countries followed the same trajectory. In Spain, like in Italy, it was applied one of the strictest lockdowns in Europe and the government declared the state of Emergency starting from March 14. Just few days after also France and Germany declared a nationwide lockdown ordering the closure of schools, restaurants, and most retail activities and prohibiting movements if not strictly necessary. Meanwhile, the Netherlands adopted the so called “Intelligent lockdown”, a controlled spread model of the virus, allowing the development of herd immunity without causing the collapse of the healthcare system. In this case, only activities that involved a close contact between people were closed and it was promoted the social distancing, trying to compromise as little as possible people’s freedom.

Due to the absence of vaccines or drugs to treat sick people, the authorities were forced to think new preventives methods for limiting contagion, like the above

citated. These policies responses are called non-pharmaceutical interventions (NPIs) and they were adopted to prevent the collapse of the healthcare system due to the limited capacity to treat the ever-increasing number of sick people. Although, several countries found themselves unprepared to face a crisis of this proportion and they did not know exactly how to deal with it. In particular, the study on the Italian case made by Gary P. Pisano et al. (2020) identifies several errors made by the authorities such as the delayed recognition of the severity of the threat and policymakers' cognitive bias that pushed on the adoption of partial measures, underestimating the exponential contagion. The stepwise escalation of the preventing measures and the lag in the decision-making process of the authorities left the disease free to spread favouring its exponential growth.

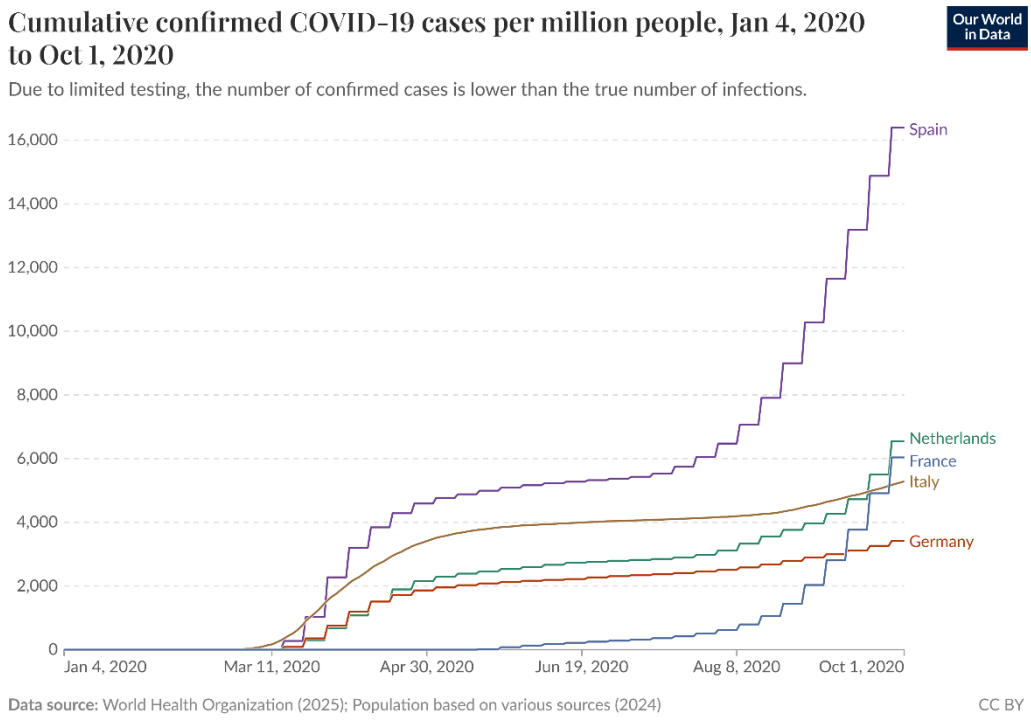

Figure 1 Cumulative confirmed Covid-19 cases per million people

However, the outbreak was not only a simple health crisis, but it triggered profound psychological and behavioural transformation at both individual and collective levels. The progressive tightening of preventing measures, such as travel restrictions, quarantine mandates and mask obligations, had significant social and psychological consequences creating a sense of anxiety, depression and uncertainty

between the population. DiCrosta et al. (2021) analysed how fear of contagion and perceived economic instability had reshaped consumer behaviour inducing panic buying of essential goods and fostering precautionary saving tendencies. A study, conducted by Kikuchi et al. (2021) examined how the crisis affected Japanese labour market. They find out that rather than a general increase in unemployment, the crisis's intensity was different across demographic and occupational groups causing heterogeneity in welfare losses. In particular, the crisis has a greater impact on young female temporary workers with non-flexible positions with respect to older men high skilled workers with flexible jobs. These patterns highlight how the crisis increased inequalities and stressed the pre-existing labour market structure, amplifying vulnerability among lower income individuals.

As lockdowns temporarily blocked industrial production, to prevent the economic collapse, governments deployed unprecedent fiscal stimulus packages. Companies began to have liquidity problems and households perceived reductions in their incomes thus, to provide immediate liquidity massive fiscal policies were designed. The Italian Government introduced multiple new decrees, like "Cura Italia" and "Rilancio" packages, which amounted to over 100 billion euros of direct support to firms and families. The main measures included the strengthening of the National Health Service, income support through unemployment benefits and furlough schemes, suspension of payments and deadlines for firms and incentives for smart working, suspension or extension of payments to public administrations, suspension of mortgage and other instalment loans. Similarly, all European countries implemented programs to support firms and to sustain employment and consumer purchasing power. Armantier et al. (2021) tried to understand how the money transfer, linked with these fiscal policies, has affected consumer behaviour in the USA. In particular, they found that households increased inflation uncertainty and polarized expectations pushing consumers to save and not to spend, the money of the stimulus checks, for precautionary purposes.

In summary, the Covid-19 pandemic has created an unprecedented crisis that intertwined health, psychological, and economic dimensions. Governments, which initially had to step in with containment measures, has also to address the economic

impact of the crisis. At the same time, families were obliged to restrictions and uncertainty adaptation caused by the crisis by changing their savings and consumption habits. The pandemic has radically altered not only macroeconomic factors but also consumer psychology at the micro level, paving the way for a lasting transformation in the way society works, consume, and adapt to uncertainty.

1.2 Problem statement & Research question

The contextual analysis presented in the previous chapter reveals that the pandemic's consequences have affected multiple dimensions: health, politics,labour market and household finances. From this point of view, the Covid-19 pandemic can be seen as a social and economic experiment that redefine the life of individuals. Among all the consequences, it is particularly interesting to note the direct influence of COVID on individuals' economic behaviour determining the transformation of consumer purchasing patterns, especially what concerns durable goods.

Durable goods have a particular decision-making process due to their nature. They are goods with repeated usability whose function does not exhaust upon a single use but continues to satisfy the consumer's needs over a period of time. The fact that they are reusable items makes them expensive, and this leads to a very high procyclical demand, which falls sharply in recessions and recovers during expansions. However, the pandemic crisis may have change this canonical behaviour. In particular, a study carried out by Tauber & Van Zandweghe (2021) on US spending shows an historically unprecedented pattern. After a brief initial contraction, the spending on durable goods like vehicles, furniture, appliances and recreational goods increase above pre-pandemic levels. The authors tried to explain that this abnormal pattern is the result of substitution and income effects. The first one, is linked with the lockdowns, social distancing and the closure of services businesses. Individuals tried to substitute leisure activities, travels, meals at the restaurant with durable goods that could replicate those experiences without leaving the house. Thus, consumers after a settling-in period started to buy items to cook, to exercise at home, electronics and other product that could improve their new life confined to home. The income effect was originated by the extraordinary fiscal

intervention that boosted households' income. Tauber & Van Zandweghe (2021) estimate a marginal propensity to consume of about 0.6 for durable goods, implying that for every additional dollar of income, households spend about sixty cents on durable goods.

Looking the Eurostat data is possible to see similar patterns also in European countries where durable goods consumption could have become a form of adaptation to the forced change in lifestyle. At the same time, supply constraints and uncertainty introduced new forces in consumer planning.

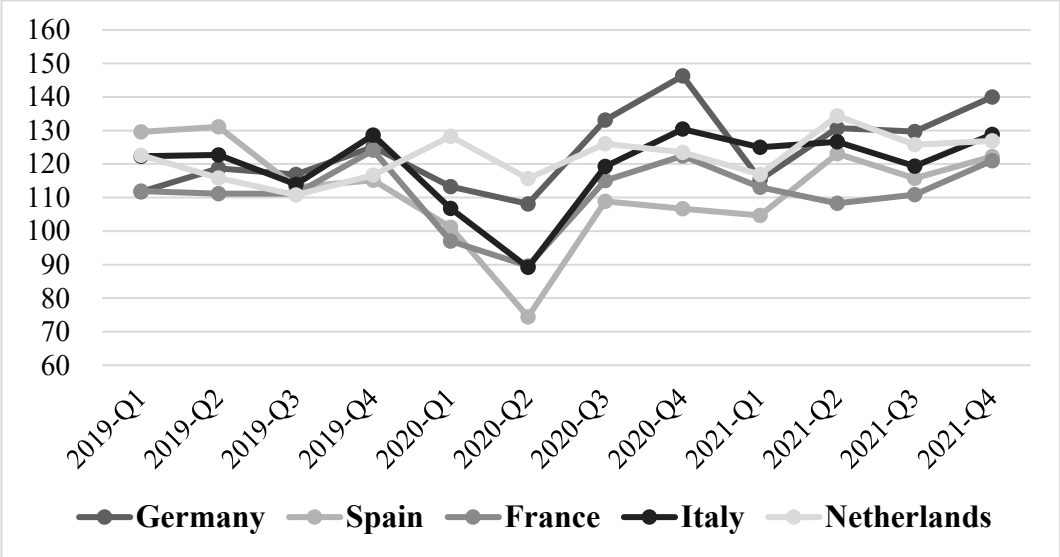

*Figure 2 The chart illustrates the final consumption expenditure of households on durable goods (ESA 2010 indicator) for Germany, Spain, France, Italy, and the Netherlands. * Unit of measure: Chain linked volumes, index 2015=100. * Time frequency: Quarterly. * Seasonal adjustment: Unadjusted data (i.e. neither seasonally adjusted nor calendar adjusted data) Source: Eurostat*

Beyond these macroeconomic factors, a study carried out by Di Crosta et al. (2021) demonstrated that also psychological factors have influenced consumer behaviour. Anxiety and Covid-related fear led people to increase purchases of essential goods like food, hygiene and protective equipment, reflecting an instinctive self-protection mechanism. Instead, consumer who experienced emotional exhaustion, depression and stress were more likely to make impulse buying of non-essential items, like entertainment, fashion, or home decoration, which can be seen as a way to reduce the negative emotions and restore a sense of normality.

Never a crisis had squeezed the demand for certain goods and boosted demand for others. Covid-19 combined macroeconomic changes and strong constraints in individuals' lifestyle that deeply intertwined on the emotional and psychological well-being. Consumers were forced to rethink their priorities, needs and their spending habits in function of the new environment shaped by the disease, the restrictions and fiscal measures. This unique convergence of factors provides the empirical and conceptual ground for a deep investigation of how consumers, under the pressure of uncertainty and Covid-related fear, have redefined their purchasing choices regarding durable goods leading to the present research question:

How has Covid-19 reshaped consumers' purchasing behaviour of durable goods?

Focusing on five European countries, France, Germany, Italy, Netherlands and Spain this research aims to find which were the main variables between direct experience of the Covid-19 disease, perceived unemployment risk and Covid-related economic uncertainty that caused the change in durable goods consumption during the first wave of the pandemic. This question is motivated by the need to understand why individuals revised their plans, not by inferring motivations from external macroeconomic variables such as inflation or interest rates, but by analysing the explanations provided by consumers themselves and assessing whether these justifications can be systematically classified across specific population groups.

1.3 Research Gap and Contribution of the Study

The crisis caused by Covid immediately captured the attention of researchers, who over the last five years have produced a highly structured literature on consumer behaviour. Broadly, these studies can be clustered into three main strands. The first consists of macro-oriented studies that evaluate how the crisis effected interest rates, inflation, GDP and unemployment rate and how these macroeconomic shifts induced changes in the aggregate demand of goods. These lines of research also focus on spending patterns associated with policy responses, typically using aggregate transactions, national accounts, and income support measures to trace

macro-behavioural changes. The second strand of the literature focuses on micro-level perspectives, in particular on individual's household purchasing decisions. They use granular data, like panels, bank account transactions and high-frequency survey to link individual consumer purchasing behaviours with individual wealth, perceived income risk, liquidity constraints. The third strand covers behavioural and socio-psychological studies, which investigate how new social dynamics and emotional response to the crisis reshape consumer purchasing decisions. Typical phenomena recorded during the crisis, like panic buying and herd mentality, demonstrate that the pandemic, unlike a typical financial crisis, has led to deeper psychological and behavioural transformations.

Despite the extensive attention the pandemic has received, empirical evidence on how COVID-19 altered durable goods purchasing behaviour remains fragmented. In particular, much of the socio-psychological studies focuses on non-durable goods consumption leading open a gap in the understanding of how emotional response to the crisis shaped purchasing behaviour regarding durable goods. Moreover, numerous studies are country specific and use only macro data to explain changes in durable goods consumption, limiting the ability to capture individual-level heterogeneity.

This study contributes to cover this gap using micro-level survey data to study how emotional reaction to the crisis, like fear and uncertainty, and the direct experience of the infection has modified durable goods purchasing plans. The availability of data belonging to 5 different countries allows to consider cross-country heterogeneity, but also to test how different socio-demographic groups react to the crisis. Unlike most studies that derive the reason for changing purchasing plans from external variables (like policies, uncertainty indicators etc.) this thesis directly collects the reasons from consumers themselves. Thanks to the targeted questionnaire, it has been asked to the respondents which factors drove them to change their plans, reducing the risk of misinterpretation and improving the internal validity of the findings. All these factors allow to study the heterogeneity in changes in consumer behaviour in response to the health and economic shock generated by the pandemic. In particular, the results show how durable goods purchasing decision

during the Covid-19 crisis was shaped by emotional factors, such perceived income risk, fear to lose the job and not by the direct experience of the virus. Socio-demographic control variables allows to understand how different group exhibited different likelihood to revise durable goods purchasing plans. In particular, high-income respondents were less likely to revise plans with respect to low-income respondent; elderly people were less likely to postpone plans but the perceived risk of unemployment played a central role in their decision to change purchasing plans, while gender differences persists but with lower level of significance women display higher precautionary behaviour. Taking into consideration different durable goods, such as house, cars and big-ticket items the effects of the variables taken into consideration are heterogeneous across the category.

Now that it has been explained the Covid-19 context and the contribution of this study, it will be conducted a literature review on the existing studies to understand which is the state of the art, and which kind of research has been already performed that can support the findings.

2 Literature review

Covid-19 pandemic has changed significantly consumer behaviour, influencing economic preferences, risk perceptions and time horizons. To better understand the possible effects of a crisis like Covid-19 on consumers' durable goods purchasing habits, several research have been conducted to identify the best theories that can describe the behavioural changes. In this sense, the following literature review aims to investigate how such phenomenon has reshaped individual preferences and choices over time. These effects are viewed in the lenses of the following theories: intertemporal choice, household saving and consumption behaviour, panic buying and herd mentality and lastly prospect theory.

2.1 Intertemporal Choice

In economics, Intertemporal choice examines how individuals make decisions regarding the trade-off between outcomes occurring at different points in time, particularly individuals' allocation of resources over extended periods such as the debate to spend money today or save it for future purchases. This concept can be of relevance in case of durable-goods as such purchases are typically costly, with a utility that can last for several years, and often the payment can be deferred due to liquidity constraints. Covid pandemic determines a general growing climate of uncertainty and stress, that shifted individual's time preferences towards immediacy, affecting the decision process of durable-goods purchases (Wu et al., 2022).

When taking intertemporal choices, people must evaluate each option by discounting future outcomes as a function of time delay. However, in real world contexts individuals take decisions without having a perfect knowledge of the temporal framing of payoffs. Sometimes, multiple time frames coexist, each characterized by a different probability to occur; additionally, sometimes both time interval and probabilities are unknown. Under these conditions, to make an

evaluation, individuals must learn them through experience or estimation, a situation called timing uncertainty. Dai et al. (2019) explore how under timing uncertainty people makes different choices depending on how they learn about uncertainty. Specifically, consumers can learn about uncertainty in 2 different ways, either from description, where delay probabilities are explicitly communicated, or from experience, trying and sampling what they gradually learn about delay probabilities. The experiment conducted by Dai et al. (2019) identifies a description-experience gap: people learning from experience tends to underweight rare, long delays and displays greater impatience while if the information is known from description individuals overweight rare, short delays. In the context of pandemic consequences, supply chain disruption, delivery and product availability uncertainty can be perfect real examples of timing uncertainty (Dai et al., 2019). Given that the pandemic creates unpredictability about delivery time, individuals have to rely on their own experience to assess uncertainty determining and increase in present-oriented preferences, reinforcing the desire to purchase products immediately.

Continuing the discussion on uncertainty, it can be defined as "*when a person confronts an inability to predict the future or an incompatibility between different cognitions, between cognitions and experiences, or between cognitions and behavior*" (Wu et al., 2022). Under normal circumstances, it is known that individuals with lower tolerance for uncertainty show preferences towards smaller-sooner gains with respect to larger-later ones. This is linked with the inability of people to predict the future but in the case of an external crisis, like the pandemic, the uncertainty is caused by an external situation, so uncertainty is not more only linked to a lack of information, but more an emotion that is tightly coupled with anxiety and fear. People that feel fear uses big discount rates to evaluate delayed outcomes, instead a feeling of anxiety increase the focus on future payoffs diminishing their perceived feasibility. Research made by Wu et al. (2022) found that the exogenous uncertainty created by COVID-19 pandemic increased preferences for smaller-sooner outcomes thus shifting individual time preferences towards a present orientation. Further, it has been documented a general rise in intertemporal impatience, especially among individuals with worse physical health

condition, who showed a higher tendency to prioritize immediate rewards (Zhang et al., 2023).

Other evidence supporting the connection between the outbreak of Covid-19 and the higher discount rates comes from a study made by Agrawal et al. (2023). Specifically, they find out that higher level of health and financial stress are significantly correlated with steeper discounting, less patience and increased impulsivity in decision-making. These patterns are aligned with the lower willingness to postpone gratifications. These findings provide a direct implication for durable-goods markets in which purchasing timing and willingness to wait are dependent on current stress and individual future orientation.

Complementing the existing literature, Hua & Mi (2025) explore others psychological dynamics that could affect the intertemporal choices of individuals. Their focus is on how perceived income decline could affect consumption and savings behaviours. They find out that people with low perceived income shows higher level of supply-shortage anxiety, which subsequently leads people to shortening their consumptions' horizons and adopting low-risk saving strategies. In particular, individuals that experienced higher difference of income before and after the outbreak were more likely to adopt short-time consumption behaviour. The authors further investigate the role of social trust in crisis decision-making. Contrary to their hypothesis, the perceived anxiety about supply shortages was not mitigated by higher level of social trust, indeed individuals that had more present-oriented consumption behaviour were the ones with higher level of social trust. Contrariwise, high income individuals exhibited lower level of social trust and less pronounced shifts in their consumption pattern (Hua & Mi, 2025).

To understand better how impatience can affect intertemporal choice, Rohde (2009) introduced the concept of decreasing relative impatience. Usually, under time-inconsistency there is a decreasing impatience, meaning that individuals discount less the difference in timing between two rewards as long as these rewards are far away in the future. Unlike this concept, which only takes into consideration one outcome, the decreasing relative impatience takes into consideration a sequence of

two outcomes, like an investment project with the cost as the first outcome and the reward as the second one. In this case an individual shows decreasing relative impatience if its willingness to pay an extra cost to receive the reward sooner shrinks as far as the reward is more distant in the future (Rohde, 2009). As suggested before, the pandemic increases impatience and present bias for small purchases, but maybe individuals could have showed more patience for durable goods purchases as the utility of these items is perceived for longer term and spread over several years. Hence, while present bias can be amplified during uncertain times, its strength likely varies across product purchasing categories.

Research made by Cornwall et al. (2018) enriches the findings by exploring gender differences in decision-making. They test if there are some differences in the way men and women evaluate trade-off between the frequency and the magnitude of the reward, despite it is widely demonstrated that females are less risk seeking than males when decisions are made from description. The results highlight that women prefer smaller but more frequent rewards, because of their higher preference towards immediate payoffs, while men show more tolerance to delay and outcome variability, preferring larger and less frequent rewards. This suggests that men are more interested in reward magnitude while women tend to focus more on reward frequency. The authors also observed that men take more time to think before deciding; conversely women are more reactive and decide faster (Cornwall et al., 2018). Applying these behavioural tendencies in the context of the covid pandemic, they may have important implications on how gender difference affects durable-goods purchasing behaviour. Female consumers, facing enhanced levels of uncertainty and stress due to the outbreak, may have preferred immediate purchasing of durable goods to benefit from their availability. Instead, male consumers, focused more on reward magnitude, may have proven greater willingness to postpone the purchase in anticipation of better quality or value.

In conclusion, these findings suggest that the pandemic heightened uncertainty, stress, and anxiety shifting consumers' behaviour towards present bias. The intensity of these emotional and psychological responses was different across

populations groups, influencing purchasing decisions in heterogeneous way and increasing consumers impatience towards purchasing behaviours.

2.2 Household Saving and Consumption Behaviour

Savings and consumptions represent two sides of the same decision, so understanding how the pandemic has affected the propensity to consume is linked to how it has influenced the propensity to save. Several studies in the literature and different theories try to investigate how and which factors affect households' savings behaviours. The most important theoretical frameworks are the Absolute Income Hypothesis postulated by Keynes in 1936, which assumes that as the present disposable income increases the current consumption increases but not proportionally; the Permanent Income Hypothesis postulated in 1957 by Friedman that introduces the concept of expected long-term average income or permanent income, on which individuals base their consumption, smoothing their spendings over the years, such that a short-term income variation doesn't change so much the consumption; similarly the Life-Cycle Hypothesis introduced by Modigliani and Brumberg in 1954 which assumes that individuals anticipate their needs in terms of consumption and savings and smooth the spending on that plan basis. In this framework savings depends on age: younger people tend to dissave and accumulate debt because their anticipate future income, middle-aged individuals pay debts and start saving money, and older people erode their accumulated wealth.

According to these theories income, wealth, rate of return, uncertainty, financial liberalization, foreign borrowing constraints, demography, fiscal policy, government expenditure are all variables that affect consumers saving capacity. Consumers erode their savings capacity during periods of low income and increase the savings during periods of high income; this underlines the positive correlation between income and savings. Inflationary conditions or high unemployment rate indicate high uncertainty, that pushes consumers to increase their savings in anticipation of dark times. The correlation of all these variables with savings capacity were analysed by Skoblar (2024) in a panel analysis across 26 countries in Europe between 2000 and 2021. The analysis displays the difference between the

savings increase motivations linked to the Global Financial Crises of 2008 and the increase of savings due to the Covid-19 pandemic. While in the first case precautionary saving raise due to the financial uncertainty, during the outbreak households reduced consumptions as a consequence of the lockdown and the movements restrictions which limited the access to goods and services. In some countries there were some policies that helped and sustained households' income; in this case savings were not precautionary but mainly "*forced savings*".

Similar distinction between the drivers of forced and precautionary savings was made by Borowski & Jaworski (2023) who analyse 16 European Countries. They find out that the severity of government restrictions and indicators of pandemic intensity, such as death rates, were the main drivers of forced savings. The results are quite intuitive, the more the pandemic has hit the country, the more severe were the restriction and this led to lower consumption and higher savings. Government support also has had a big impact; in fact, their models highlight that a fiscal easing of 1% in relation to GDP between 2019 and 2020 leads to an increase in forced savings of 0.80–0.91% of disposable income. Another key finding is that cross-country saving heterogeneity can be explained by behavioural factors like national level indicators of economy, obedience and perseverance. These cultural factors can be liked with the willingness to observe the government measures; the more polite are the citizens the more they follow the rules limiting their mobility and consumption determining an increase in their savings.

The magnitude of consumers' force saving was also influenced by income. Davenport et al. (2020) find that high-income households accumulated more forced savings with respect to poorer households, as their income losses were outweighed by a reduction in consumption. On the contrary, lower-income households recorded lower level of forced savings, and in some cases even greater indebtedness. Since their expenditures were already reduced to the essential, the income reduction caused by covid-19 forced them to use their existing saving or take on additional debt.

The study made by Skoblar (2024) investigates the role of consumer confidence and finds out that the lower the consumer confidence on future economic conditions the higher is their propensity to postpone consumption and increase precautionary savings. Another study made by Szustak et al. (2021) support this hypothesis. They used a multiple linear regression to analyse the determinants of households saving rates in Poland, Czech Republic, and Hungary. The results indicate that the pandemic influenced households' financial conditions through multiple channels, such as rise in unemployment and decrease in Consumer Confidence Index (CCI) leading to a reduction in consumption. Also in this case the decline of CCI was a key driver in precautionary savings behaviours, showing a negative correlation, so the lower the CCI the more the consumer is going to save. This effect was particularly evident in Poland where the households disposable income didn't decrease thanks to the fiscal policy, but families still increase their savings due to the uncertainty and lower confidence. This highlight how much was psychological and expectation drivers the main factors that reshaped consumer saving behaviours also in context where the households didn't experience high income losses.

In conclusion, the evidence suggests that Covid-19 pandemic introduces others determinant variables with respect to a normal economic crisis, affecting macro-variables like unemployment, inflation but also micro-psychological variables like consumer confidence and uncertainty that have shaped a unique consumer behaviour.

2.3 Panic buying and Herd mentality

Events such as natural disasters, healthcare crises and terrorist attacks trigger the survival psychology of individuals which may undergo behavioural changes (Loxton et al., 2020). These events bring a rare form of collective uncertainty that radically changes consumers behaviour and their decision-making process. In this context the emotional reaction of people often prevails over the rational and pragmatic feelings, leading to changes of discretionary purchasing habits inducing short-term behaviours like panic buying and herd mentality. Wang et al. (2022) have grouped together these behaviours into "abnormal buying behaviours" category,

one of the six categories of the pandemic related consumer behaviour responses which also include health-related, technology-related, information-related, leisure-related, and prosocial behaviours.

Panic buying is a typical behaviour observed before a large price increase or upstream shortage but also in anticipation, during or after a disaster or perceived catastrophe. Usually, after these extreme events, people buy different types of products to restore a normal life: products that meet basic physiological needs for survival, products to communicate and products to clean. The study conducted by Yuen et al. (2020) identify four key factors that lead people to buy an unusual large amount or an unusual, varied range of products during Coronavirus pandemic namely perception, fear of the unknown, coping behaviour and social psychology.

Individual perception and assessment of the outbreak are the key factors that spring forth panic buying; the two dimensions of perceived threat and perceived scarcity are the core drives. Susceptibility (probability to contract the disease) and severity (expected consequences) are the parameters used by individuals to assess the degree of riskiness of the pandemic. When both are high, according to the Health Belief Model, people to minimize risk and protect themselves act by stockpiling supplies such as masks, disinfectants and food. These stocks reduce the number of travels to stores serving also as a safety buffer in case of stockouts (Yuen et al., 2020). Perceived scarcity is closely related to the *"Reactance theory",* which explains that if individuals' behavioural freedom is threatened or restricted, they will experience psychological reactance. In this context, the fear that a product will become inaccessible is seen as a personal freedom restriction triggering a compensatory desire to buy it and regain autonomy. In uncertainty situation *"Anticipated regret"* could be another theory that explains how perceived scarcity is linked with panic buying. People anticipate the emotional regret of not buying something now that in the future could be no more available. During an outbreak, the perceived scarcity will make more intense the feeling of regret of not participating at the panic buying than the satisfaction derived from resisting the urge to purchase (Yuen et al., 2020).

Cervellati et al. (2022), analysing Italian consumers, prefer to describe the rush to accumulate stocks as *"Precautionary buying"* instead of Panic buying since the most affected goods were food and personal protection equipment, like masks and gloves. They believe that the rush to stockpile is more related to precautionary purposes, therefore a rational response to the disease outbreak rather than to irrational behaviours. The regression model carried out by Cervellati et al. (2022) highlights how socioeconomic and demographic variables influence precautionary buying during the pandemic. Variables such as age, marital status, income, and area of residence have a significant impact on the propensity to stockpile. Unmarried, and younger respondents were more incline to make precautionary purchases, maybe since they disponed of lower savings and income, and higher level of stress derived from a more drastic and limiting change in lifestyle habits, whereas older and wealthier respondents were less prone to precautionary buying thanks to financial stability. Furthermore, respondents living in big towns, considering the higher capillary supplies, displayed less precautionary buying behaviour with respect to people living in small towns.

Going back, the second parameter suggested by Yuen et al. (2020) is the fear of unknown. At the beginning of the pandemic, the new virus was not well known, and this lack of knowledge led people to imagine different future scenarios, fuelling the fear. Therefore, more than the outbreak of the pandemic, it was the fear that had changed people's purchasing behaviours. This view is supported by the "*risk-as-feeling theory"* (Loxton et al., 2020) proposing that emotional reaction to stressful events precedes cognitive and rational evaluations, leading individuals to accumulate products unreasonably. But it's interesting that this behaviour of stockpiling some essential product can become transmissible (Loxton et al., 2020). Essentially, a rapid increase in the demand of a product and the subsequent shortage triggered additional panic buying and further increasing the demand of other products.

Yuen et al. (2020) summarize panic buying as a compensatory consumption behaviour to restore a lost sense of control. Usually, humans have an innate desire to control, but an event such as a pandemic crisis reduces the perception of control

causing discontent. Taking into consideration the *"Compensatory control theory"* when the source of distress is not controllable, individuals try to exercise their power increasing the control over other areas. The act of purchasing tangible goods satisfies these criteria.

Herd mentality is a phenomenon where individuals align their thoughts or behaviours becoming a group; this can happen without the influence of an external authority, but it is driven by interactions between the agents (Loxton et al., 2020). In a crisis context, driven by fear and uncertainty, people start mimicking other people's consumption habits. This is determined by an information cascade: consumers inside the network observe others' decisions and believe that they have some sort of information privilege about what it is important to buy and stock to overcome the crisis, and they start buying the same products until the shelves become empty, which became a typical social self-fulfilling prophecy. Also Yuen et al. (2020) confirm that herd behaviour is triggered by social psychological factors, where individuals copy the actions and attitudes of others belonging to their social group. During crisis people are bombarded with news and updates on the crisis from the government and health associations. This is true especially now, in the era of social media, where it is difficult to distinguish between real and fake news, and the spread of information intensifies the feeling of urgency and drives collective actions.The constat stream of alarming news such as a photo of empty shelves, increases the perception of scarcity and urgency, often leading to misinformation and the diffusion of rumours, creating confusion and a rush to buy. Cervellati et al. (2022) highlight that this is particularly true in small communities, where stores are smaller and less supplied so more prone to stockouts with respect to large cities, where supply chains are more robust. So, the combination of human natural behaviour of conforming actions with other people actions, media influence, and perceived scarcity create the perfect environment for the arising of herd behaviour, where individuals stop thinking and pondering their actions being driven impulses of urgency and uncertainty.

Panic buying and herd mentality mainly influence purchasing decisions, leading us to make important considerations on how, in times of crisis, consumer behaviour

shifts from rational to emotionally and socially driven behaviour. Despite this behaviour is generally associated with everyday consumer goods, it can have an impact also on the durable goods market such as household appliances, cars and technological equipment pushing individuals to anticipate purchases for fear of future unavailability of these products.

2.4 Prospect Theory

In case of large and hard to reverse purchases some bias like loss aversion, regret and present bias can affect the decision process in addition to more rational models. To explain individual behaviour under uncertainty conditions Kahneman and Tversky in 1979 developed the Prospect theory. This theory was formulated to correct the shortcoming of Expected Utility Theory, in particular the fact that it does not explain the way in which framing can change individuals' decisions and it also fail in explaining why individuals are risk-taker in some situations and risk-averse in others. (Edwards, n.d.)

The original version of the Prospect Theory has some limitations. It can be applied only to gambles with maximum two non-zero outcomes. To overcome this problem, in 1992, Kahneman and Tversky published a new version called "Cumulative Prospect Theory", the version used in modern economics. Under this approach, outcomes are evaluated through a value function, an increasing function, and decision weights derived from a probability-weighting function (Barberis, 2013).

Kahneman & Tversky' (n.d.) have identified four elements of the prospect theory:
1. reference dependence
2. loss aversion
3. diminishing sensitivity
4. probability weighting.

First individuals evaluate outcomes as gains or losses relative to a reference point, leading to three different phenomena:

- Certainty effect: individuals tend to be more cautious when outcome is a certain gain, while they are more risk-seeking when outcomes involve certain losses. Thus, they attach greater value to outcomes that are certain than to merely probable ones
- Isolation effect: it happens when individuals must choose between prospects sharing some common components and they disregard the components that are common to all prospects. This will alter the framing of the prospects and the final choice made by the individual decision-maker.
- Reflection effect: when individuals face negative prospects their choices are a mirror image of their choices in case of positive prospects. In other words, decision making with losses is a reversed version of decision making with gains. (Edwards, n.d.)

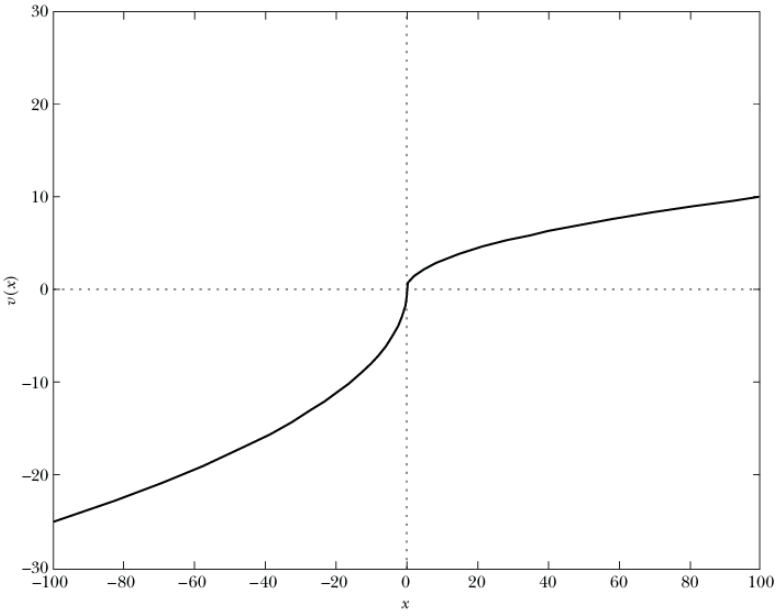

Figure 3 The Prospect Theory Value Function

Second, the value function is steeper for losses than gains, a phenomenon called "loss aversion". Individuals are generally more sensitive to losses, even small ones, than to gains of the equal value. Based on Figure 3 The Prospect Theory Value Function, Tversky & Kahneman (1992) third key hypothesis is the principle of "diminishing sensitivity". They demonstrate that the impact of a change in the outcome decreases as long as you move further away from your reference point.

For this reason, the value function is convex in the region of losses and concave for gains. The fourth finding is “probability weighting”. This effect highlights that individuals don’t evaluate the raw probabilities, but they rely on decision weights, thus the psychological impact of those probabilities (Barberis, 2013; Kahneman & Tversky’, 1979.).

Prospect Theory is relevant to the COVID-19 context because it helps understanding how an external shock impacts people’s risk preference. Indeed, citizens personal risk preference affects the preventive and precautionary actions conditioning the further spreading of the disease. Preventive and precautionary behaviours involve accepting some short-run costs (like wearing a mask, receiving vaccination, getting insurance or saving money) to avoid some future potential losses (like get infected).

Shinsuke Ikeda et al., 2023 conducted a Panel Analysis in Japan to estimate how COVID-19 modifies the risk-attitude of consumers in the loss-domain. They found out that the diffusion of the disease enhances diminishing sensitivity and both value end probability functions becomes monotonically stronger. The pandemic determines a dual effect on people psychology. First, they become less sensitive to losses, even big ones. Second, they become more worried about events with low probabilities but large impact, defined tail loss risks, and more relaxed about outcomes with lower losses but higher probabilities. In this sense, the value function becomes more curved, and people are less cautious especially considering large non-tail losses. From the study they also noticed some gender differences. Especially the male sample showed a weaker diminishing sensitivity for both value and probability functions than woman sample.

Another Panel Study conducted by Tsutsui & Tsutsui-Kimura (2022) analyses if risk preference, which is considered stable over the life of an individual, changed during the pandemic. Using data of five survey waves in Japan, between March and June 2020, they discovered that people has become more risk tolerant in the loss domain in both moderate and high risks. Interestingly, the risk preference steadily decreased across the waves, meaning that with the progression of the disease,

people became more risk tolerant. These results could be biased by an increase of financial risk, but the wave survey allow to rule out this hypothesis, indeed already the third wave recorded an increase in people's risk tolerance, while the economic situation declined just after the 4th of April, when there was the declaration of the emergency. Furthermore, a deterioration of the economic situation led to an increase in risk-adverse behaviours, which reinforces their conclusion. To solve this problem, they also put in the survey a question regarding the expected income in 2020. With this information, they would be able to divide people in low and high expected income, and both groups showed an increase of risk preference independently of their income.

Risk preferences could also be affected by other psychological factors associated to the pandemic, especially stress and fear. It is widely recognised that COVID-19 has led to psychological distress and fear across the population (Brooks et al., 2020). The primary stressors were fear of infection, duration of quarantine, frustration and boredom, inadequate information, inadequate supply and social isolation affecting the mental wellbeing of individuals. Since individuals experience fear and stress at different magnitudes, Tsutsui & Tsutsui-Kimura (2022) compared groups with different Expected symptoms, Expected probability and Extent of fear. They observed that that the group with higher expected symptom, higher expected probability and extend of fear had a higher propensity toward risk tolerance. These findings led to the conclusion that the increased stress linked to Covid-19 could have impacted the decline in the risk aversion.

Now that we have understood that risk preferences are not static, but they are context-dependent these insights can be extended in the case of durable goods consumption. If the evidence shows that some individuals made riskiest spending decision during the pandemic, the prospect theory and in particular the shift in tolerance could support and explain these findings.

The next fundamental principle of prospect theory is loss aversion. During the first lockdown an experiment was conducted in the UK by Sanders et al. (2021); they tried to understand how different framings could affect the adoption of public health

guidelines. They hypothesised that a framed message following specific strategical guidelines, would result in a certain number of lives saved (gain framed) by easing the lockdown, against a message failing to meet the guideline which would result in a loss of lives (loss framed). Unexpectedly, the results didn't show a significant difference between the two framing options. The authors suggested that the reference point is not fixed, but it changes with the circumstances. People update it gradually, so, as long as the situation kept changing the individuals changed the situation that they considered to be "baseline". Another explanation could be the great emphasis and importance given by media to the pandemic, making citizen aware of the possible benefits and risk with or without the lockdown measures. Hameleers (2021) integrating the *Appraisal theory* offers another point of view suggesting that people evaluation criteria were affected by emotions. Indeed, emotion doesn't come directly from events but from the cognitive valuation of people of these events, in other words what we feel depends on how we interpret a situation. Gain framing usually evokes hope while loss framing tends to induce anger, fear, frustration and helplessness. So, the Appraisal theory enriches Prospect theory showing that the emotion generated by the framing con influence the way in which people evaluate the risks, so it's not only the logical content of the message to be important, but also how it will be emotionally interpreted by people.

These finding are relevant for the purpose of this thesis as Prospect theory shows some limitation in crisis contexts. Especially, this affects the way in which consumers evaluate risks during the decision-making process to buy a durable good leading to a divergence with respect to traditional consumer habits.

This evidence is highly pertinent to the analysis of consumer behaviour during the pandemic as it demonstrates how framing effects can influence decision-making under uncertainty. In markets for durable goods, consumers exposed to predominantly loss-framed information (e.g., news about job losses or economic collapse) may be more prone to risk-seeking behaviours such as impulsive purchases, while gain-framed communication could encourage more conservative, risk-averse choices.

2.5 Uncertainty and Durable-goods consumption

Uncertainty, as stated before, can be a state of lack of knowledge or certainty about a future outcome. A study conducted by Knotek & Khan (n.d.) analyses how aggregate uncertainty shocks affect household behaviour, measuring uncertainty derived from the stock market and reference to uncertainty in the newspaper. Their findings differ slightly from the theory, which predicts an immediate drop in purchases after an uncertainty shock, while in practice the drop in households spending is modest and may only become visible after a considerable time has gone by. Uncertainty linked with future wealth and household income makes consumers very cautious before taking an irreversible purchase. Buy a new house or a car is not a quickly reversible, costless decision because if consumers want to undo these types of purchases, they must face losses related to value drop, agency cost, closing commissions. So, households enter in a *"wait-and-see"* mode, stopping spendings of expensive purchases like durables and housing, while nondurables and services are much less affected. Then as uncertainty diminishes over time, spendings recovery very fast (Knotek & Khan, n.d.).

Durables goods purchasing can also be influenced by other types of uncertainty like employment uncertainty. The first to introduce market labour risk into models of consumer decision-making for durable goods was Dunn (1998), who developed a framework that explains spending decisions taking into consideration also income uncertainty. In her model, consumers show a propension to postpone purchase under increasing unemployment risk and simultaneously raise precautionary savings diminishing their spending on nondurable goods. This framework also emphasizes heterogeneity in behavioural responses: wealthier people, who are typically older individuals because they have accumulated wealth during their careers, are less sensitive to income and unemployment uncertainty. To prove the validity of the model Dunn used data from US households survey finding that households facing higher job insecurity were significantly less likely to have bought a house or a car. Furthermore, it has been observed that the effect of unemployment risk is not linear, in fact consumers who buy a house or a car even if they perceive a high unemployment risk carry with them greater liquid assets than consumers who

perceive a lower unemployment risk and have not purchased a car. (Dunn, 1998). This heterogeneity could be an important factor in the analysis of this thesis, suggesting that age and financial constraints could amplify the behavioural effects of the Covid-19 crisis.

Building on these foundations, Harmenberg & Öberg (2021) crated a quantitative heterogeneous agent-model to study the dynamics of durable and non-durable goods under time-varying unemployment risk. They found out that, the fall of durable goods consumption begin with the increase in perceived unemployment risk and so a higher level of future income uncertainty, being an ex-ante effect with respect to the real income loss. Instead, the aggregate spending on non-durable goods decreases when the income losses materialized, due to the dismissal, being an ex-post effect of the real decrease in income. These effects are amplified for households with lower level of liquid assets. The two distinct effects between the anticipation of job-loss and the actual income decline could explain why during the first wave of covid-19 there a substantial decline in durable good demand despite the government fiscal income support was. This could also explain cross-country differences, due to different policies, structure of labour market and employee protection that modify the perceived unemployment risk.

3 Theoretical framework and methodology

This study tries to answer the following research question: *How and to what extent Covid-19 crisis changed consumers purchases behaviour of durable goods?* To answer this question this research is based on data collected from 7501 individuals across five different countries (Italy, Germany, France, Spain, Netherlands) in June 2020 during the initial covid-19 wave. The large and diverse dataset allow to test the main drivers of the behavioural changes across different-socio-demographic groups ensuring robustness, reliability and statistically significance of the results. Given the size and heterogeneity of the sample it has been possible to carry out multiple regression analysis to nuance the understanding of the crisis's impact on durable goods purchasing habits.

The following section first introduces the hypotheses that will be tested explaining the theory behind and what is the expected outcome. Secondly the independent, dependent and control variables used to prove the hypothesis are introduced and discussed in detail.

3.1 Research hypothesis

At the beginning of 2020 households that were planning to adjust their stock of durable goods, like buying a new house, replacing the old car or buying a new household appliance were forced to reevaluate their choices due to the shock triggered by the pandemic. As state by the literature the choice to purchase a durable good is an intertemporal decision so households must compare the today cost with the discounted future utility under uncertainty (Rohde, 2009). The pandemic shocks increased uncertainty, unemployment risk which had increased the discount rates and pushed people into a "wait-and-see" mode, particularly for costly and difficult to reverse purchases, such as durable goods (Dunn,1998; Knotek & Khan, n.d.).The outbreak of covid-19 introduced multiple and overlapping shocks that will be discussed one by one.

There is evidence that the uncertainty and stress associated with covid increases impatience and shifts consumers focus on immediate needs rather than long-term view (Zhang et al., 2023). However, for large and irreversible purchases, the liquidity concerns and the raise of perceived risks shift preference toward a cautious approach. This tendency to postpone purchases can relate to the need to preserve financial flexibility since people is worried about potential income losses due to health-related problems (Knotek & Khan, n.d.). Direct experience of the illness, with all the connected effects, could have amplified these effects increasing the perceived risk of a downside consequence. This personal health shock could lead consumers to overweight rare but high impact risks overreacting to the potential long term impacts of the crisis on their health and income, making individuals more cautious in their purchasing decisions. This rationale led to the formulation of the first Hypothesis:

H1: *Individuals infected or with direct experience of the disease (a person close to them) show a greater propensity to postpone purchasing plans than uninfected individuals.*

The first hypothesis analyses the direct effect of covid on consumer behaviour, but as the literature suggests, the main drivers could be the emotional and psychological response to the uncertainty created by the crisis, rather than simply the healthy risk of infection. Previous research on financial and health shocks consistently highlights that fear and uncertainty are powerful drivers of consumers behavioural changes. For instance, it is demonstrated that fear and anxiety are responses of exogenous uncertainty created by the shocks, and individuals that feel these emotions tend to be short-term focused, deferring long-term commitments, like the purchase of durable goods (Wu et al., 2022). Fear is a recurring element that connects the crisis with changes in consumer behaviour. Fear of the unknown, fear of scarcity, fear of loss of control are all emotional reactions to crisis leading people to follow irrational behaviours like panic buying and herd mentality (Loxton et al., 2020). Some studies analyse the role of fear in consumer decision making process applying Prospect theory. Hameleers (2021) shows how loss-framed messages create strong emotional reactions, in particular fear and helplessness, and these

feelings increase risk aversion. During the covid-19 pandemic, people was exposed by media to a constant flow of "loss-framed" news, like economic recession, lockdown, infection risk, job insecurity, so following the previous mechanism consumers might feel higher level of fear leading to more conservative choices and postponements of durable goods purchases. Dunn (1998) and Knotek & Khan (n.d.) show how factors, like income instability and perceived risk of unemployment drive people to adopt a "wait-and-see" approach postponing big purchases to preserve liquidity.

Following this reasoning, being infected may have impacted less than feeling afraid of infection, job loss, or income reduction. Thus, if an individual was affected by covid or had a close contact to someone infected, the resulting change in their purchasing plan may have been influenced not only by the direct effects of being infected but also by a broader emotional response to the changes in the macroeconomic context due to the crisis. To isolate these different components, two additional variables have been introduced: *fear_losing_job* and *fear_fiancial_covid*. Their inclusion in the model allows to separate the direct health-related effect of the infection from the indirect emotional response associated with fear and uncertainty leading us to the second hypothesis:

H2. *Changes in purchasing plans are primarily driven by the emotional responses arising from the crisis context and not by direct personal exposure to the virus*

For a more comprehensive view of how the pandemic has reshaped consumer behaviour it will be analysed the heterogeneity of the reasons behind postponement. Given the different levels of commitment, financial implications and urgency associated with each type of durable good the factors that influence the decision to postpone the purchase may vary across the types of durable goods. This led to the third hypothesis:

H3. *The main drivers of postponement differ across housing, cars, and other big-ticket items, both in motivation and in size effect.*

To make the hypothesis more feasible to test, it has been decomposed into 3 different category-specific hypotheses. The first category of durable goods is house. The decision to purchase a house involve high financial commitment, with a typical large upfront commitment and a mortgage with long term consequences, but also high transaction costs that include agency costs. All these factors make this decision particularly sensitive to uncertainty about future income and financial constraints. The irreversibility and the magnitude of the investment, together with the economic instability and uncertainty created by the covid crisis may led people to be more cautious before taking the decision to buy a house. As a result:

***H3A**. Fear of losing job will be the primary driver of postponing house purchases*

The second durable goods that is going to be analyse is car purchase. This type of good is more flexible and with a shorter commitment but transaction costs are still high, and the new the car loose value immediately after the purchase. The decision to buy a car is also linked to the mobility needs and the immediate utility can be compromised if an external event, like the Covid restrictions, reduces the necessity to travel. J. Kikuchi et al. (2023) find out that fear of infection led consumers, particularly older individuals, to reduce consumption and mobility to avoid the probability of contract the virus. Therefore, while unemployment risk still plays a role, the financial fear due to the pandemic could reduce drastically the utility of a car purchases.

***H3B**. Covid related financial uncertainty will be the primary factor influencing the postponement of car purchases.*

Big ticket goods like appliances, electronics and furniture are much more flexible and cheaper in terms of commitment. As mentioned above, increased uncertainty and fear lead people to prefer financial flexibility postponing discretionary spending to increase precautionary savings (Borowski & Jaworski, 2023; Skoblar, 2024). On the other hand, people spend more time at home due to remote work, lockdown and quarantine increasing the utility of home-related products. As discuss by Dai et al. (2019) and Zhang et al. (2023) uncertainty shifts preference towards immediate rewards increasing emphasis on products that offer immediate utility.

Skoblar (2024) suggests that during crisis periods people are more willing to buy goods that help to mitigate discomfort at home. Also Loxton et al. (2020) advise that individuals might show a compensatory consumption behaviour, buying things only to restore a sense of control or improve immediately well-being. Thus, igher levels of fear could increase perceived scarcity of product leading to an increase of urgency to buy the product. This leads to an opposite formulation with respect to the previous one:

***H3C**. Individuals who were directly exposed to COVID-19 are less likely to postpone the purchase of big-ticket items.*

3.2 Independent variables

The main independent variable of this study is *covid exposure*, a dummy variable that captures the fact that the respondent was infected or had a close relative or friend who was infected. The outbreak is treated like an exogenous factor, an external and unpredictable event that influenced the consumer's behaviour and their decision-making process. In this context, the pandemic can be treated like a quasi-natural experiment, where the treatment group is the group of respondents directly or indirectly exposed to the virus and the control group is composed by respondents who were not infected. However, the spread of the disease cannot be taken as purely random as some jobs, like doctors and nurse, and different social behaviours affect the probability to be infected. Despite this, following the approach of Andersen et al. (2020) for the purpose of this research the diffusion of the pandemic will be treated as if it were a random assignment, affecting households' behaviour irrespective of their job, age and irrespective of the policies applied by the different countries of the interviewees.

covid	Freq.	Percent	Cum.
No	6,745	91.04	91.04
Yes_expose_to_covid	664	8.96	100.00
Total	7,409	100.00	

Table 1 Descriptive statistics for COVID-19 exposure variable

To farther investigate which are the drivers of the purchasing plans changes, two other variables have been incorporated that capture the psychological and emotional effect of covid crisis namely the "*fear_losign_job*" and "*fear_financial_covid*". The purpose of these two variables is to separate the direct effect to have been infected with the overall uncertainty created by the crisis.

How worried are you about losing your job in the near future?	Freq.	Percent	Cum.
Very worried	806	10.75	10.75
Somewhat worried	1,635	21.80	32.54
Not worried	2,056	27.41	59.95
I am already unemployed	381	5.08	65.03
I am not working and I am not looking f	2,467	32.89	97.92
I prefer not to answer	156	2.08	100.00
Total	7,501	100.00	

Table 2 Respondents' levels of fear of job loss

The variable *fear_losign_job* measures the respondents perceived risk of unemployment, reflecting their expectations regarding future job stability. The literature suggests that employment uncertainty represents one of the main factors that affects decision-making process of consumers under periods of crisis. Following the reasoning that this variable can affect directly perceived financial security, saving and spending behaviour, it has been decided to add it in our model. It is derived from question q22 of the survey *"How worried are you about losing your job in the near future?"* which included six categorical responses as can be seen in the table above (Table 2). To make the variable suitable for the regression analysis the responses were grouped into an ordinal variable with four levels that retained significant behavioural distinctions. This transformation divide respondent into four groups:

- 0 – No fear of losing job: it includes respondents that declared not being worried or not being an active participant in the labour market, maybe because retired or not looking for a job.
- 1 – Lower fear of losing job: considering respondents that chose the option "somewhat worried"

- 2 – Middle fear of losing job: referred to respondents that have declared to be very worried about possible unemployment.
- 3 – High fear of losing job: it includes respondents that were already unemployed, and so they were in the worst condition.

Respondents who preferred not to answer were excluded from the construction of the variable.

fear_losing_job	Freq.	Percent	Cum.
No fear of losing job	4,523	61.58	61.58
Low fear of losing job	1,635	22.26	83.84
Middle fear of losing job	806	10.97	94.81
High fear of losing job	381	5.19	100.00
Total	7,345	100.00	

Table 3 Descriptive statistics for the variable fear_losing_job

The decision to construct a four-level ordinal variable instead of a binary one, which could have distinguished only people with and without fear, is driven by both theoretical and empirical reason. From the theoretical point of view, fear is not a dichotomous emotion but rather it is a psychological response to perceived uncertainty because individuals could feal the emotion with different intensity in front of the same shock. Transforming all the levels of concern into a simply dummy variable would have neglected the fact that individuals with low level of fear may adjust their purchasing plans in a different way with respect to those that have experienced high perceived unemployment risk. From an empirical standpoint the classification was possible given the large sample size that avoided the loss of statistical power.

The second psychological variable is *fear_financial_covid* which captures respondent's perceived financial risk caused by the pandemic. It is derived from the question q50 of the survey: "*How concerned are you about the effects that the coronavirus might have for the financial situation of your household?"*. It is measured on an ordinal scale from 0 to 10, where zero indicates no concern and 10 extreme concerns (see Table 4 for the distribution). The choice to measure the

variable with a unidimensional 0–10 scale allowed a better appraisal of the psychological intensity of the response to the crisis. This variable is complementary to the previous one, but it expands the focus from the employment specific risk to a broader idea of household financial uncertainty, including personal forecast on expected inflation, interest rate and the duration/severity of the crisis. Ideally, in this our model the *fear_fiancial_covid* works as a bridge between the pandemic's exogenous shock and the individual decision making including both psychological and economic aspect.

fear_financial_covid	Freq.	Percent	Cum.
0	287	3.93	3.93
1	484	6.63	10.57
2	473	6.48	17.05
3	409	5.61	22.65
4	356	4.88	27.53
5	1,071	14.68	42.21
6	932	12.77	54.98
7	1,028	14.09	69.07
8	963	13.20	82.27
9	595	8.15	90.42
10	699	9.58	100.00
Total	7,297	100.00	

Table 4 Distribution of respondents by level of concern for the financial impact of COVID-19

The integration of these two variables into the empirical model allows to isolate the three main drivers of change in consumer behaviour. The first driver is *covid* variable, capturing the behavioural adjustments induced by direct or indirect exposure to the infection. Second, *fear_losing_job* variable, related to the perceived risk of unemployment and suffering an income reduction, it links the changes in purchasing plans of durable goods due to unemployment uncertainty. The third driver is *fear_of_covid* variable, which captures the impact of uncertainty due to Covid-19 crisis, not only like as fear of infection, but also as a broader sense of uncertainty regarding economic future.

This differentiation allows to understand whether variations in planned purchases in time of a general crisis are mainly determined by the objective stimulus of the external shock, in this case the covid-19 exposure, or by the subjective

psychological and emotional response to the crisis which drives the perceptions of risk and uncertainty.

3.3 Dependent variable

Purchase timing of durable goods is an intertemporal choice, and individuals have to evaluate today's outlay against the discounted stream of future utility of the goods. In this context, the survey allows to further investigate if the pandemic shock led respondents to revise their purchases of durable goods that were intended before covid-19. Previously the respondents had to answer to the question "*Before COVID-19 happened, were you planning to make a major purchase in the next 12 months? By this we mean the purchase of a new home, vehicle, or other big-ticket item (fridge, TV, large piece of furniture, etc.)".* Of the 7,501 respondents, only 2,053 said yes, that they were planning to purchase something in the next 12 months, and they will constitute the sample of our research. Additionally, respondents had to answer question q44, on which has been build the dependent variable of this thesis: *"Now that COVID-19 crisis happened, did you change your plans?".*

The dependent variable, called *plans_changed,* indicates whether the people interviewed have changed their purchasing plans compared to what they had planned before the rising of Covid-19. The difference in the number of respondents that declare to have plans and the total number of observations of the variable *pans_changed* is related to the fact that 9 respondents chose the option "I prefer not to answer" so they have been excluded.

plans_changed	Freq.	Percent	Cum.
No	691	33.66	33.66
Yes	1,362	66.34	100.00
Total	2,053	100.00	

Table 5 Descriptive statistics for the variable plans_changed

The question q44new was a multiple-choice question, where respondent could also indicate the reason for which they changed plans. So, the variable *plans_changed*

is equal to zero when the respondents select the choice "*No, the plans have not changed"* and it is equal to one when respondent indicate one of the other choices indicating the motivation of the change. It has been decided to make the variable binary to simplify the analysis permitting to use linear regression, allowing category-specific comparability.

To preserve information about the behavioural granularity of motivation, for each stated reason for changing plans it has been created a separate binary variable. As in the multiple-choice question only one option could be ticked the reason result to be mutually exclusive allowing to further investigate which are the main reasons and how socio-economic factors influence the choice of the reason. 28 respondents chose the option *"I don't know"* referring to the fact that they don't know the reason of why they changed plans, so given the fact that this option doesn't give any information it has been decided to eliminate this option from the study.

motivation	Freq.	Percent	Cum.
plans increased	57	4.27	4.27
plans postponed	344	25.77	30.04
save money	200	14.98	45.02
uncertain employment	171	12.81	57.83
cannot afford due to covid	151	11.31	69.14
other purchase	134	10.04	79.18
unrelated to covid crisis	51	3.82	83.00
pending	227	17.00	100.00
Total	1,335	100.00	

Table 6 Distribution of respondents by motivation for changing purchasing plans

To analyse the heterogeneity of behaviours by category of durable goods, the question used was: *"Before COVID-19 happened, which of the following did you plan to purchase in the next 12 months?"*. This was a multiple-choice question, and respondents could select one or more options between house, vehicle and Big-ticket item (like appliances, electronics or a large piece of furniture, etc.). Since the question wasn't mutually exclusive, it has been constructed a priority hierarchy to avoid double counting. It was decided to prioritize the choice with the greatest financial impact, irreversibility, and compliance costs, because it was believed that

when a consumer must reevaluate their plans, they will first consider the most significant purchase. Specifically, Home ≻ Vehicle ≻ Big-ticket item. Thus, if a respondent selected "house" and "vehicle," the observation is classified as house; if "vehicle" and "big-ticket item" were selected, it is classified as vehicle. This choice facilitates clear interpretation of treatment effect by good type and allows to distort the weight of the independent variables in the analysis.

good_type	Freq.	Percent	Cum.
House	476	24.77	24.77
Vehicle	814	42.35	67.12
Big-ticket item	632	32.88	100.00
Total	1,922	100.00	

Table 7 Distribution of intended durable purchases by Good type

3.4 Control variables

In this study, to account for the potential heterogeneity in the factors that could influence purchasing behaviour during the pandemic, several control variables have been introduced. In particular, five variables were considered based on the existing literature and their potential influence on consumer behaviour: gender, age, income, education and country. Controlling for these factors is useful for two main reasons. First, running regression model is easy to incur into omitted-variables bias and control variables allows to mitigate this risk. They allow to consider differences in risk tolerance, liquidity constraints, information processing, and institutional context that otherwise could wrongly into the coefficient of the main regressors. On the other hand, it enhances comparability across respondents and country, allowing the estimated effect to the independent variables to reflect the real contribution to a change of the dependent variable, in this case the change in durable good purchasing plans.

The first control variable is *gender*. There is evidence that men and women exhibit different consumption behaviour, and the event of a crisis could further highlight these differences. Men tend to be less risk-averse than women, and in periods of crisis this difference in risk tolerance might increase leading to different purchasing

behaviour. Thus, it might be more likely that a woman decides to delay purchases in uncertainty times to prioritize financial stability (Cornwall et al., 2018). Also, women are usually more sensitive to emotional aspects and so could have perceived higher fear of the infection leading to more significant change in purchasing (Loxton et al., 2020).

gender	Freq.	Percent	Cum.
Male	3,669	48.95	48.95
Female	3,826	51.05	100.00
Total	7,495	100.00	

Table 8 Distribution of respondents by gender

Another critical demographic variable is *age* because it is usually linked with income stability, financial security and life stages. Younger individuals might have lower income, less financial security and more precarious contracts which lead to a more uncertain situation. On the other hand, older individuals had more time to accumulate savings, their usually have more senior positions at work which ensures greater peace of mind, leading older individuals to be more resilient in time of future income uncertainty. Accordingly younger consumers will be more likely to postpone purchases of durable goods due to high income uncertainty and stronger financial constraints while older consumers will be less impacted by the crisis (Dunn, 1998; Harmenberg & Öberg, 2021).

age	Freq.	Percent	Cum.
18-34	1,788	23.84	23.84
35-54	2,603	34.70	58.54
55+	3,110	41.46	100.00
Total	7,501	100.00	

Table 9 Distribution of respondents by age group

For the third control variable it has been choose individuals *income* as it plays a significant role in the decision-making process of durable goods since these types of purchases require a significant financial commitment and depend on

affordability, liquidity and access to credit. Lower income individuals have higher financial constraints and low flexibility that makes them more willing to postpone big purchases when future uncertainty increase. Furthermore, literature suggest that lower income individuals are more prone to increase their precautionary savings in response to economic uncertainty leading to the postponement of durable good purchases(Davenport et al., 2020.). By controlling for income, it was possible to separate between the impact of financial constraints and the effects of uncertainty on the likelihood of changes to the purchasing plan, ensuring that the coefficients on the main regressors are not confounded by income-related differences in purchase postponement.

income	Freq.	Percent	Cum.
Low-income	2,440	36.48	36.48
Middle-income	2,639	39.46	75.94
High-income	1,609	24.06	100.00
Total	6,688	100.00	

Table 10 Distribution of respondents by income

The last control variable to be included is *country* to net out cross-national difference. The sample is balanced across countries to limit composition bias and ensuring that differences are not linked with sample size. Although all five countries belong to the European Union and share the same currency there are important cultural and institutional differences like social norms, access to credit, and consumer-protection regimes. Moreover, baseline saving behaviour and financial vulnerability differ across European countries and it is possible to expect that countries were income security is higher, the purchasing plans could have change less. Country Fixed Effect assume even greater importance during the pandemic because policy capacity, health-system organization, difference in intensity and precautionary measures or fiscal support policies could have played an important role on how consumer react to the crisis.

country	Freq.	Percent	Cum.
France	1,500	20.00	20.00
Germany	1,500	20.00	39.99
Italy	1,500	20.00	59.99
Netherlands	1,500	20.00	79.99
Spain	1,501	20.01	100.00
Total	7,501	100.00	

Table 11 Distribution of respondents by country

3.5 Methodological approach

This section explores the methodological approach adopted in this empirical study. The objective of the modelling approach is to identify how the pandemic affected consumer durable goods purchasing behaviour, isolating the effect of the direct exposure to the virus, the effect of perceived unemployment risk, and the effect of financial uncertainty while taking into consideration also socio-demographic variable and country fixed effects. The data was elaborated using the software STATA.

Despite the structure of the data and the binary nature of the dependent variable it has been preferred a linear regression model (OLS) over nonlinear models (logit/probit) because OLS allows a better interpretability thanks to the fact that coefficients can be directly interpreted as marginal effects on the probability of changing plans, making it easier to compare different models.

Given the heterogeneity in respondent demographic and different nationality there was high probability to incur into heteroskedasticity problems. Heteroskedasticity is the condition in which the variance of errors in a statistical model is not constant across all levels of the independent variables, it means that the dispersion of errors varies depending on the values of the explanatory variables. This problem generates incorrect values of standard error weakening the statistical inference and compromising the significance of the hypothesis test. To account for this potential issue all regressions were estimated using heteroskedasticity-robust standard errors using the "vce(robust)" option. Another issue could have been the potential

multicollinearity among regressors. Thus, to avoid this problem it has been conducted a Variance Inflation Factor (VIF) on the main regression model, and all values of VIF were very low, ranging between 1.02 and 1.84. These values are below the conventional threshold (typically 5) meaning that all the variables capture different and distinct effects.

Another central component of the empirical design involves the correct construction of the variables. As the survey was already constructed, some variables derive from multiple choices questions, other with an ordinal scale, other are simply dummy variables. As explained in the previous chapters each variable was modelled to retain its full informational content.

Taking all these considerations into account, the general regression model used in this study is the following:

$$Y_i = \alpha + \beta_1 Covid_i + \beta_2 fear\_financial\_covid_i + \beta_3 fear\_losing\_job_i + \beta_4 gender_i + \beta_5 age_i + \beta_6 income_i + \beta_7 education_i + \delta c + \varepsilon_i$$

where Y_i is the dummy variable that indicates if the respondent i change its purchasing plans, δc represents the country fixed effects, ε_i is an idiosyncratic error term.

Overall, the model applied in this thesis provides a robust foundation to disentangle all the effects of the socio-demographic variables from the main independent variables, and to measure how the direct exposure to the Covid-19 virus and the individual perception of uncertainty and risk reshaped consumer purchasing behaviour of durable goods.

4 Empirical findings

This chapter presents the empirical evidence on how Covid-19 crisis has reshaped consumers' durable goods purchasing behaviour. The analysis aims to explain how the dependent variable *plans_changed* is influenced by three key factors: exposure to *covid*, *fear_losing_job* and *fear_financial_covid*. Starting from Chapter 4.2, all regression models will include country fixed effects to control for systematic differences between countries. However, for clarity and to maintain focus on the regressors of interest, fixed effects will not be shown in the graphs, even though they are included in all regression models.

4.1 Covid-19 like an exogenous factor

The first step of the empirical analysis is to investigate if consumers that had a direct or indirect experience of Covid-19 disease have displayed a different consumption pattern. Following the literature the pandemic is treated as an exogenous factor, so consumers behaviour is affected by Covid-19 independently of consumer characteristics, like in a quasi-natural experiment. (Andersen et al., 2020) To explore this difference, it has been made a cross-tabulation table between Covid-19 exposure and changes in purchasing plans and then, with a Pearson chi-square test, it has been assessed the dependency of these two variables.

Key

frequency
cell percentage

	plans_changed		
covid	No	Yes	Total
No	**613** **35.33**	**1,122** **64.67**	**1,735** **100.00**
Yes_expose_to_covid	**74** **24.10**	**233** **75.90**	**307** **100.00**
Total	**687** **33.64**	**1,355** **66.36**	**2,042** **100.00**

Pearson chi2(1) = **14.7278** Pr = **0.000**

Table 12 Contingency table for COVID-19 exposure and purchase plan changes

The chi-square test ($\chi^2(1) = 14.72$, $p < 0.001$) confirm that the association between having experienced the virus and the decision to change plans is statistically significant. 65% of respondents that hadn't experienced a direct impact of the infection modified their purchasing plans, whereas the percentage rises to 76% among respondents that were infected or a person close to them was infected. So, we can conclude that being directly exposed to Covid significantly increased the probability of revising purchasing plans.

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
covid	0,11227	0,02699	0,000	0,05935	0,16520
_cons	0,64669	0,01148	0,000	0,62417	0,66920

Number of obs	2042
R-squared	0,0072

Table 13 Linear regression results for COVID-19 exposure and purchase plan modification

The results of regression analysis further validate this relationship. The coefficient of the variable Covid is 0.112 and the p-value<0.001, meaning that consumers directly affected by Covid were on average 11 percentage point more likely to modify the purchasing intentions with respect to consumers that didn't experience directly Covid. Despite the model confirms that the effect is statistically significant, on the other hand, the R^2 value (0.007) point out that Covid variable explains only a small portion of the variation in the changes of purchasing plans. Nonetheless, this is a typical result while working with behavioural models, because decisions are complex and they are influenced by psychological, economic and cultural factors.

These findings are coherent with the literature review of intertemporal choice and uncertainty models. Direct Covid-19 exposure plausibly increases perceived health risk amplifying uncertainty, leading consumers to adopt a "wait-and-see" approach. Also perceived health related uncertainty brings individuals to save more for precautionary purposes, increasing the willingness of individuals to postpone purchases, in particular for expensive and irreversible expenditures like cars, house and big-ticket items (Dunn, 1998; Knotek & Khan, n.d.). Furthermore, according

to Wu et al. (2022) and Zhang et al. (2023) external shocks bring exogenous uncertainty and stress shifting people into a more present-oriented view, increasing impulsivity. The dual effect of financial prudence and emotional immediacy may explain why Covid exposure have altered consumer behaviour and their purchasing plans, making them revaluate long term commitment preferring immediate reward.

In a multi-country survey individuals may differ not only by personal traits but also by country specific. Especially during the pandemic crisis, the preventive measures implemented like lockdown and social distancing, together with cultural norms, media narrative and the pre-existing macro differences, could have affected individuals purchasing behaviour. As is not possible to include all these national variables in the model, to avoid this bias it has been taken into consideration the Country Fixed Effects introducing the *country* variable in the model granting to each nation its own intercept.

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
covid	0,08796	0,02629	0,001	0,03640	0,13951
Germany	0,01164	0,03703	0,753	-0,06098	0,08425
Italy	0,19287	0,03137	0,000	0,13135	0,25439
Netherlands	-0,09051	0,03628	0,013	-0,16165	-0,01937
Spain	0,25180	0,02966	0,000	0,19364	0,30996
_cons	0,55835	0,02479	0,000	0,50974	0,60697

Number of obs	2051
R-squared	0,0832

Table 14 Linear regression output controlling for national heterogeneity

As expected, the coefficient of *covid* variable decrease as part of the baseline association is absorbed by country differences. Some countries like Italy and Spain have a higher baseline propensity to change plans while Netherland have lower baseline levels showing that the place of living explains a large portion of the difference in consumer behaviours. The coefficient of *covid* exposure declines from 11.2 to 8.8 percentage points, but it remains statistically significant (p-value < 0.05), indicating that some of the baseline correlation was due to cross-country differences. Overall, these results indicate that place of residence explains a

significant share of the underlying differences, but individual exposure to COVID still exerts an independent effect on the decision to revise durable goods plans.

In conclusion, the result indicate that direct exposure to COVID-19 has acted as an exogenous shock capable of changing consumers' purchasing behaviour. The statistical evidence supports the hypothesis *H1* stating that individuals infected or with direct experience of the disease (a person close to them) show a greater propensity to postpone purchasing plans than uninfected individuals.

4.2 Control variables integration

The first control variable to be introduced is *gender*. As it can be seen in the graph below, both covid and gender significantly affect the probability to change purchasing plans. In particular, being a woman raises the likelihood to revise purchasing plans by 6.4% with (p-value< 0.05).

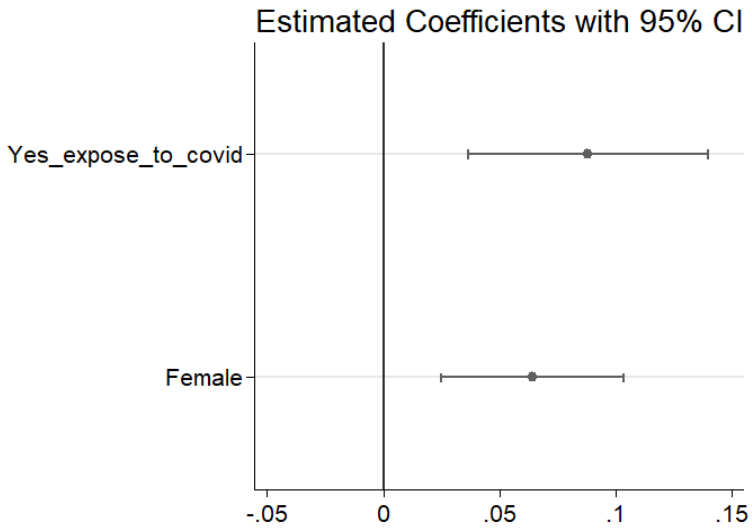

Figure 4 Effect of COVID-19 exposure and gender on the likelihood of changing purchasing plans

The positive and significant coefficient means that females were more willing to modify their consumption behaviour during the outbreak. This finding can be interpreted as the fact that woman might be more risk averse and adopt a more precautionary behaviour during uncertainty shocks. This is supported by Cornwall

et al. (2018) who confirm that females are more sensitive to the frequency of reward and potential losses. Loxton et al. (2020) suggest that the more pronounced change in purchasing behaviour showed by female consumers might be related to the stronger emotional reaction exhibited by women with respect to men in front of a perceived threat. The hypotheses that gender difference can lead to different consumer behaviours in response to uncertainty shocks is confirmed by the results. Female respondents were more likely to change their purchasing plans of durable goods due to higher emotional response to the pandemic crisis and stronger precautionary behaviour.

The graph below (Figure 3) shows the result of the regression including the control variable *age*. The variables of *covid* exposure and *gender* continue to have a positive and significant effect on the likelihood of changing purchasing plans, while the inclusion of age shows significant differences between the groups. However, the estimated coefficient of *covid* decreases from 0.088 to 0.074, meaning that the age composition of the sample explains a small share of the observed effect.

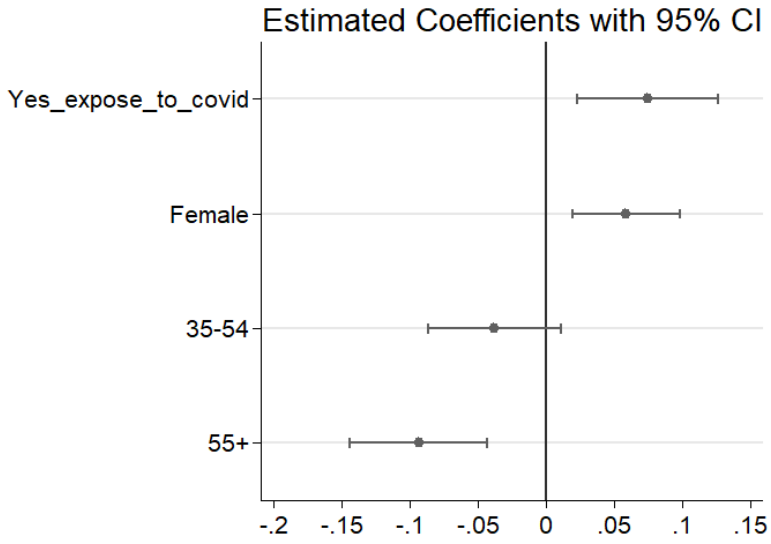

Figure 5 Estimated coefficients for COVID-19 exposure, gender, and age on purchasing plan changes

The estimated coefficients for age groups points out that the older the consumers the less likely they are to change their purchasing plans. The middle age group (35-54) does not differ so much from the youngest group (18-34) and the results are not

statistically significant. However, for the oldest group (55+) the coefficient is negative and statistically significant p-value<0.05, so it is possible to state that consumers with more than 55 years have 9.4% less probability to change plans with respect to the younger respondents.

Consulting the literature, the Life Cycle Hypothesis could help to understand this results. The lower propensity of old consumers to modify their purchasing plans of durable good can be linked to economic factors like wealth accumulation and financial security. On the other hand, younger individuals having less wealth accumulated and lower income stability, typically due to earlier career stages, could be much more affected by the uncertainty of the crisis and so more willing to postpone big purchases like durable goods. This is supported by Dunn (1998) that find out that households with higher wealth have less liquidity constraints and less likely to postpone purchases under uncertainty with respect to people with higher liquidity constraints. Following these reasonings, age groups might indirectly capture heterogeneity in accumulated savings and exposure to income volatility. An additional consideration is the fact that older consumers generally have shorter effective time horizon, because they have also to consider the decrease the expected utility of that product in the future due to possible health limitations or declining ability to enjoy certain goods. Taken together, the negative coefficient for older groups could reflect not only economic motivation, but also difference in intertemporal preferences and expected future consumption opportunities.

Adding the control variable *income* to the model, the explanatory power of the model increases ($R^2 = 0.1204$) indicating that income contributes significantly to explain the heterogeneity in purchasing behaviour during the pandemic. The graph below (Figure 6) shows the estimated coefficients for *covid* exposure, *gender, age* and *income.* As expected, consumers with higher incomes are more willing to follow the original purchasing plans of durable goods despite the crisis. Taking as reference the low-income group, there is a negative relationship between middle-income and high-income groups with respect to the probability to change purchasing plans. Precisely, middle-income consumers are 10.7% less likely to

change purchasing plans, and this effect increase to 18.4% for high-income consumers, with both coefficients statistically significant at the 95% level.

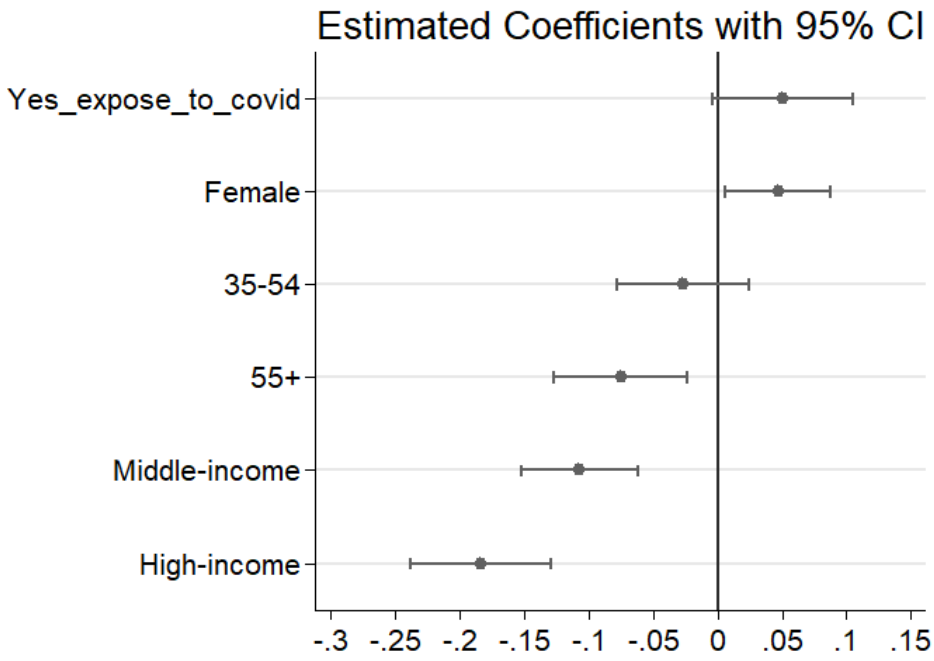

Figure 6 Estimated coefficients for COVID-19 exposure, gender, age and income on purchasing plan changes

The results are in line with the existing literature, which states that low-income individuals are more sensitive to the increase income risk and uncertainty due to a crisis. They are more willing to diminish their consumption of expensive durable goods to increase their precautionary savings. For example, the study made by Davenport et al. (2020) on UK households shows some similarities, where high-income households maintain stable spending pattern, while low-income households face liquidity constraints that forced them to postpone purchases.

As previously foreseen, the introduction of income as a control variable significantly alters the interpretation of the *covid* exposure variable, which previously was statistically significant with a coefficient of 0.0745 (p-value = 0.005) but with the new control variable it loses its significance, and the coefficient decrease to 0.051 (p-value = 0.067). This suggests that a big portion of the previously effect observed in the *covid* variable is explained by income differences across individuals.

The last control variable to be added is education. Its inclusion doesn't change so much the previous results; indeed gender variable remain statistically significant and with a positive effect on the likely to change plans, and income is still having a strong negative effect on the dependent variable. It can be seen from the graph below that the education variable is not statistically significant (p-values>0.05) but taking consumers with a low level of education as a reference, positive decreasing coefficients are obtained: 2,5% for respondents with an average education and 1,2% for respondents with a high level of education.

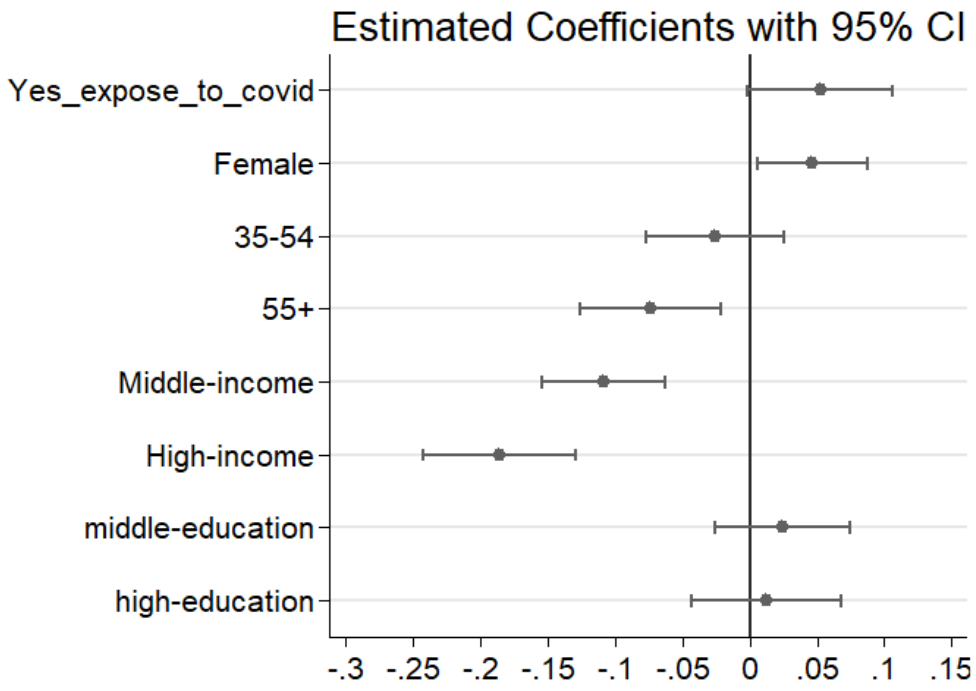

Figure 7 Estimated coefficients for COVID-19 exposure, gender, age, income and education on purchasing plan changes

During the literature review, no significant evidence was found that education impacts consumption propensities in times of crisis. However, removing the income variable, the education variable becomes more significant, and in particular, the last group becomes statistically significant with a p-value <0.05. This confirms that, as with age, the correlation between high education and high income might at first glance make it seems that a higher level of education corresponds to a lower propensity to change plans, but this is only due to the fact that a higher level of education leads to greater financial stability. So, the absence of significance

supports the fact that education is correlated with income but does not exert an independent behavioural effect once income is included.

The progressive inclusion of demographic and socio-economic control variables helps to gather a more comprehensive understanding on which of the consumers characteristics contribute to shape their decision-making during Covid-19 pandemic. After accounting for all the control variables in the final regression model, the coefficient associated with *covid* variable remains positive but loose its statistically significance. Among the control variables, the strongest determinant of the behavioural change is income, and in particular high-income individuals are less likely to modify their purchasing plans because less affected by the uncertainty shock caused by the pandemic.

In conclusion, in the baseline model without control variables the direct experience of the covid-19 disease is associated with 11% higher probability of changing purchasing plans, with statistically significance, but after the introduction of control variables the coefficient drops to 5% and it loses statistically significance, suggesting that part of the effect is mediated by individual heterogeneity. As a result, although the positive association between covid exposure and changes in purchasing plans is consistent with hypothesis H1, the final model doesn't strongly support the hypothesis and should be interpreted as providing only weak evidence rather that a robust confirmation of the hypothesis *H1*.

4.3 Fear: the real driving motivation?

Following the suggestion of the literature, in this section it is going to be analyse if the emotional and psychological consequences of the outbreak may have played a bigger role in shaping consumer purchasing behaviour, respect to the direct exposure to the disease. Following this reasoning it has been introduced in the model other two independent variable: *fear_financial_covid* and *fear_losing_job.* These variables capture individuals' emotional response to the macroeconomic shock allowing to test the second hypothesis formulated in this thesis, whether the decision to change purchasing plans is primarily driven by the direct personal

exposure to the virus or by the emotions generated in response to the shock. To test this hypothesis, firstly, it has been conducted a regression between *fear_financial_covid* and *covid* to find out if respondents that had a direct experience of the virus or had a close contact affected by the virus reported higher level of *fear_financial_covid*.

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
covid	0,97407	0,10558	0,000	0,76709	1,18104
_cons	5,69721	0,03468	0,000	5,62923	5,76519

Number of obs	7243
R-squared	0,0099

Table 15 relationship between exposure to COVID-19 and the level of financial concern

The regression results reported in Table 15 reveal a positive and statistically significant relationship, in particular individuals who weren't directly or indirectly affected by the virus show on average a level of financial fear almost one-point lower with respect to those who had a direct experience of the virus. Although, the high constant term shows that also among unexposed individuals the baseline level of financial concern is significant. The results, therefore, supports the idea that the crisis increase generally the level of uncertainty, not only determined by personal experience, but rather derived from broader macroeconomic and psychological factors that affect the entire population.

The next step of the analysis adds *fear_financial_covid* into the regression model. The inclusion of this variable substantially increases the explanatory power of the model going from explaining 12% of behavioural variability to 23%, meaning that fear of covid explains a significant portion of why some people changed their spending plans during the pandemic. The graph (Figure 6) shows that the *fear_financial_covid* variable has a monotonically increasing relationship with the likelihood of changing purchasing plans, the coefficient is positive an highly significant (p-value<0.05).Specifically, a one-unit increase in financial fear raises the probability of changing plans by approximately 6.3 percentage point, meaning that individuals with the maximum level of fear have 63% more likelihood to

change their plans respect to an individual with zero fear. On the other hand, the coefficient of the variable *covid* drops from 0.052 to 0.035, meaning that part of the changes in purchasing plans earlier attributed to the covid variable it's actually connected to fear. This confirms that emotional and psychological uncertainty was a key factor in shaping purchasing behaviour during the pandemic crisis. These findings confirm the first point of the second hypothesis *H2*.

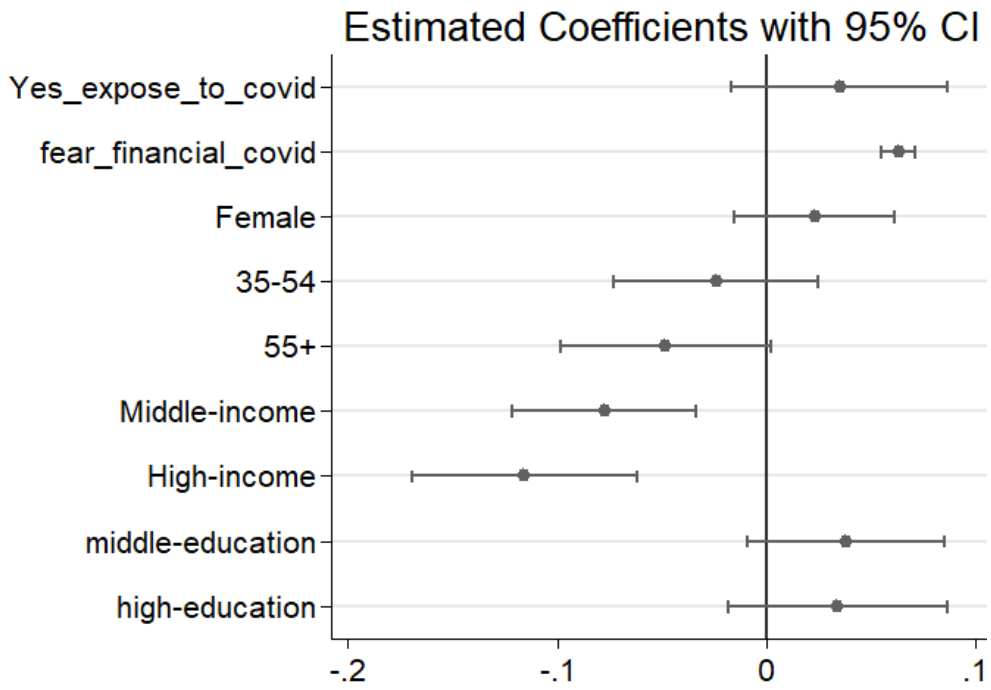

Figure 8 Estimated coefficients for COVID-19 exposure, financial concern, and socio-demographic factors on purchasing plan changes

Subsequently, the introduction of the variable *fear_losing_job* futher explores the role of income uncertainty in shaping consumer behaviour. *fear_financial_covid* variable captures individuals' general perception of financial uncertainty, more linked to macroeconomic factors, like personal forecast on expected inflation, interest rate and the duration/severity of the crisis. Instead *fear_losing_job* focuses more on anxiety related to expectations of future job instability and income discontinuity.

The Table 16 Impact of COVID-19 exposure on perceived job insecurity reports the result of a simple linear regression between *fear_loosing_job* and *covid* to search

some relations. The results shows that respondents who had direct experience of the virus are more concerned about the possibility to lose their job. In particular, on average the responses that had a directly exposure to the disease report 0.29 higher level of fear to lose their job compared with those who were not infected and did not have close contacts affected by the virus. Given that the constant term is 0.569 it is possible to conclude that also people that doesn't experience the virus showed a non-negligible baseline level of fear. This means that in relative terms covid exposure cause an increase of 50% in the level of job-loss concern which is a significant correlation. Although these findings should not be interpreted as strictly causal, as job insecurity may be driven by other unobserved contextual factors, such as jobs that might put people at greater risk of COVID-19 while also working in a sector where they are more likely to be laid off.

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
covid	0,29156	0,03881	0,000	0,21548	0,36767
_cons	0,56887	0,01060	0,000	0,54810	0,58965

Number of obs	7302
R-squared	0,009

Table 16 Impact of COVID-19 exposure on perceived job insecurity

As displayed by the graph, the regression model reveals a significant relationship between fear to become unemployed and the likelihood to modify purchasing plans. The coefficients of all the levels of fear are statistically significant having a p-value < 0.05. It is interesting that a respondent with low level of fear is 12.5 percentage point more likely to change the purchasing plans respect to respondents with no fear, but for high level of fear the coefficient raise only by 1 percentage points. The fact that , there isn't so much difference in the coefficient of low, middle and high level of fear of losing the job, means that the main difference is to be or not be afraid of losing job, and it is sufficient to have a low level of concern about job stability to trigger a change in purchasing behaviour.

Introducing this variable in the model the R^2 increase up to 0.24, meaning that now the model explains a large portion of variation in the changes in purchasing plans,

suggesting that the two variables that have been introduced play a substantial role in shaping consumer decisions.

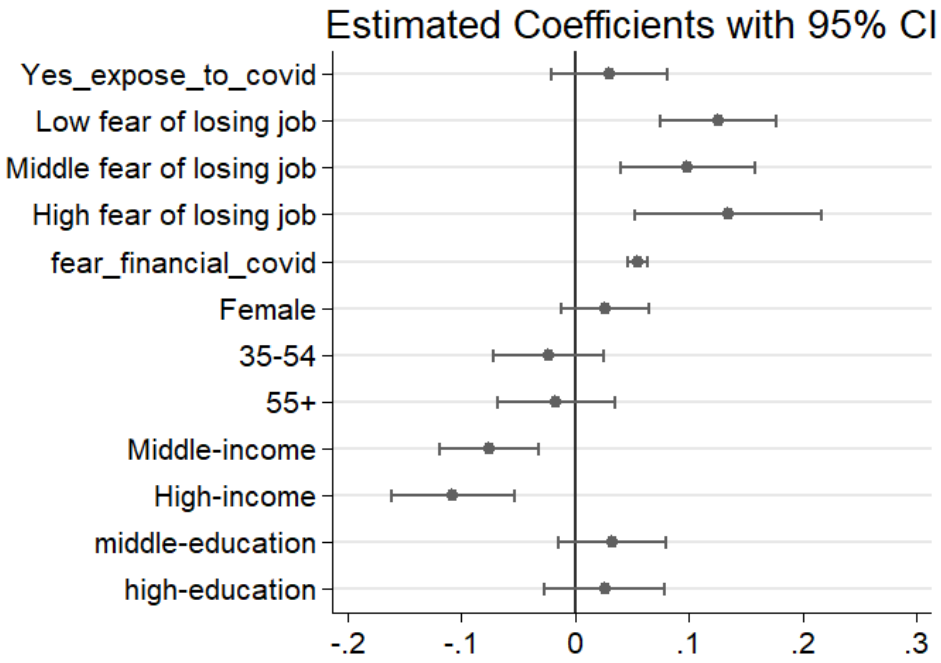

Figure 9 Effect of COVID-19 exposure, fear of job loss, and financial concern on the likelihood of changing purchasing plans

Considering *fear_financial_covid* variable it remains highly significant with a coefficient of 0.055 and a p-value < 0,001. Since this variable is continuous for individuals with level of fear above 4, the likelihood that they will change plans is increased by 22 percentage points and could reach 55 percentage points for the consumers with a level of fear equal to 10, confirming that economic uncertainty is the most powerful predictor of changes in purchasing behaviour. The only control variable to remain significant after the introduction of these two variables is income, which still shows a negative monotonic relationship with the likelihood of changes in purchasing behaviour. So, higher income can be associated with higher financial stability allowing consumers to be more resilient also during crisis times and uncertainty, reducing the necessity to change their plans. Taken together, these results indicate that financial uncertainty caused by Covid represents the primary channel through which the pandemic influenced consumers, outweighing health-related factors, like direct exposure to the virus.

In conclusion, the results confirm hypothesis H2, which predicted that the direct effect of Covid-19 would be reduced once fear-related variables were included in the model. The covid variable has completely lost its significance (p-value>0.05) and its coefficient decreases to a meaningless 0.03. In contrast, *fear_losing_job* and *fear_financial_covid* turn out to be much stronger and more significant predictors than covid, indicating that economic concerns, such as job loss, are the true underlying drivers of changes in durable goods purchasing behaviour than health-related fear. So, in time of crisis, consumers show higher sensitiveness to economic uncertainty and perceived unemployment risk than to the objective experience of the event, underscoring the fundamental role of emotion and psychological factors in shaping consumer purchasing behaviour of durable goods.

4.4 Determinants of changes in Purchasing Behaviour during the pandemic

Until now, the study has tried to explain which between psychological, demographic and socio-economic factors could be the driver of the different willingness to change purchasing plans showed by respondents during the first wave of Covid-19. As explained in chapter 3.3, respondents could select between 10 different reasons that justify their decision to change purchasing plans made before the Covid arrival. The aim of this chapter is to find out if there are some groups of individuals with particular traits that are driven by similar motivation to change plans. To do this analysis, for each motivation it has been run the last regression model with 8 explanatory variables: *covid, fear_losing_job, fear_of_covid, gender, age, income, education, country*.

Looking the first line of the graph below, it is possible to observed how being directly exposed to covid has a positive and significant relationship with the motivation *other_purchase*. Also, *plans_increase* motivation has a positive correlation, but it is less significant p-value =0.052. Among the literature analysed none explains these results. The explanation can be found in the effects of the virus and the containment measures. The lockdown imposed by many governments and the mandatory quarantine required for infected individuals increased the amount of

time that people spent at home. This home confinement may have altered consumer priorities, shifting their attention towards items and products that previously seemed unnecessary and leading them to make additional or alternative purchases.

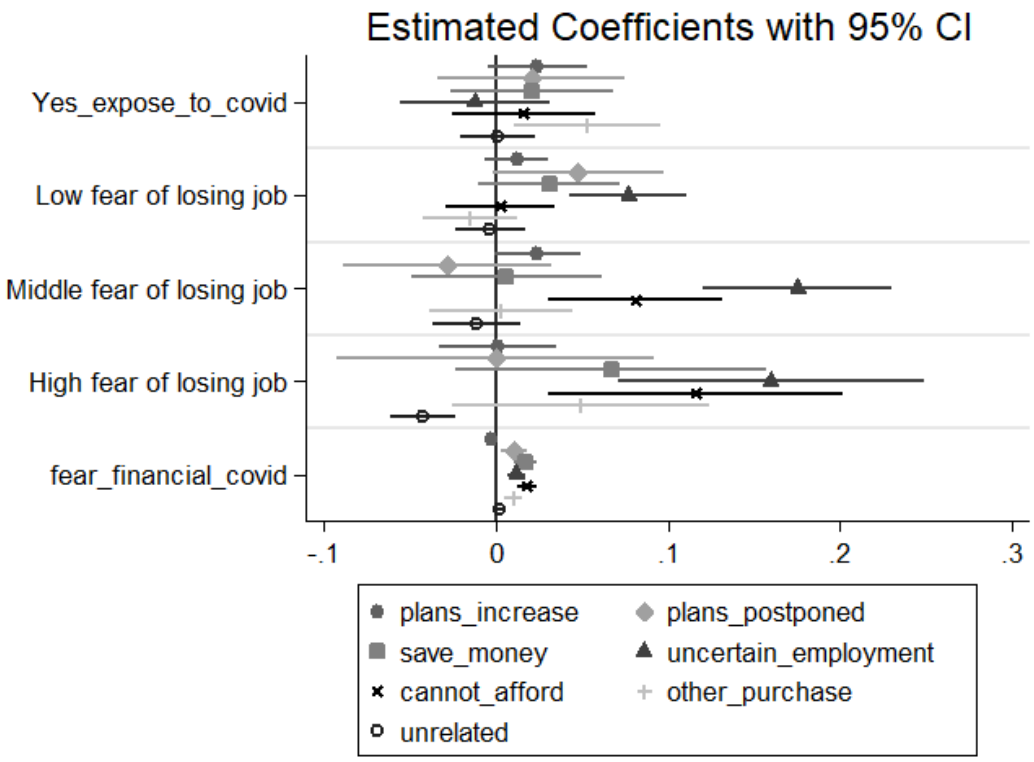

Figure 10 Effect of COVID-19 exposure, fear of losing job and financial fears on different purchasing motivations

The second variable to be considered is *fear_losing_job.* The variable shows a statistically significant positive correlation with the variable *cannot_afford* and logically also with *uncertain_employment.* These finding are in line with literature, as suggested by Dunn (1998) and Skoblar (2024) who found out that higher level of perceived unemployment risk, leads individuals to be more cautious and adopt precautionary behaviour, prioritizing savings against purchases. This is exactly what our model predicts: higher value of *fear_losing_job* are associated with a greater probability of revising durable-purchase plans because increased occupational risk reduces economic accessibility. Fear to become unemployed decreases also the probability to change plans due to motivation unrelated with covid-19. This behaviour can be linked with the notion on decision-making under liquidity constraints studied by Knotek & Khan (2011) that defined that increasing

uncertainty about future income affects purchasing behaviour reducing the demand for durable goods.

The variable *fear_financial_covid* increases the likelihood of change purchasing plans for almost all the motivations. One of the higher correlations is with the variable *plans_postponed*, and this can be explained applying intertemporal choice theories. Wu et al. (2022) and Zhang et al. (2023) show that uncertainty due to health risks increases the interest rates used by discounting future utility, driving consumers to prioritize short-term needs and purchases that can give an immediate reward with respect to future purchase. The connection with the other motivations can be explained by the fact that general uncertainty and fear created by the pandemic makes people feel emotions like anxiety and stress. This emotional response, according to Loxton et al. (2020) and Yuen et al. (2020) significantly affects consumer-decision making, making the process less rational and more emotionally drive.

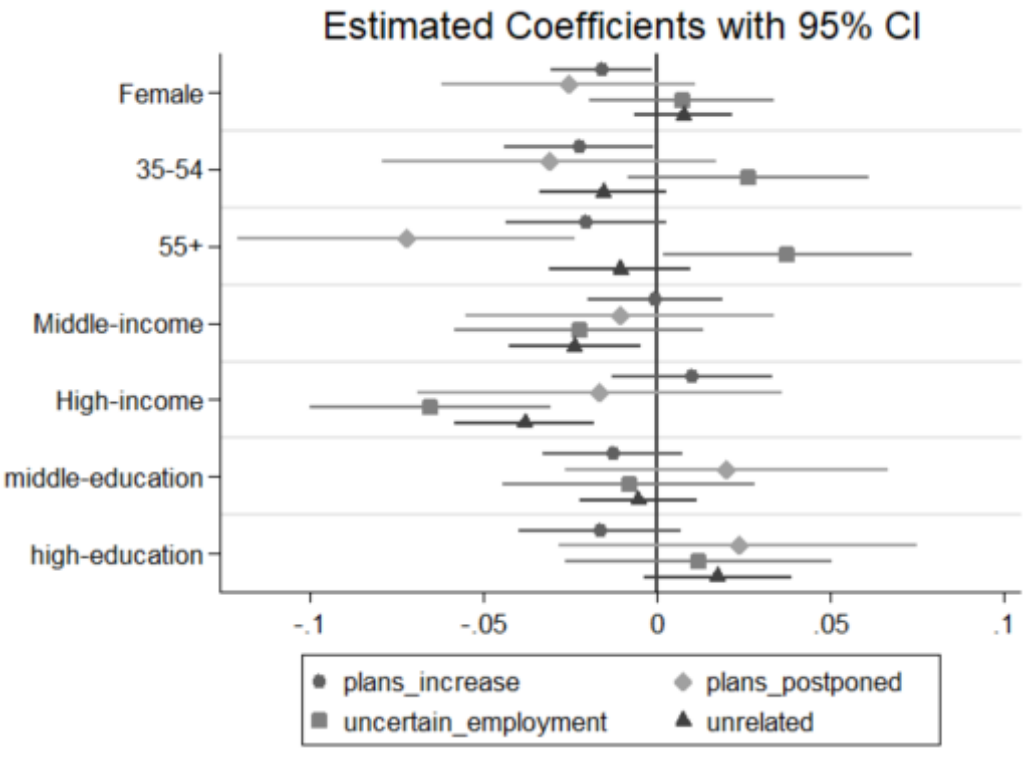

Figure 11 Effect of socio-economic and demographic on different purchasing motivations

Locking the variable *gender*, the only significant relationship is with the variable *plans_increase*. The coefficient is negative, meaning that women are less likely to increase their purchasing plans against men during crisis situations. The others motivations have a positive coefficient, but they are not significant. Looking at the path, women seem to be more precautionary and financially driven. Also, in a study made by Cornwall et al. (2018) women appear more risk averse and present-biased in times of uncertainty, focusing on immediate problems and financial stability, which can be directly linked with their reluctance to purchase durable goods.

It is interesting to note that the older respondents have a negative correlation with the motivation *plans_postponed*. The relationship is not significant, but the coefficient is quite negative, meaning that postponement is not an option for elderly people. The Life-Cycle Hypothesis could help us to understand this behaviour. Contrary than young consumers, they have greater financial security and higher accumulated wealth, so they may be less financially constrained and therefore they can afford prioritizing immediate consumption over further precautionary saving (Dunn, 1998). The lower tendency to postpone showed by older individuals could also reflect the psychological and temporal component linked to the life expectancy. From an Intertemporal choice perspective, elderly people have shorter expected time horizon, so they apply higher discount rate to future utility, preferring immediate consumption. Despite elderly people generally display a lower propensity to change plans the graph (Figure 8) shows a positive and significant correlation between the 55+ group and the likelihood to change plans due to uncertain employment. This could result counterintuitive, because as explained before elderly people are less vulnerable from an economic point of view, but they also often face much more difficulty in re-entering the labour market. Consequently, if consumers are too close to retirement they may have the same concerns of younger individuals in terms of uncertain employment.

Income has only two significant relationships with *uncertain_employment* and *unrelated_with_covid,* and both have a negative coefficient. The first relationship is quite logic, the higher is respondents' income the less they change plans for motivations relate to employment uncertainty as higher salaries also correspond to

greater contractual security because the role covered is more important. On the other hand, this means that lower-income individuals are more likely to change their purchasing behaviour due to liquidity constraints and save money to prevent future income instability, as suggested by Davenport et al. (2020). The last variable, *education*, doesn't have any significant results to analyse.

These findings confirm the complexity of purchasing decision-making process and generalizing behaviours by gender, age, education, and income is wrong because behind the decision to change purchasing plans there are also other psychological and emotional variables that are unique for each individual independently of its education, job, age, wealth and gender.

4.5 Heterogeneity in Postponement Drivers: Housing, Cars, and Big-Ticket Items

In this chapter investigates how Covid-19 and the psychological and emotional responses to the crisis, like the perceived financial uncertainty and the fear to become unemployed, affect purchasing decisions for different types of durable goods, in particular house, vehicles and bit-ticket items (household appliances, technological equipment). The study focuses on the behavioural differences behind the decision to change purchasing plans of these goods, seeking to find which factor is the more relevant for each type of purchase. The same linear regression model applied before is adopted also in this case, considering as dependent variables *plans_changed,* and *covid* while *fear_losing_job* and *fear_covid* as independent variables, the same four socio-economic and demographic variable and including country fixed effects. To create the graphs, the linear regression has been run 3 times selecting only respondents that had planned to purchase that particular type of durable good. The model output shows the estimated coefficients with a 95% confidence interval allowing to observe how each different variable affects the probability to change purchasing plans for the specific product type.

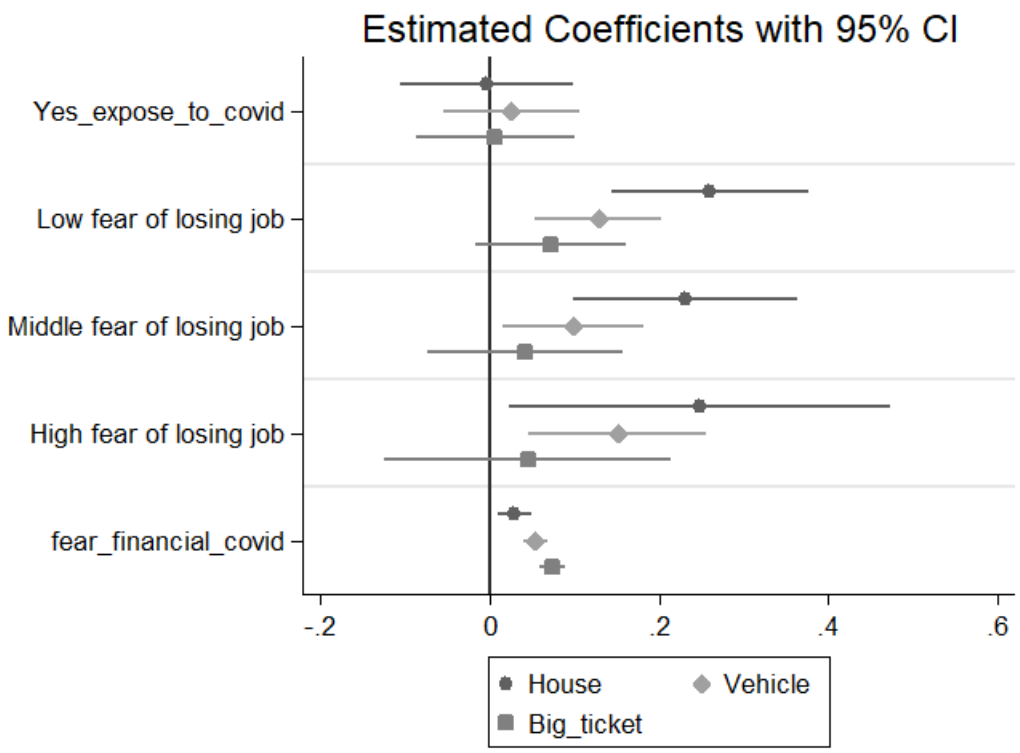

Figure 12 Effect of COVID-19 exposure, fear of losing job and financial fears across durable goods categories

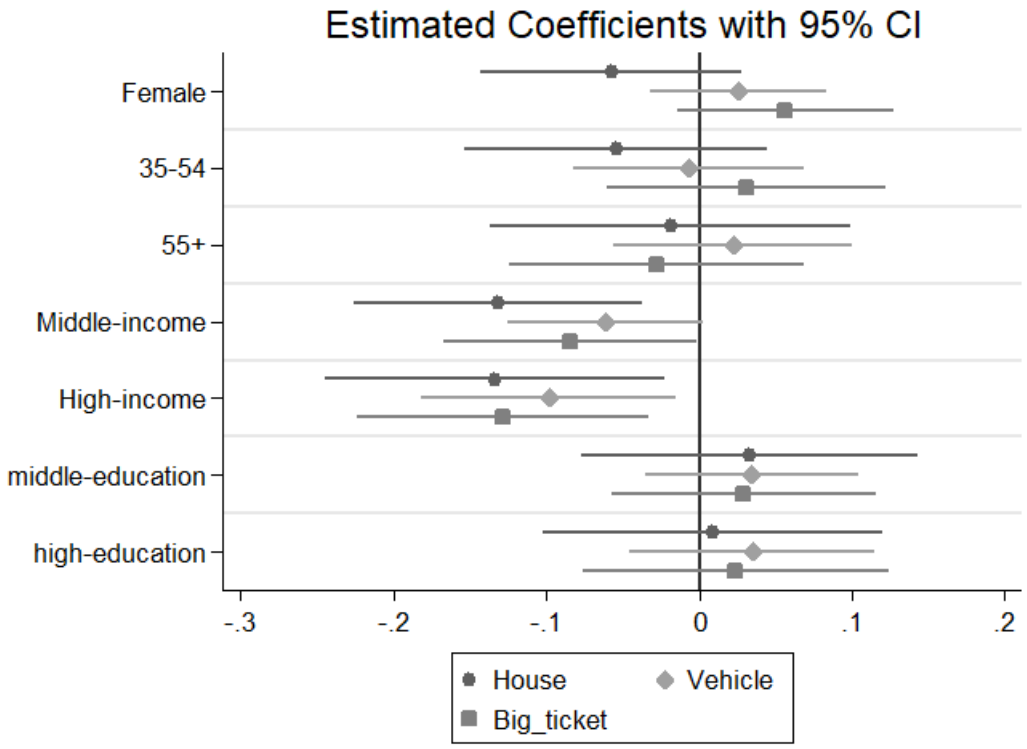

Figure 13 Effect of socio-economic and demographic across durable goods categories

The first purchase type that is going to be analyse is the most irreversible and financially demanding: the house. Looking the graph above, the regression results for the housing category reveal that *covid* exposure is not statistically significant in explaining plans changes. As expected, *fear_financial_covid* together with *fear_losing_*job are the variables with the most significant effect on the probability to change the decision on house purchases. Being afraid to become unemployed increases on an average of 24 percentage points the likelihood to change housing plans; additionally, if the consumer is also very scared about future financial conditions, the likelihood can reach a peach of 55 percentage points. This pattern suggests that during the pandemic fear of losing the job and a broader financial uncertainty are the dominant factor in housing plans changes, and being directly exposed to the disease is not a relevant factor. It is possible to connect the result with the findings of Wu et al. (2022) who suggest that uncertainty pushes consumers to reconsider their purchasing decisions shifting the attention to short-term, increasing discount rates and prioritizing immediate rewards. Similarly, the study of Knotek & Khan (2011) found that economic uncertainty leads consumers to postpone purchase of durable goods like houses due to the high irreversibility adopting a "wait-and-see" approach. Instead, the study of Dunn (1998) associates higher unemployment risk with an increase of precautionary behaviour increasing savings and reducing the propensity to make expensive purchases, like durable goods. These finding partially contradicts the hypothesis H3A, which predicts that *fear_losing_job* is the main driver of changes in purchasing plans for the house category*,* because financial uncertainty has a stronger psychological effect with respect to the fear of becoming unemployed. So, consumers might perceive more the macro-economic uncertainty created by the shock than the individual unemployment risk, and in response they adjust their purchasing behaviours.

Regarding vehicle purchasing, the results reveal a higher unbalanced influence of the two fear variables. Both are statistically significant but for the highest level of financial fear the likelihood to change plans increase by 50 percentage points and for the highest level of fear of losing the job it increases only by 15 percentage points. Unexpectedly, the relationship with age is not significant despite the literature suggests that health uncertainty and reduced mobility during the

lockdown have led older people to reduce purchases to avoid contact with other people, reducing the utility to buy a new car. J. Kikuchi et al. (2023). This result is in any case in line with the intertemporal choice framework theory, which helps us explain that people changes plans not only out of prudence but also because the more they are convinced that the pandemic will last (high levels of fear), the more the utility of having it will decrease, due to the lockdown or remote working. These results confirm Hypothesis H3B, which sustains that covid related financial fears would be the main driver of delayed vehicle purchases.

Durable goods, such as household appliances, electronics, and furniture, showed a distinct behavioural pattern. Unexpectedly, Covid related financial fear has much more influence on purchases of this type than the other two types of durable goods. In particular, *fear_financial_*covid increases the likelihood to change plans up to 74 percentage points for respondents with maximum level of fear. The variable *fear_losing_job* loses statistically significance for this type of goods maybe due to the fact that this item involves smaller financial commitment and are more easily reversible without long term commitment, making them easier to buy. The direct exposure to the disease (*covid* variable) remains statistically insignificant with also a very low coefficient. This is an unexpected result as the expectation was that consumers driven by the need to adapt to the new domestic lifestyle during lockdown periods would show a greater propensity to purchase goods that improve the comfort and functionality of the home, as suggested by Skoblar (2024). Therefore, the results do not support the H3C hypothesis, which states that individuals directly exposed to COVID-19 would be less likely to postpone the purchase of expensive items.

Looking at the individual variables, patterns are easily noticeable. The more expensive and unlikely to be reversible the asset, the stronger its association with the fear of losing one's job. This relationship can be explained by the way in which these purchases are done. Often, consumers buy these goods recurring to debt, and therefore, if a consumer is uncertain about future income, the debt repayment will be difficult, so people perceives this risk and therefore prefers to wait for better times. On the other hand, for smaller purchases there is fewer financial concerns

and so people is more willing to stock with the planned purchases also if they are concerned about unemployment risk. Although the *gender* variable is not statistically significant, an interesting insights can be observed: women appear to be more inclined to postpone less expensive items than to postpone home purchases. This may reflect different risk perceptions or household decision-making priorities, in line with previous findings suggesting that women display stronger emotional responses and risk aversion when facing uncertainty. For the age and education variables, the results are truly insignificant, and furthermore, it is impossible to identify any possible logical patterns. By contrast income is the only control variable that remains significant. As can be seen in Figure 13, the higher the respondent's income, the lower their propensity to change their purchase plans.

In conclusion, differences in the impact of psychological and health factors on various types of purchases suggest that the response to the pandemic is uneven. As expected, the differences in financial commitment, irreversibility of the purchases, and longevity of purchase could lead people to make different decisions depending on the good that they plan to buy. An interesting starting point for future research could be to develop a more in-depth analysis of how the intensity of these factors influences decisions in the event of a typical financial crisis versus a natural disaster or pandemic. This comparison could improve our understanding of the effects of psychological and emotional factors on purchasing decisions.

5 Conclusion

This thesis aims to answer the question "*How has Covid-19 reshaped consumers' purchasing behaviour of durable goods?"*. Using a dataset of 7501 respondents across five European countries, a set of linear regression models was built to analyse how three key variables (*covid*, *fear_financial_covid, fear_losing_job)* affected the respondents' decision to change purchasing plans of durable goods after the outbreak of the pandemic. The empirical evidence is clear: respondents who were infected, or that had a close contact infected by the Covid-19 virus, weren't more willing to change purchasing plans. Instead, respondents that were concerned about the future financial situation or that perceived high unemployment risk showed higher likelihood to revise purchasing plans with respect to respondents that didn't feel these fears. This suggests that it is not the health shock per se, nor its direct consequences, like quarantine or hospitalization, the primary drivers of the drop in purchases of durable goods, but the real drivers are the emotional and psychological responses to the crisis.

These effects were heterogeneous across categories of durable goods. Housing plans were more sensitive to unemployment risk and less related with general financial uncertainty. On the other hand, big ticket items were the category of durable goods that showed more sensitiveness to financial uncertainty and less on job-loss risk. Plans to purchase a car instead were in the middle between the other two. This can be explained due to the nature of these goods: a house is the most expensive one and implies a long-term commitment, so people must be sure to be able to pay the instalment of the mortgage in the future while big ticket items are more affected by general financial fear of people that prefer to save money.

Socio-demographic variables also shape the propensity to change purchasing plans. Women were more likely to adjust plans, particularly for saving purposes, although the estimated effects are only weakly significant. Respondents age is not always statistically significant, but it is possible to see a clear path: the elderly consumers

are the less prone to change plans. In particular, the older the respondent the lower the willingness to postpone the plans, because they prefer immediate utility and they have higher discount rate, instead they show more propensity to change plans due to uncertain employment situation. The model shows also that higher income individuals are less likely to change plans and so more resilient to uncertainty thanks to their wealth.

Methodologically the thesis contributes by showing how psychological and emotional factors such as perceived unemployment risk and crisis-related uncertainty affect consumer purchasing behaviour. It has also important policy implication for the future fiscal support measures suggesting that stabilizing expectations through income protection plans, safeguard of employment, can avoid the dumping in durable goods demand, targeting young, female and low-income individuals which are the profiles of the individuals with higher propensity to postpone purchases.

The limitations of this study are related to the reliability of the interviewees' responses, and to the fact that it has not been considered macro-factors which could have given a more comprehensive view on the real motivation of the changes in consumer behaviour. Another limit is that the data used were collected only during the first wave of the pandemic, but it would be necessary to have a wave panel data to capture how uncertainty and fear evolved during the pandemic and if the policy actuated by the governments influenced consumer behaviour over time. Future work must include macro and micro variables to understand which are the main drivers of behavioural changes but also to understand how policies during the time could sustain demand and normalize consumer behaviour.

Overall, the pandemic did not simply alter the macroeconomic environment it also transformed consumers' time preference and risk perceptions. Uncertainty and fear generated by the crisis become the main drivers of whether and when households decide to commit to durable goods purchases, making psychological and emotional response the main channels to understand durable-goods demand in time of crisis.

6 Table of figures

7 Bibliography

Agrawal, M., Peterson, J. C., Cohen, J. D., & Griffiths, T. L. (2023). Stress, Intertemporal Choice, and Mitigation Behavior During the COVID-19 Pandemic. *Journal of Experimental Psychology: General*, *152*(9), 2695–2702. https://doi.org/10.1037/xge0001417

Andersen, A. L., Hansen, E. T., Johannesen, N., & Sheridan, A. (2020). *Pandemic, Shutdown and Consumer Spending: Lessons from Scandinavian Policy Responses to COVID-19*. http://arxiv.org/abs/2005.04630

Armantier, O., Koşar, G., Pomerantz, R., Skandalis, D., Smith, K., Topa, G., & van der Klaauw, W. (2021). How economic crises affect inflation beliefs: Evidence from the Covid-19 pandemic. *Journal of Economic Behavior and Organization*, *189*, 443–469. https://doi.org/10.1016/j.jebo.2021.04.036

Barberis, N. C. (2013). Thirty years of prospect theory in economics: A review and assessment. In *Journal of Economic Perspectives* (Vol. 27, Issue 1, pp. 173–196). https://doi.org/10.1257/jep.27.1.173

Borowski, J., & Jaworski, K. (2023). Economic and behavioral determinants of forced household savings during the COVID-19 pandemic. *Empirica*, *50*(1), 237–253. https://doi.org/10.1007/s10663-022-09563-8

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. In *The Lancet* (Vol. 395, Issue 10227, pp. 912–920). Lancet Publishing Group. https://doi.org/10.1016/S0140-6736(20)30460-8

Cervellati, E. M., Stella, G. P., Filotto, U., & Maino, A. (2022). How COVID-19 changed Italian consumers' behavior. *Global Finance Journal*, *51*. https://doi.org/10.1016/j.gfj.2021.100680

Cornwall, A. C., Byrne, K. A., & Worthy, D. A. (2018). Gender differences in preference for reward frequency versus reward magnitude in decision-making under uncertainty. *Personality and Individual Differences*, *135*, 40–44. https://doi.org/10.1016/j.paid.2018.06.031

Dai, J., Pachur, T., Pleskac, T. J., & Hertwig, R. (2019). What the Future Holds and When: A Description–Experience Gap in Intertemporal Choice. *Psychological Science*, *30*(8), 1218–1233. https://doi.org/10.1177/0956797619858969

Davenport, A., Joyce, R., Rasul, I., & Waters, T. (n.d.). *Institute for Fiscal Studies IFS Briefing note BN308 Spending and saving during the COVID-19 crisis: evidence from bank account data*.

Di Crosta, A., Ceccato, I., Marchetti, D., la Malva, P., Maiella, R., Cannito, L., Cipi, M., Mammarella, N., Palumbo, R., Verrocchio, M. C., Palumbo, R., & Domenico, A. Di. (2021). Psychological factors and consumer behavior during the COVID-19 pandemic. *PLoS ONE*, *16*(8 August). https://doi.org/10.1371/journal.pone.0256095

Dunn, W. E. (1998). *Unemployment Risk, Precautionary Saving, and Durable GoodsPurchase Decisions Board of Governors of the Federal Reserve System*.

Edwards, I. D. (n.d.). *Prospect Theory: A Literature Review*.

Gary P. Pisano, Raffaella Sadun, & Michele Zanini. (2020). Lessons from Italy's Response to Coronavirus. *Harvard Business Review*.

Hameleers, M. (2021). Prospect Theory in Times of a Pandemic: The Effects of Gain versus Loss Framing on Risky Choices and Emotional Responses during the 2020 Coronavirus Outbreak–Evidence from the US and the Netherlands. *Mass Communication and Society*, *24*(4), 479–499. https://doi.org/10.1080/15205436.2020.1870144

Harmenberg, K., & Öberg, E. (2021). Consumption dynamics under time-varying unemployment risk. *Journal of Monetary Economics*, *118*, 350–365. https://doi.org/10.1016/j.jmoneco.2020.10.004

Hua, Y., & Mi, J. (2025). Does declining income caused by the COVID-19 pandemic affect Chinese individuals' future risky decision-making and intertemporal choices? A construal level perspective. *Frontiers in Psychology*, *16*. https://doi.org/10.3389/fpsyg.2025.1584337

Kahneman, D., & Tversky', A. (n.d.). *Ec o n ometrica i c i volume 47 march, 1979 number 2 Prospect theory: an analysis of decision under risk*.

Kikuchi, J., Nagao, R., & Nakazono, Y. (2023). Expenditure responses to the COVID-19 pandemic. *Japan and the World Economy*, *65*. https://doi.org/10.1016/j.japwor.2022.101174

Kikuchi, S., Kitao, S., & Mikoshiba, M. (2021). Who suffers from the COVID-19 shocks? Labor market heterogeneity and welfare consequences in Japan.

Journal of the Japanese and International Economies, *59*. https://doi.org/10.1016/j.jjie.2020.101117

Knotek, E. S., & Khan, S. (n.d.). *How Do Households Respond to Uncertainty Shocks?* www.KansasCityFed.org.

Loxton, M., Truskett, R., Scarf, B., Sindone, L., Baldry, G., & Zhao, Y. (2020). Consumer Behaviour during Crises: Preliminary Research on How Coronavirus Has Manifested Consumer Panic Buying, Herd Mentality, Changing Discretionary Spending and the Role of the Media in Influencing Behaviour. *Journal of Risk and Financial Management*, *13*(8). https://doi.org/10.3390/jrfm13080166

Rohde, K. I. M. (2009). Decreasing relative impatience. *Journal of Economic Psychology*, *30*(6), 831–839. https://doi.org/10.1016/j.joep.2009.08.008

Sanders, M., Stockdale, E., Hume, S., & John, P. (2021). Loss aversion fails to replicate in the coronavirus pandemic: Evidence from an online experiment. *Economics Letters*, *199*. https://doi.org/10.1016/j.econlet.2020.109433

Shinsuke Ikeda, Eiji Yamamura, & Yoshiro Tsutsui. (2023). *COVID-19 Enhanced Diminishing Sensitivity in Prospect-Theory Risk Preferences: A Panel Analysis*. Review of Behavioral Economics. https://doi.org/10.1561/105.00000178_app

Skoblar, A. (2024). The puzzle of household savings in the European Union: tracing influences across time and space. *Public Sector Economics*, *48*(3), 248–282. https://doi.org/10.3326/pse.48.3.1

Szustak, G., Gradoń, W., & Szewczyk, Ł. (2021). Household financial situation during the covid-19 pandemic with particular emphasis on savings—an evidence from poland compared to other cee states. *Risks*, *9*(9). https://doi.org/10.3390/risks9090166

Tauber, K. N., & Van Zandweghe, W. (2021). Why Has Durable Goods Spending Been So Strong during the COVID-19 Pandemic? *Economic Commentary (Federal Reserve Bank of Cleveland)*, 1–6. https://doi.org/10.26509/frbc-ec-202116

Tsutsui, Y., & Tsutsui-Kimura, I. (2022). How does risk preference change under the stress of COVID-19? Evidence from Japan. *Journal of Risk and Uncertainty*, *64*(2), 191–212. https://doi.org/10.1007/s11166-022-09374-z

Tversky, A., & Kahneman, D. (1992). Advances in Prospect Theory: Cumulative Representation of Uncertainty. In *Journal of Risk and Uncertainty* (Vol. 5).

Wang, X., Shi, W., & Yuen, K. F. (2022). A synthesised review of pandemic-driven consumer behaviours and applied theories: Towards a unified framework. In *International Journal of Disaster Risk Reduction* (Vol. 77). Elsevier Ltd. https://doi.org/10.1016/j.ijdrr.2022.103104

Wu, X., Li, J., & Li, Y. (2022). The impact of uncertainty induced by the COVID-19 pandemic on intertemporal choice. *Journal of Experimental Social Psychology*, *103*. https://doi.org/10.1016/j.jesp.2022.104397

Yuen, K. F., Wang, X., Ma, F., & Li, K. X. (2020). The psychological causes of panic buying following a health crisis. In *International Journal of Environmental Research and Public Health* (Vol. 17, Issue 10). MDPI AG. https://doi.org/10.3390/ijerph17103513

Zhang, X., Wu, Z., & He, Q. (2023). A mini-review on how the COVID-19 pandemic affected intertemporal choice. In *Psychoradiology* (Vol. 3). Oxford University Press. https://doi.org/10.1093/psyrad/kkad021

8 Appendix

This appendix discloses the numerical output of the various linear regression models utilized in the Empirical Results. These tables are the numerical underlying of all the graphs represented in chapter 5.

Table 1: Linear regression results for *plans_changed*: COVID exposure, gender, and country fixed effects. (Figure 4)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,087997	0,026308	0,001	0,036403	0,139591
Female	0,063931	0,020014	0,001	0,024681	0,103181
Germany	0,007055	0,036936	0,849	- 0,065381	0,079490
Italy	0,192611	0,031118	0,000	0,131459	0,253764
Netherlands	- 0,092800	0,036164	0,010	- 0,163722	- 0,021879
Spain	0,247632	0,029662	0,000	0,189461	0,305803
_cons	0,526777	0,026695	0,000	0,474424	0,579129

Number of obs	2041
R-squared	0,0879

Table 2: Linear regression results for *plans_changed*: COVID exposure, gender, age, and country fixed effects. (Figure 5)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,074472	0,026507	0,005	0,022487	0,126456
Female	0,058544	0,020055	0,004	0,019219	0,097868
Age 35-54	-0,038199	0,024993	0,127	-0,087213	0,010815
Age 55+	-0,093973	0,025596	0,000	-0,144171	-0,043775
Germany	0,005271	0,036722	0,886	-0,066746	0,077288
Italy	0,195286	0,031171	0,000	0,134166	0,256416
Netherlands	-0,095166	0,036025	0,008	-0,165814	-0,024518
Spain	0,253101	0,029641	0,000	0,194970	0,311232
_cons	0,577259	0,031747	0,000	0,515000	0,639519

Number of obs	2041
R-squared	0,094

Table 3: Linear regression results for *plans_changed*: COVID exposure, gender, age, income and country fixed effects. (Figure 6)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,050543	0,027558	0,067	-0,003505	0,104591
Female	0,046844	0,020746	0,024	0,006157	0,087531
Age 35–54	-0,026736	0,026000	0,304	-0,077727	0,024256
Age 55+	-0,075361	0,026622	0,005	-0,127573	-0,023150
Middle-income	-0,107016	0,023307	0,000	-0,152726	-0,061306
High-income	-0,183896	0,027683	0,000	-0,238118	-0,129603
Germany	0,036204	0,037885	0,339	-0,038098	0,110506
Italy	0,189781	0,032077	0,000	0,126871	0,252690
Netherlands	-0,107470	0,037537	0,004	-0,181088	-0,033852
Spain	0,264187	0,030401	0,000	0,204564	0,323809
_cons	0,659704	0,034472	0,000	0,592907	0,727312

Number of obs	1885
R-squared	0,1204

Table 4: Linear regression results for *plans_changed*: COVID exposure, gender, age, income, education and country fixed effects. (Figure 7)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,052420	0,027636	0,058	-0,001782	0,106621
Female	0,046491	0,020768	0,025	0,005759	0,087222
Age 35–54	-0,026117	0,026070	0,317	-0,077246	0,025012
Age 55+	-0,074045	0,026738	0,006	-0,126485	-0,021605
Middle-income	-0,108835	0,023475	0,000	-0,154875	-0,062795
High-income	-0,186097	0,028998	0,000	-0,242969	-0,129226
Middle-education	0,024829	0,025591	0,332	-0,025360	0,075018
High-education	0,012365	0,028461	0,664	-0,043454	0,068183
Germany	0,035190	0,038005	0,355	-0,039347	0,109727
Italy	0,191464	0,032466	0,000	-0,127790	0,255137
Netherlands	-0,107974	0,037544	0,004	-0,181606	-0,034345
Spain	0,267576	0,030537	0,000	0,207686	0,327467
_cons	0,645069	0,038903	0,000	0,568722	0,721360

Number of obs	1885
R-squared	0,1208

Table 5: Linear regression results for *plans_changed*: COVID exposure, fear_financial_covid, gender, age, income, education and country fixed effects. (Figure 8)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,034895	0,026276	0,184	-0,016639	0,086429
Fear financial covid	0,063043	0,004018	0,000	0,055164	0,070922
Female	0,023152	0,019509	0,235	-0,015110	0,061415
Age 35–54	-0,024147	0,024750	0,329	-0,072688	0,024933
Age 55+	-0,048211	0,025573	0,060	-0,098367	0,001945
Middle-income	-0,077411	0,022454	0,001	-0,121450	-0,033373
High-income	-0,115641	0,027486	0,000	-0,169549	-0,061734
Middle-education	0,038096	0,024040	0,113	-0,009052	0,085244
High-education	0,034150	0,026687	0,201	-0,018190	0,086490
Germany	0,104209	0,035006	0,003	0,035555	0,172863
Italy	0,155701	0,030694	0,000	0,095502	0,215900
Netherlands	-0,034559	0,035478	0,330	-0,104139	0,035022
Spain	0,166213	0,029979	0,000	0,107418	0,225008
_cons	0,207453	0,047321	0,000	0,114644	0,300262

Number of obs	1871
R-squared	0,2253

Table 6: Linear regression results for *plans_changed*: COVID exposure, fear_financial_covid, fear of losing job , gender, age, income, education and country fixed effects. (Figure 9)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,0300706	0,0262211	0,251	-0,021331	0,081482
Low fear of losing job	0,1256899	0,0256983	0,000	0,074760	0,176620
Middle fear of losing job	0,0987572	0,0301328	0,001	0,039659	0,157585
High fear of losing job	0,1345577	0,0417597	0,001	0,052656	0,216459
Fear financial covid	0,0548490	0,0044855	0,000	0,046046	0,063652
Female	0,0259724	0,0195309	0,184	-0,012333	0,064277
Age 35–54	-0,0236719	0,0245977	0,336	-0,071914	0,024570
Age 55+	-0,0170410	0,0261917	0,515	-0,068410	0,034328
Middle-income	-0,0755925	0,0223527	0,001	-0,119432	-0,031753
High-income	-0,1078777	0,0274956	0,000	-0,161804	-0,053952
Middle-education	0,0329724	0,0240739	0,171	-0,014243	0,080187
High-education	0,0257181	0,0267436	0,336	-0,026733	0,078169
Germany	0,0958747	0,0349894	0,006	0,027252	0,164498
Italy	0,1436472	0,0303793	0,000	0,083476	0,203818
Netherlands	-0,0390336	0,0353160	0,270	-0,108383	0,030316
Spain	0,1406683	0,0302518	0,000	0,081353	0,200016
_cons	0,2047122	0,0474457	0,000	0,111659	0,297765

Number of obs	1862
R-squared	0,2367

Table 7: Linear regression results for *plans_increase*: COVID exposure, fear_financial_covid, fear of losing job , gender, age, income, education and country fixed effects. (Figure 10 Figure 11)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,024023	0,014686	0,102	-0,004780	0,052826
Low fear of losing job	0,012094	0,009450	0,201	-0,006440	0,030627
Middle fear of losing job	0,024049	0,012737	0,059	-0,000932	0,049031
High fear of losing job	0,001282	0,017127	0,941	-0,032505	0,035068
Fear financial covid	-0,002309	0,001525	0,130	-0,005300	0,000683
Female	-0,015897	0,007409	0,032	-0,030428	-0,001366
Age 35–54	-0,022449	0,010931	0,040	-0,043887	-0,001011
Age 55+	-0,020571	0,011765	0,081	-0,043645	0,002502
Middle-income	-0,000545	0,009963	0,956	-0,020085	0,018995
High-income	0,010018	0,011852	0,398	-0,013227	0,033263
Middle-education	-0,012743	0,010217	0,212	-0,032781	0,007295
High-education	-0,016416	0,011835	0,166	-0,039627	0,006795
Germany	-0,019715	0,011679	0,092	-0,042620	0,003189
Italy	-0,020081	0,013056	0,057	-0,047049	0,000577
Netherlands	-0,006262	0,013706	0,650	-0,033095	0,020665
Spain	0,009401	0,013136	0,474	-0,016361	0,035163
_cons	0,069843	0,019175	0,000	0,032236	0,107450

Number of obs	1866
R-squared	0,0197

Table 8: Linear regression results for *plans_postponed*: COVID exposure, fear_financial_covid, fear of losing job , gender, age, income, education and country fixed effects. (Figure 10 Figure 11)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,020633	0,027533	0,454	-0,033366	0,074631
Low fear of losing job	0,047826	0,025267	0,059	-0,001728	0,097380
Middle fear of losing job	-0,028234	0,030879	0,361	-0,088795	0,032326
High fear of losing job	-0,000184	0,047025	0,997	-0,092411	0,092043
Fear financial covid	0,010686	0,004003	0,008	0,002800	0,018572
Female	-0,025479	0,018527	0,169	-0,061815	0,010858
Age 35–54	-0,030994	0,024502	0,206	-0,079050	0,017061
Age 55+	-0,072040	0,024764	0,004	-0,120609	-0,023471
Middle-income	-0,010588	0,022703	0,641	-0,055114	0,033938
High-income	-0,016542	0,026805	0,537	-0,069113	0,036029
Middle-education	0,019891	0,023700	0,401	-0,026592	0,066373
High-education	0,023399	0,026235	0,373	-0,028054	0,074851
Germany	0,020928	0,030794	0,497	-0,039466	0,081322
Italy	0,038714	0,028745	0,179	-0,017700	0,095127
Netherlands	-0,061301	0,027204	0,025	-0,114385	-0,007677
Spain	0,058325	0,030176	0,053	-0,000857	0,117507
_cons	0,144327	0,040457	0,000	0,064980	0,223673

Number of obs	1866
R-squared	0,0312

Table 9: Linear regression results for *save_money*: COVID exposure, fear_financial_covid, fear of losing job , gender, age, income, education and country fixed effects. (Figure 10 Figure 11)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,020879	0,024221	0,389	-0,026625	0,068383
Low fear of losing job	0,031018	0,021139	0,142	-0,010440	0,072476
Middle fear of losing job	0,006303	0,028179	0,823	-0,048959	0,061578
High fear of losing job	0,067157	0,045952	0,144	-0,022967	0,157280
Fear financial covid	0,016981	0,003355	0,000	0,010400	0,023562
Female	0,023376	0,015683	0,136	-0,007382	0,054134
Age 35–54	-0,031830	0,019815	0,108	-0,070693	0,007033
Age 55+	0,002648	0,021714	0,903	-0,039393	0,045236
Middle-income	-0,007597	0,019333	0,694	-0,045513	0,030319
High-income	0,013270	0,022761	0,560	-0,031371	0,057910
Middle-education	-0,003513	0,020243	0,862	-0,043214	0,036189
High-education	-0,000825	0,022280	0,970	-0,044521	0,042871
Germany	0,045942	0,023910	0,055	-0,000951	0,092835
Italy	0,059338	0,023506	0,011	0,013629	0,105046
Netherlands	0,054715	0,023940	0,023	0,007658	0,101727
Spain	0,036548	0,023713	0,123	-0,009958	0,083055
_cons	-0,031195	0,034691	0,369	-0,099232	0,036843

Number of obs	1866
R-squared	0,033

Table 10: Linear regression results for *uncertain_employment*: COVID exposure, fear_financial_covid, fear of losing job , gender, age, income, education and country fixed effects. (Figure 10 Figure 11)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	-0,012239	0,022275	0,583	-0,055925	0,031447
Low fear of losing job	0,076936	0,017241	0,000	0,043122	0,110750
Middle fear of losing job	0,175191	0,027927	0,000	0,120419	0,229964
High fear of losing job	0,159674	0,045218	0,000	0,070989	0,248356
Fear financial covid	0,011999	0,002758	0,000	0,006591	0,017408
Female	0,007165	0,013550	0,597	-0,019411	0,033741
Age 35–54	0,026362	0,017648	0,136	-0,008287	0,060939
Age 55+	0,037598	0,018300	0,040	0,001709	0,073488
Middle-income	-0,022426	0,018271	0,220	-0,058262	0,013408
High-income	-0,065167	0,017747	0,000	-0,099972	-0,030361
Middle-education	-0,007953	0,018520	0,668	-0,044275	0,028369
High-education	0,011841	0,019558	0,545	-0,026516	0,050198
Germany	0,051441	0,018132	0,005	0,015880	0,087002
Italy	0,071437	0,019183	0,000	0,033815	0,109060
Netherlands	0,063434	0,018668	0,001	0,026822	0,100046
Spain	0,064878	0,020392	0,001	-0,001000	0,104873
_cons	-0,079364	0,027668	0,004	-0,133627	-0,025100

Number of obs	1866
R-squared	0,1076

Table 11: Linear regression results for *cannot_afford*: COVID exposure, fear_financial_covid, fear of losing job , gender, age, income, education and country fixed effects. (Figure 10 Figure 11)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,015979	0,021161	0,450	-0,025522	0,057480
Low fear of losing job	0,002720	0,016202	0,867	-0,029056	0,034495
Middle fear of losing job	0,080975	0,025651	0,002	0,030668	0,131282
High fear of losing job	0,115876	0,043624	0,008	0,030318	0,201433
Fear financial covid	0,018267	0,002834	0,000	0,012699	0,023835
Female	0,007401	0,012752	0,562	-0,017609	0,032412
Age 35–54	-0,008819	0,017167	0,608	-0,042488	0,024850
Age 55+	-0,001983	0,018046	0,913	-0,037376	0,033411
Middle-income	-0,015263	0,016265	0,348	-0,047161	0,016636
High-income	-0,011054	0,018008	0,541	-0,046518	0,024411
Middle-education	0,029613	0,016103	0,066	-0,001970	0,061195
High-education	0,033262	0,017374	0,056	-0,000857	0,067291
Germany	0,055166	0,022153	0,013	0,011717	0,098614
Italy	0,017516	0,019059	0,372	-0,020989	0,056022
Netherlands	0,022771	0,019991	0,255	-0,016436	0,061978
Spain	-0,019183	0,019942	0,336	-0,058294	0,019928
_cons	-0,077754	0,029039	0,007	-0,134697	-0,020811

Number of obs	1866
R-squared	0,0623

Table 12: Linear regression results for *other_purchase*: COVID exposure, fear_financial_covid, fear of losing job, gender, age, income, education and country fixed effects. (Figure 10 Figure 11)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,053486	0,021691	0,014	0,010944	0,096028
Low fear of losing job	-0,014983	0,013876	0,280	-0,042196	0,012231
Middle fear of losing job	0,003107	0,021147	0,883	-0,038367	0,044582
High fear of losing job	0,049278	0,038055	0,196	-0,025358	0,123913
Fear financial covid	0,010140	0,002676	0,000	0,004892	0,015388
Female	0,011454	0,011393	0,315	-0,010891	0,033799
Age 35–54	-0,021182	0,015331	0,167	-0,051250	0,008886
Age 55+	-0,016324	0,016010	0,308	-0,047722	0,015075
Middle-income	0,002432	0,014758	0,869	-0,026511	0,031375
High-income	-0,009222	0,015876	0,561	-0,040360	0,021915
Middle-education	0,009013	0,014974	0,547	-0,020354	0,038379
High-education	0,006477	0,016165	0,689	-0,025227	0,038181
Germany	0,013707	0,017909	0,444	-0,021416	0,048830
Italy	0,013675	0,017490	0,423	-0,019764	0,047114
Netherlands	0,002623	0,017042	0,879	-0,031193	0,036439
Spain	0,022912	0,018723	0,221	-0,013809	0,059633
_cons	-0,014520	0,025550	0,570	-0,064631	0,035591

Number of obs	1866
R-squared	0,031

Table 13: Linear regression results for *unrelated*: COVID exposure, fear_financial_covid, fear of losing job, gender, age, income, education and country fixed effects. (Figure 10 Figure 11)

Variable	Coefficient	Std. Err. (Robust)	p-value	CI 95% Lower	CI 95% Upper
Covid	0,001170	0,011270	0,917	-0,020933	0,023272
Low fear of losing job	-0,003393	0,010460	0,746	-0,023907	0,017121
Middle fear of losing job	-0,011482	0,012982	0,377	-0,036943	0,013978
High fear of losing job	-0,042577	0,009582	0,000	-0,061370	-0,023785
Fear financial covid	0,002560	0,001597	0,109	-0,000572	0,005692
Female	0,007653	0,007213	0,289	-0,006493	0,021799
Age 35-54	-0,015485	0,009380	0,099	-0,033881	0,002911
Age 55+	-0,010565	0,010428	0,311	-0,031016	0,009887
Middle-income	-0,023651	0,009695	0,015	-0,042664	-0,004638
High-income	-0,038170	0,010355	0,000	-0,058478	-0,017862
Middle-education	-0,005502	0,008611	0,523	-0,022390	0,011386
High-education	0,017426	0,010790	0,106	-0,003736	0,038588
Germany	0,004900	0,012421	0,693	-0,019456	0,029264
Italy	0,004784	0,011357	0,674	-0,017524	0,027092
Netherlands	0,011500	0,013311	0,388	-0,014606	0,037607
Spain	-0,008589	0,011269	0,446	-0,030690	0,013512
_cons	0,032263	0,013734	0,019	-0,005327	0,059195

Number of obs	1866
R-squared	0,02

Table 13: Linear regression results for *plans_changed*: COVID exposure, fear_financial_covid, fear of losing job, gender, age, income, education and country fixed effects imposing good_type = house. (Figure 12 Figure 13)

Variable	Coef.	Std. Err. (Robust)	p-value	CI 95% Lower	CI 95% Upper
Covid	-0,003845	0,052069	0,941	-0,106199	0,098508
Low fear of losing job	0,259883	0,059196	0,000	0,143518	0,376247
Middle fear of losing job	0,231100	0,067559	0,001	0,098297	0,363903
High fear of losing job	0,240808	0,114611	0,031	0,022793	0,473339
Fear financial covid	0,029464	0,009865	0,003	0,010072	0,048857
Female	-0,057234	0,043478	0,189	-0,142701	0,028323
Age 35–54	-0,054273	0,050287	0,281	-0,153123	0,044578
Age 55+	-0,018781	0,060129	0,755	-0,136978	0,099416
Middle-income	-0,131741	0,047831	0,006	-0,225765	-0,037717
High-income	-0,134068	0,056585	0,018	-0,245299	-0,022837
Middle-education	0,032894	0,055855	0,557	-0,076948	0,142646
High-education	0,008949	0,056297	0,874	-0,101177	0,119614
Germany	-0,043667	0,078247	0,579	-0,197280	0,110347
Italy	-0,065685	0,063517	0,919	-0,135928	0,122559
Netherlands	-0,093004	0,047434	0,049	-0,208341	0,091206
Spain	0,129711	0,056658	0,072	-0,058052	0,200080
_cons	0,460766	0,102008	0,000	0,260244	0,661287

Number of obs	429
R-squared	0,2098

Table 14: Linear regression results for *plans_changed*: COVID exposure, fear_financial_covid, fear of losing job, gender, age, income, education and country fixed effects imposing good_type = car. (Figure 12 Figure 13)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	0,025903	0,040587	0,524	-0,053779	0,105583
Low fear of losing job	0,128388	0,037823	0,001	0,054132	0,202643
Middle fear of losing job	0,098463	0,042695	0,021	0,014461	0,182283
High fear of losing job	0,151258	0,053559	0,005	0,046058	0,256458
Fear financial covid	0,054134	0,006890	0,000	0,040608	0,067661
Female	0,025855	0,029435	0,380	-0,031932	0,083642
Age 35–54	-0,006821	0,038404	0,859	-0,082216	0,068574
Age 55+	0,022286	0,039671	0,574	-0,055596	0,100169
Middle-income	-0,061020	0,032542	0,061	-0,124908	0,002868
High-income	-0,098519	0,042609	0,021	-0,182170	-0,014868
Middle-education	0,034542	0,035609	0,332	-0,035366	0,104450
High-education	0,034655	0,040654	0,394	-0,045158	0,114467
Germany	0,137901	0,055376	0,013	0,029184	0,246617
Italy	0,189772	0,045855	0,000	0,099693	0,279741
Netherlands	-0,063143	0,031076	0,073	-0,111055	0,148015
Spain	0,127109	0,046493	0,006	0,035832	0,218339
_cons	0,197595	0,075030	0,009	0,050652	0,345255

Number of obs	744
R-squared	0,2296

Table 15: Linear regression results for *plans_changed*: COVID exposure, fear_financial_covid, fear of losing job, gender, age, income, education and country fixed effects imposing good_type = big-ticket item. (Figure 12 Figure 13)

Variable	Coefficient	Std. Error (Robust)	p-value	CI Lower 95%	CI Upper 95%
Covid	-0,006319	0,047527	0,894	-0,087036	0,099674
Low fear of losing job	-0,071933	0,045086	0,111	-0,016627	0,160495
Middle fear of losing job	0,042545	0,058679	0,469	-0,072714	0,157805
High fear of losing job	0,044910	0,086299	0,603	-0,124602	0,214422
Fear financial covid	0,074633	0,007671	0,000	0,059566	0,089701
Female	0,056603	0,035969	0,116	-0,014048	0,127254
Age 35–54	-0,030631	0,046446	0,510	-0,060601	0,121863
Age 55+	-0,027917	0,049111	0,570	-0,124382	0,068955
Middle-income	-0,084457	0,042327	0,046	-0,167598	-0,001315
High-income	-0,128588	0,048714	0,009	-0,224274	-0,032901
Middle-education	0,029246	0,043991	0,506	-0,057163	0,115654
High-education	0,023971	0,050864	0,638	-0,075937	0,123880
Germany	0,162797	0,059501	0,006	0,045922	0,279671
Italy	0,195562	0,056160	0,001	0,085249	0,305875
Netherlands	-0,095158	0,036713	0,014	-0,165652	-0,005507
Spain	0,240496	0,053727	0,000	0,134927	0,345993
_cons	-0,006195	0,082372	0,940	-0,167993	0,155604

Number of obs	572
R-squared	0,3275