Adapting to Change: How COVID-19 Shaped Online Consumer Behavior

A comparative study between the United Kingdom and Sweden aimed at analysing consumption variations in online shopping and online gambling.

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Abstract:

The purpose of this study is to investigate the impact of the COVID-19 pandemic on online shopping and online gambling, as well as the differences between Sweden and the United Kingdom. Both social isolation and online consumption habits have been significantly impacted by the pandemic. Examining how online functions changed in usage during this period can shed light on the pandemic's effects for individuals. We hypothesize that both online gambling and online shopping increased in Sweden and United Kingdom during the pandemic because of the increased perceived relative price and cost for its physical options, where the relative increase is expected to be larger for the last-mentioned country. The data collected in April of 2021 is used to examine demographic and psychological characteristics to refine the results and gain a deeper understanding of the differences between online shopping and online gambling consumption among individuals. Several different methods are used to analyse the data, such as OLS regressions and histograms. Results aligns with our hypothesises and indicates an increase in online shopping and online gambling for both Sweden and the United Kingdom, with the United Kingdom experiencing a larger increase than Sweden. It can be beneficial to gain insights into consumer behaviour for potential future pandemics or other situations where social isolation occurs. Future research could investigate how restrictive policies and supportive programmes can be designed to be even more effective for all individuals ahead.

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1 INTRODUCTION

The WHO declared COVID-19 a pandemic on March 11, 2020, due to its rapid spread (WHO, 2020a; WHO, 2020b). Mild respiratory symptoms required social isolation and distance (Cucinotta et al., 2020) and to combat the spread, many governments around the world imposed stay-at-home orders, travel bans, and meeting bans (Arimura et al., 2020). Sweden's policy to combat the spread of COVID-19, which relied primarily on voluntary suggestions rather than lockdowns like most European countries (including the United Kingdom), sparked a lot of debate (Mishra et al., 2021).

The impact the pandemic had on daily life and consumer behaviour makes it an interesting scenario to investigate (Watanabe et al., 2020). Watanabe bases this assumption on the fact that, as physical retail channels were restricted, online options such as online gambling and online shopping became more popular as a replacement for the physical options. The e-commerce market grew rapidly due to the fear of contracting a virus about which little was known and the closure of physical stores (Ivascu, 2022). This was the case observed in all EU member states (Postnord, 2021). Government restrictions and fears of contracting the virus discouraged consumers from shopping in physical stores (Akhtar et al., 2020). To adapt, shops increased their social media advertising, encouraged customers to shop online and use online shopping apps, offered discounts, and launched new marketing programmes (Koch et al., 2020). Kirk and Rifkin (2020) add that the pandemic's persistent uncertainty also may have led to transformational consumption behaviours.

The effects of COVID-19 restrictions on countries will vary (UNDP, 2020). Lockdowns reduced infection in early adopters, but other evidence suggests that they were expensive (Lewis, 2022). Lewis goes on to say that school and university closures may have harmed children's health (Lewis, 2022). The closure of businesses may also have exacerbated financial and social distress, as well as caused mental illness and economic downturns (Lewis, 2022). Restriction of movement and social contact, isolation, and quarantine have all been shown to have negative effects on mental health (Brooks et al., 2020). Psychological issues were less prevalent prior to the pandemic than during (Smith et al., 2022), with feelings of social isolation in particular causing anxiety and depression in university students in the United Kingdom (Catling et al., 2022). Despite fewer constraints, 45.6% of Swedish respondents in a 2020 survey reported severe mental health problems like depression, insomnia, or anxiety (McCracken et al., 2020).

The purpose of this study is to examine the effect of the pandemic on online shopping and online gambling, to further examine how this differed between Sweden and United Kingdom. Both demographic variables and psychological variables (income concern, general trust in people, and life satisfaction) are analysed to gain further insights. We anticipate an increase in both online gambling and online shopping as substitutes for physical options. Further, differences in online consumption between Sweden and United Kingdom is expected where we anticipate a larger shift towards online usage in United Kingdom due to stricter policy responses regarding restrictions and lockdowns. Demographic and psychological factors may

additionally deviate in significance and effect on online shopping and online gambling between the countries.

Our paper, with regards to earlier research, will examine two main research questions:

(1) *How did the consumption behaviour for online gambling and online shopping change during the COVID-19 pandemic?*

(2) *How did the change in consumption behaviour for online gambling and online shopping differ between Sweden and United Kingdom; two countries with different approaches to COVID-19 restrictions?*

Other topics related to the main questions above includes examining which individuals (with different demographic and psychological characteristics) will increase their online consumption of gambling and shopping, whether the change in consumption will differ between online gambling and online shopping, and whether people in the United Kingdom will consume more online gambling and shopping than Sweden due to stricter restrictions.

Understanding how online consumption changed during the pandemic and how it differed between two countries is relevant for several reasons. During the pandemic, consumption shifted from physical to online consumption. COVID-19 also had an impact on mental health and online function use. Examining how online functions were used during this time period can shed light on the effects of the pandemic on individuals. Future research examining the pattern for problematic consumption, such as compulsive online gambling or online shopping, could also be interesting to examine. These knowledges can help researchers and policy makers in the future to identify risk factors for pandemic responses that result in social isolation, as well as propose holistic solutions and policies for the future. Companies might also use this knowledge to segment groups to create marketing towards a specific group. Difference in significant variables between Sweden and United Kingdom might further indicate that different strategies should be developed for different markets.

The research is limited to Sweden and the United Kingdom in a 2021 survey conducted by random sampling. Quantitative methods, such as regressions, with ordered categorial variables on a Likert-scale are used to conclude coefficients' significance. In our regressions, economic reasoning plays a role, where economic theory is incorporated into the econometric model by, for example, choosing both demographic and psychological variables that are important to explain consumers behaviours (Burclaff, n.d).

A ceteris paribus perspective enables us to examine the effects of the change in a single variable, despite the fact that multiple other variables may influence our results. People's interest in gambling and online shopping may have been affected by many factors besides the pandemic. Since the counterfactual is unknown (the outcome if COVID-19 had not occurred) it may be difficult to establish causality. Other factors that may have influenced our findings include the introduction of restrictions on online gambling in Sweden and the United Kingdom

during the pandemic (Spelinspektionen, 2020; Gambling Commission, 2020). To demonstrate causality, additional research utilising complex econometric models is required.

We have identified a research gap that we intend to examine. Similar work has been done in the field where earlier studies have been researching *online gambling* during the pandemic (Avena et al., 2021; Brodeur et al., 2021; Columb et al., 2020; Frisone et al., 2020; Koós et al., 2022; Marsden et al., 2020; Sirola et al., 2023). Research connected to specifically *online gambling* in United Kingdom respective in Sweden during the pandemic also exists (Emond et al., 2022; Håkansson, 2020; Månsson et al., 2020). Furthermore, on the subject of online shopping, comparable research has been conducted in the field where prior studies investigated *online shopping* during the pandemic (Watanabe et al., 2020; Ivascu, L. 2022; Andruetto et al., 2023; Schulze, 2021; Hashem, 2020; Eger et al., 2021; Sixsmith et al., 2022; Theodororu et al., 2023; Koch et al., 2020; Kirk & Rifkin, 2020). Existing research pertains specifically to *online shopping* in the United Kingdom during the pandemic (Schulze, 2021; Marikyan et al., 2023; Horne & Furnham, 2023; Jaller & Dennis, 2023; Papagiannidis et al., 2023; Appinio, 2021), but to the best of our knowledge, there are no research papers about online shopping in Sweden other than national statistics (Simon-Kucher & Partners, 2021). We are contributing to future research by comparing the United Kingdoms and Swedish online gambling and shopping consumption during the pandemic. A comparable study in the same setting has to our knowledge not been found before. The novel study concludes two dimensions in one thesis: how online gambling and shopping changed during a pandemic crisis and how this differed between two countries with different restrictive policies.

The structure of the paper is as follows: It begins with a literature review of prior research on the subject and then continue with the theoretical framework, providing a foundational understanding of the utilised economic and psychological theories. The regressions and methodology of this paper will be covered by econometric model, which will be followed by descriptive data. Histograms and regressions are then presented and analysed in relation to the literature review and theories. In addition, this section addresses limitations and future research. The thesis will conclude with a summary of the findings in the conclusion.

2 LITERATURE REVIEW

This part presents the literature review, where earlier research within the field will be displayed. *Online gambling* will first be examined, to thereafter look at *Online shopping*. Previous research for how *psychological factors* affects will also be presented for both online shopping (retail) and online gambling. These psychological factors are observed to affect online shopping and online gambling in a similar way, making it reasonable to examine these together.

2.1 ONLINE GAMBLING

In this section, previous literature related to online gambling and COVID-19 will be presented.

Further review of earlier literature connected to *online gambling* behaviours, and their change during the COVID-19 pandemic has been conducted. Earlier studies have been researching *online gambling* during the pandemic (Avena et al., 2021, Brodeur et al., 2021, Columb et al., 2020, Frisone et al., 2020, Koós et al., 2022, Marsden et al., 2020, Sirola et al., 2023). Research connected to specifically *online gambling* in United Kingdom respective in Sweden during the pandemic also exists (Emond et al., 2022, Håkansson 2020, Månsson et al., 2020).

The drastic change of living such as physical separation and lockdowns associated with the COVID-19 pandemic caused significant disruptions in people's life, raising worries about increases in addictive behaviours such as an increase in gambling (e.g., online betting and online casino use) (Koós et al., 2022; Marsden et al., 2020). Problematic and excessive gambling is best described as a "behavioural" addiction, in which the individual is hooked to a rewarding activity rather than a substance (Mann et al., 2016). The disorder is seen as a high-risk activity (Brodeur et al., 2021) that affects financial, mental, and social capabilities on both individuals, families, and communities (Langham et al., 2015).

A study concludes that uncertainties brought on by the pandemic may have increased the problematic usage of online gambling as a maladaptive coping technique to deal with the heightened psychological discomfort (Avena et al., 2021). Another study means that online gambling did increase in popularity during COVID-19, despite the shutdown of betting arenas and the suspension of popular athletic events globally (Narayan, 2020). Gambling corporations were extensively advertising computer-generated "virtual" sports, and online casino games due to sports events being postponed (Davies, 2020). Another study means that addicts' stress, anxiety levels, and engagement in addictive behaviour (such as problem gambling online) and substance abuse was higher and made worse during social isolation (Columb et al., 2020).

The lockdown in *United Kingdom* led to a decrease in gambling (such as sports events), while online gambling (such as bingo, casino games and online poker) increased (Emond et al., 2022). Regular users increased their usage of online gambling six-fold while users who occasionally gambled were still more than twice as likely to gamble online. Emond further means that *financially disadvantaged people* responded with a larger increase in online gambling. The previous gambling behaviour affected the frequency of gambling, where most gamblers were *male and heavy drinkers*. Emond does at last state that the frequency of online gambling was unrelated to *occupation* obtained during the pandemic.

A study made in *Sweden* indicated how the vast majority did not change their consumption, while a vulnerable group of *males* with more *gambling issues* and *high alcohol consumption* prior the pandemic increased their online gambling (Håkansson, 2020). While another study from Sweden found no connection between COVID-19's related effects and an increase in online gambling, except for high-risk games, however, concern about mental health was linked to problem gambling (Månsson et al., 2020).

Contrary to earlier worries, people who had no prior problem with addictive behaviours may not have acquired it during the pandemic (Koós et al., 2022). While the worries for the

vulnerable group of problem online gamblers remained (Brodeur et al., 2021). The vulnerable group consisted mostly of *males with high alcohol consumption* (Langham et al., 2015; Håkansson, 2020). Another study amplifies how psychological hazards due to a lack of deep social ties could have affected compulsive gambling during the pandemic (Sirola et al., 2023). Sirola further concludes how *loneliness* is harmful to well-being and can emerge in harmful behaviors like problem gambling. Other factors such as *impulsive characteristics and lower levels of education* did also have a significant impact on problem gambling during the pandemic (Frisone et al., 2020).

COVID-19 has been seen to increase *income concern* which in turn had impacts on mental health (Wilson et al., 2020). In prior representative studies from the US, financial stress has been demonstrated to be a catalyst for mental health issues and compulsive gambling (Ronzitti et al., 2018). *Trust* is further vital in online gambling since it is doubtful that someone will spend money online without assurance (Griffiths, 2010). The pandemic has increased people's fear of becoming infected, dying, or losing loved ones, and encountering infected people (Dymecka, 2021). Dymecka elaborates that the fear of COVID-19 was found to be negatively correlated with *life satisfaction*. This aligns with the reasoning that the pandemic has had an impact on happiness and life satisfaction (Gawrych 2021; Dymecka 2021). A study made by the Gambling Council found that mental health issues and low life satisfaction are risk factors for gambling addictions (Responsible Gambling Council, 2020).

2.2 ONLINE SHOPPING

In this section, previous literature related to online shopping and COVID-19 will be presented.

Online shopping is in this case limited to retail. Retail is defined as "The set of activities that markets, products or services to final consumers for their own personal or household use. It does this by organizing their availability on a relatively large scale and supplying them to consumers on a relatively small scale" (Newman & Cullen, 2002).

Andruetto et al. (2023) looked at how the pandemic influenced online shopping in Italy and Sweden, who modified their shopping habits the most, and the differences between Italy and Sweden, as they had different COVID-19 policies. Italy implemented more stringent rules such as lockdown, whilst Sweden just issued recommendations. According to the findings, Italy had witnessed a greater increase in online shopping and a greater decrease in physical store sales. Another study conducted in the UK showed that COVID-19 has strongly influenced consumers' buying behaviour, especially online purchasing frequency, although regardless of sociodemographic factors like *age* and *gender* (Schulze, 2021). According to Schulze, the average user now uses both online and offline shopping platforms instead of just one. Looking at the findings of a study that was carried out in the Czech Republic, *fear* appeal, which includes anxieties about health and economic concerns, related to alterations in consumer behaviour and higher online sales during COVID-19 rather than offline purchases (Eger et al., 2021).

The largest increase during COVID-19 in online shopping was observed among *women and the highly educated* (UNCTAD, 2020; Ivascu, 2022; Hashem, 2020). *Men* have been more

prevalent in online shopping pre-pandemic than women according to most of the research done, although there are some statistics and research that suggest otherwise (Start.io., 2022; Eurostat, 2020; Li et al., 1999). There is also some research suggesting the intention to make online purchases is unaffected of *gender* and *education* (Theodorou et al., 2023).

According to Rodgers and Harris (2003) women prefer vendor-consumer-product interaction. Women like to bid and try products before buying them. Thus, women *distrust* online shopping more than men. Men, on the other hand, buy products without considering size, materials, or quality where Rodgers and Harris suggest that men purchase online more easily than women. Online *trust* varies by gender and that women trust less than men in online shopping, suggest women have less trusting behavioural intentions towards online shopping, which could explain men's online presence in shopping too (Faqih, 2022).

A positive correlation between *employment status and educational level* (Eurostat, 2021; Li et al., 1999; Hashem, 2020) has also been observed. In 2022, the largest increase in e-shopping was observed by *young* internet users (Eurostat, 2022). This is consistent with the findings of numerous studies that indicate a positive correlation between age and online shopping (Lian et al., 2014; Theodororu et al., 2023), although literature from Kung et al. (2023) did not find any increase in daily internet use for older people during the pandemic even if there was an increased digitalisation. There is also research from Sixsmith et al. (2022) which shows that, throughout the course of the pandemic, old people increased their usage of technology in order to support their wellness and health as well as their communication needs, although, there is literature from Song et al. (2021) suggesting that there still is an age-related digital divide that has excluded older adults from both the real society and the virtual society, especially during COVID-19 (Sixsmith et al., 2022; Song et al., 2021). But this adoption of technology observed in older people has nevertheless led to an increase in online shopping amongst older people (Kovalenko, 2021). Erjavec and Manfreda (2022) also found that COVID-19 fear increased the older adults' behavioural intention toward online shopping.

There is although contradicting findings from Jensen et al. (2021) that revealed that age had a negative impact on the likelihood of buying for groceries online, maybe because older people were less familiar with technology, and technology required to shop for groceries online. Lastly, living isolated (*alone*) may have led to an increase in shopping in stores, as a consumer may wish to physically connect with other people (Escandon-Barbosa et al., 2021). Online shopping is also linked to stress management, including escape, relaxation, and socializing (Rahadjo et al., 2023).

According to Thoresen et al. (2021), *trust* was observed to be higher in people who had already been infected with the virus and lower in those who considered themselves to be particularly vulnerable or who were extremely concerned about COVID-19. Bierhoff and Vornefeld (2004) further explain that individuals generate subjective beliefs that transform relational trust into system trust (which also applies to internet trustworthiness). Trust in people (interpersonal/relational trust) will influence whether an individual might use certain online functions, such as buying groceries online (Van Der Werff, 2018). Lastly, although a

significant amount of research has been conducted regarding the effect of online shopping on *life satisfaction* to our knowledge, no research has been conducted on how the level of life satisfaction could influence online shopping, particularly during COVID-19.

3 THEORETICAL FRAMEWORK

In this section, the theoretical framework will briefly explain economic theory concerning consumption behaviour, with consumer theory serving as a framework for economic theory. This will be expanded further by looking at factors other than monetary aspects to broaden consumer theory and our understanding of how and why people changed their behaviour in order to explain other mechanisms behind making decisions during the COVID-19 pandemic. The mechanisms examined in this paper are how a person's attitude towards consumption and social factors can influence their decision to engage in a specific behaviour.

3.1 CONSUMER THEORY

Consumer theory is a field in microeconomics that tries to explain how individuals consume their money by considering their individual preferences and available resources (Frank & Cartwright, 2020). It works as a foundational theory for microeconomics (Raaij, 1985). Consumer theory views individuals as rational and informed, even though this might not always be the case (Pindyck et al., 2013). Pindyck furthermore argues that consumption is heavily influenced by psychology and similar areas.

In consumer theory, prices, costs, and incomes are typically described in monetary terms. The *substitution effect* has an impact on consumer behaviour (Leung et al., 2014; Shi et al., 2019) and describes how price changes (in monetary terms) affect consumer preferences for substitute products (Frank & Cartwright, 2020). The concept of price will be expanded in this paper. We expect that the COVID-19 pandemic changed resource availability, people's needs and preferences, which all influence people's decisions. Other psychological factors and perceived prices and costs associated with shopping in physical stores that were significant during the pandemic but are usually minor during normal times will be considered. These include the inconvenience of wearing a mask outside, as well as the fear of becoming sick and its consequences (loss of income, being perceived as irresponsible by shopping in physical stores). More spare time, technological knowledge, and financial scarcity/abundance (depending on pandemic effect) may also have influenced a person's perceived price of online shopping and gambling. This shift in perception will therefore change the perceived relative price and cost thus generate a substitution effect.

The restrictions in the United Kingdom made it relatively more "expensive" to consume physical shopping and physical gambling, whereas online shopping and online gambling was relatively cheaper during the pandemic. Therefore, this paper hypothesize that the *relative price* of consuming online shopping and online gambling decreased more in United Kingdom than in Sweden, indicating a higher substitution effect for United Kingdom than Sweden from physical to online consumption. The total impact on the changes in online shopping and online

gambling during the COVID-19 pandemic will however be dependent on both the substitution- and the income effect which further will be presented.

Another model within consumer theory explains how the *income effect* influence consumer behaviour (Leung et al., 2014). The income effect is the effect of changes in income on purchasing power (Frank & Cartwright, 2020), and its effect changes depending on the type of good consumed. Most goods are considered normal, with income elasticity greater than zero (Frank & Cartwright, 2020). Online shopping can thereby be seen as a market with mainly normal goods (although inferior and luxury goods can also be purchased). Because online gambling is considered a normal good (Davies, 2015), it is expected to follow the same trends as online shopping.

Individuals' inability to engage in activities such as travelling and dining out, for example, had a positive impact on household income during the pandemic. Household income increases if money cannot be spent, and households will therefore have more money left at the end of the month. This will have a positive income effect if the good is normal and increase the demand for online shopping and online gambling. An overall positive income effect is expected due to the pandemic. This assumption is based on presuming that the majority of people did not lose their jobs and that the majority of people were unable to travel or spend money as they had in the past (although we are aware that the income effect was negative for some households since some people lost their jobs). It is further based on the idea that both online gambling and online shopping are seen as markets with mainly normal goods. Additionally, one could expect an overall greater positive income effect in the United Kingdom, given that Swedes had more options for spending their money outside because of the less strict pandemic policies.

In summary, the total impact on the changes in online shopping and online gambling during the COVID-19 pandemic will be dependent on both the substitution- and the income effect. The substitution- and income effects generally moved in the same direction, suggesting that consumption of online gambling and online shopping increased in both countries. The larger total effect of income and substitution effect in United Kingdom suggest that online gambling and online shopping increased relatively more in United Kingdom than in Sweden. The total effect of the substitution and income effect will therefore be positive in both Sweden and the United Kingdom, although larger in the United Kingdom.

3.2 HYPOTHESIS

Based on the literature review and theory, our belief is that online gambling and online shopping increased during the pandemic. To investigate how consumption differs for individuals with different demographic characteristics, psychological characteristics, and levels of well-being, and to present a comparison between Sweden and the United Kingdom, the following hypotheses are thus examined:

> H_1*: Consumption of online gambling (e.g., online casinos) have increased during the pandemic.*

H_2: *Consumption of online gambling (e.g., online casinos) have increased more in UK than in Sweden.*

H_3: *Consumption of online shopping have increased during the pandemic.*

H_4: *Consumption of online shopping have increased more in UK than in Sweden.*

4 ECONOMETRIC MODELS

The methodology of the paper, as well as the regressions made, will be broken down into more specifics in the following section.

4.1 CHOICE OF STATISTICAL MODEL

The dependent variables are ordered categorical, as the categories possess an inherently increasing order. However, it is uncertain whether the perceived distance between the categories is equal or how it varies across participants. It is thereby presumed that the psychological distance between the categories is equal. Moreover, due to the non-continuous and potentially non-normally distributed nature of the dependent variable, the assumptions of linear models may not be met. Another limitation with the methodology may be that linear OLS regression assumes a linear relationship between dependent and independent variables (Aggarwal & Ranganathan, 2017). This may be an incorrect assumption for some variables used. It could thereby be more suitable to use another model, such as an ordinal model (Bürkner & Vuorre, 2019). Robitzsch (2020) on the contrary suggests that it is possible to treat ordinal variables as continuous variables in most situations, without considering the number of categories or the distribution of the data.

The decision to choose the linear model OLS (Ordinary Least Square) instead of the ordinal models (ordered logit or probit model) was made with the support of Robitzsch's reasoning, and since it is easier to interpret the results. However, logit regressions will also be presented in the appendix D1 and D2 to evaluate the robustness of the result from OLS. The results from the ordinal logit regression did not differ that much. The significance and the signs differed in 7 coefficients out of a total 118 coefficients (see appendix D1 and D2). This made it hard to justify choosing a more complicated model. The major advantage of the linear model against the ordered logit model is its interpretability. Linear regression generates more easily readily understandable estimates of the ATE (average treatment effect), while logistic regression coefficients are presented as logarithmic odds ratios (Gomila, 2021). Noreen also explains how the OLS regression performs at least equally well as *probit model* (Noreen, 1988).

4.2 OLS ASSUMPTIONS

The OLS model has several assumptions (Stock & Watson, 2020) that must be fulfilled for it to be considered a robust model. Assumption A1 "*The conditional distribution of ui given Xi has a mean of zero*" is not fulfilled. This can be investigated by plotting and seeing a systematic asymmetrical pattern deviating from zero (see Appendix E1). Assumption A2, *(Xi, Yi) i = 1…, n, are independently and Identically Distributed (random sampling)*" is fulfilled since random sampling was conducted when doing the experiment "The participants were

recruited via the Innolink OY panel by using random sampling" (Wilska et. al, 2021). Assumption A3, *Large Outliers Are Unlikely X_i and ui have nonzero finite fourth moment"* is met for all variables except for Net_income. Assumption A4, *"There is no multi-collinearity (or perfect collinearity. Full rank assumption)" is* fulfilled since the correlation between given explanatory variable and other explanatory variables in the models are between 1.03 and 2.40 when doing several experiments for both dependent variables for both countries via the *VIF-function*. A value between 1 and 5 indicates moderate correlation between a given explanatory variable and other explanatory variables in the model that rarely is severe enough to require attention.

Further, A5, *Var (ui | Xi) σ^2_u, where σ^2_u is a constant (homoscedasticity)."* is fulfilled in all cases since as we can't conclude that there is heteroscedasticity, by using the *Breusch-Pagan test for heteroskedasticity*. Stata does by default assume homoscedastic errors. One could tell the tool to assume heteroscedastic error term by running the regressions with the option "robust" which in turn will increase the standard errors. This will however be skipped since the Breusch-Pagan test for heteroskedasticity cannot conclude heteroscedasticity for any of the models. Autocorrelation is not taken into consideration since data is examined from the same time-period. Further, assumption A6, *"The conditional distribution of ui given Xi is normal (normal errors)"* is not fulfilled for all variables, however some variables are closer to having a normally distributed residuals then others. This can be seen by plotting a histogram and fitting in a normal distribution curve (see Appendix E2). All the OLS-assumptions are rarely fulfilled and the fact that A2-A5 are fulfilled indicates robustness.

4.3   REGRESSIONS

This section contains information about how regressions are set up and how the variables are defined. You will first find the layout and then explanations for the simple- and extended models.

The data was refined to find interesting variables to examine. Demographic variables in the simple models, whereas softer variables (*concern about income, general trust in other people,* and *life-satisfaction*) in the extended models are added due to an interest in examining how the pandemic with added restrictions affected these factors, to later affect online shopping and online gambling. The third kind of model are pooled regressions for both the simple and extended models, where the independent variable *UK* is added to include more observations and examine differences between the United Kingdom and Sweden. This section will thereafter have explanations for all the chosen variables.

Decision to include variables was based on looking at the answer options in the questionnaire for each variable (see Appendix B1 and B2 for more information). In the regression, most of the *independent variables* are set up dummy variables. The two independent variables *Age* and *Net income* are however set up as continuous variables. Survey participants responded with Likert-type scale answers from 1-4 for the *dependent variables*. In other words, participants are asked to compare their present expenditure (in April 2021) to their spending before the pandemic. Be thereby aware that the variable itself is measuring a change. The poll did not

collect precise data on the volume of consumer expenditure, rather if the person believed that they changed their consumption.

The following regressions are the *simple models* with demographic variables for first online gambling, and second online shopping. These will be performed for both United Kingdom and for Sweden.

$$Onl_{gambl} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \varepsilon$$

$$Onl_{shop} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \varepsilon$$

The following regressions are the *extended models* with demographic variables and psychological variables, for first online gambling, and second online shopping. These will be performed for both United Kingdom and for Sweden.

$$Onl_{gambl} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \beta_9 Conc_{inc} + \beta_{10} Trust + \beta_{11} Satlife + \varepsilon$$

$$Onl_{shop} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \beta_9 Conc_{inc} + \beta_{10} Trust + \beta_{11} Satlife + \varepsilon$$

The following regressions are pooled, in which the United Kingdom and Sweden are analysed in the same regression in order to include more observations and derive additional insight. Presented are first two *simple pooled regressions* (with demographic variables), further the second two are *extended pooled regressions* (with demographic and psychological variables).

$$Onl_{gambl} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \beta_{12} UK + \varepsilon$$

$$Onl_{shop} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \beta_{12} UK + \varepsilon$$

$$Onl_{gambl} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \beta_9 Conc_{inc} + \beta_{10} Trust + \beta_{11} Satlife + \beta_{12} UK + \varepsilon$$

$$Onl_{shop} = \beta_0 + \beta_1 Age + \beta_2 Net\ Income + \beta_3 Male + \beta_4 City + \beta_5 Working + \beta_6 Highsch + \beta_7 Uni + \beta_8 Alone + \beta_9 Conc_{inc} + \beta_{10} Trust + \beta_{11} Satlife + \beta_{12} UK + \varepsilon$$

Table 1: Description for variables

Type of variable	Name	Description
Dependent variable	*Onl_gambl*	The dependent variable for how the individual's online consumer habits changed during the coronavirus pandemic regarding online gambling in comparison to their previous habits. 1 = I have purchased less, 2 = the same amount, 3 = more to some degree, alt. 4 = considerably more
Dependent variable	*Onl_shop*	The dependent variable for how the individual's online consumer habits changed during the coronavirus pandemic regarding online shopping in comparison to their previous habits. 1 = I have purchased less, 2 = the same amount, 3 = more to some degree, alt. 4 = considerably more.
Independent variable	*Age*	The coefficient for consumers aged between 18 and 75 years.
Independent variable	*Net income*	The coefficient for net income in 10 000 EUR/year.
Independent variable	*Male*	The coefficient for a male consumer. The control group represents female consumers.
Independent variable	*City*	The coefficient for a consumer living in an urban area (city). The control group represents consumers living in a rural area (countryside/countryside-urban).
Independent variable	*Working*	The coefficient for a consumer working. The control group represents consumers that are not working (studying, furloughed, unemployed, parental leave, retired etc).
Independent variable	*Highsch*	The coefficient for a consumer with a high school/college degree. The control group represents consumers with less than a high school diploma, i.e. primary school or vocational degree (including apprenticeship).
Independent variable	*Uni*	The coefficient for a consumer with either an Undergraduate degree (bachelor's degree), or a master's or Doctor's degree. The control group represents consumers with less than a university diploma, i.e. high school, primary school or vocational degree (including apprenticeship).
Independent variable	*Alone*	The coefficient for a consumer living alone. The control group represents consumers that are living with others (roommates, children, couples, parents).
Independent variable	*Conc_inc*	The coefficient for an individual that is worried about the impact of coronavirus on their income level (i.e., answered 3, 4 or 5 in the survey). The control group represents individuals that is not worried (i.e., answered 1 or 2 in the survey).
Independent variable	*Trust*	The coefficient measuring if the individual generally believes that most people can be trusted (i.e., answered 1, 2, 3 or 4 in the survey). The control group represents individuals that generally believes that you can't be too

		careful when dealing with people (i.e., answered 5, 6, 7, 8, 9 or 10 in the survey).
Independent variable	*Satlife*	The coefficient measuring if the individual in general is satisfied in with their life (i.e., answered 3 or 4 in the survey). The control group represents individuals that generally are not satisfied with their life (i.e., answered 1 or 2 in the survey).
Independent variable	*UK*	The coefficient for an individual that lives in the United Kingdom. The control group represents individuals that lives in Sweden.

5 DATA

The data that was used will be presented in the following sections. In addition to that, descriptive statistics will be presented.

5.1 DATA BACKGROUND

The data[1] was collected in between the 9th and the 13th of April of 2021 with the respondents ranging from the ages 18 to 75 in Sweden and Great Britain (It also includes Finland) (Wilska et al., 2021). The participants were selected using the Innolink OY panel using random selection to achieve a quota of 1000 participants per country. The data has a margin of error of 3.1% with a 95% confidence interval for each nation investigated. Participants were polled on the consequences of COVID-19 on their consumption and personal finances, views on government policies, and predictions for their financial behaviour following the pandemic to make clearer effects of the coronavirus pandemic on the lives of residents. The survey was conducted, and the data was managed in accordance with the Helsinki Declaration (according to a similar study that used the same dataset) which outlines ethical principles for research involving human subjects (Sirola et al., 2023). At last, Wilska et al., meant that the obtained data is quite rich and provides several intriguing prospects for future research. The large dataset was carefully investigated, cleaned, tested and examined to be able to present quality data with the purpose of answering our research questions. After investigating the whole data set, parts of it are examined below (see appendix B1 and B2) to answer the research question. The data is utilized to perform quantitative research by conducting OLS regressions with the statistical tool Stata.

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[1] Utilizing a dataset provided by Dr. Nyrhinen.

5.2 DESCRIPTIVE STATISTICS

Table 2: Descriptive Statistics for Sweden

Variable	Obs	Mean	Median	Std.dev	Min	Max
Onl_shop[2]	888	2.156	2	1.011	0	4
Onl_gambl[3]	884	1.037	0	1.195	0	4
Age (Year)	890	44.422	43	15.438	18	75
Net_income (10^4 EUR/Year)	841	0.317	0.2	0.636	0	9
Male	890	0.497	0	0.500	0	1
City	883	0.772	1	0.420	0	1
Working	890	0.584	1	0.493	0	1
Highsch	890	0.412	0	0.493	0	1
Uni	890	0.430	0	0.495	0	1
Alone	889	0.282	0	0.450	0	1
Conc_inc	881	0.585	1	0.493	0	1
Trust	871	0.421	0	0.494	0	1
Satlife	884	0.723	1	0.448	0	1

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[2] Observations where Onl_shop is 0 will be dropped when doing regressions for the mentioned dependent variable.

[3] Observations where Onl_gambl is 0 will be dropped when doing regressions for the mentioned dependent variable.

Table 3: Descriptive Statistics for United Kingdom

Variable	Obs	Mean	Median	Std.dev	Min	Max
Onl_shop[4]	905	2.620	3	1.057	0	4
Onl_gambl[5]	903	1.110	0	1.300	0	4
Age (Year)	909	43.273	41	15.856	18	75
Net_income (10[4] EUR/Year)	851	0.310	0.21	0.539	0	8.5
Male	909	0.498	0	0.500	0	1
City	869	0.568	1	0.496	0	1
Working	907	0.610	1	0.488	0	1
Highsch	909	0.383	0	0.486	0	1
Uni	909	0.432	0	0.496	0	1
Alone	905	0.160	0	0.366	0	1
Conc_inc	908	0.658	1	0.475	0	1
Trust	887	0.421	0	0.494	0	1
Satlife	976	0.740	1	0.439	0	1

Above are the descriptive statistics for Sweden and United Kingdom. Note that the descriptive statistics for the United Kingdom and Sweden are very similar. Please be aware that observations later are dropped since the option ("I have not purchased at all") measures an individual that has not purchased anything at all. The option is not a measurement of change, making it misleading to include these observations in the regressions. See appendix C1-C4 for more specified descriptive data after dropping observations.

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[4] Observations where Onl_shop is 0 are later dropped when doing regressions for the mentioned dependent variable.

[5] Observations where Onl_gambl is 0 are later dropped when doing regressions for the mentioned dependent variable.

6 RESULT AND DISCUSSION

The results and discussions for the study are presented below. Histograms are used to display the survey responses. To further investigate the research question, tables with results from regressions are displayed to evaluate the sign and statistical significance of the coefficients. Regressions are presented for both Sweden and the United Kingdom, including simple regressions with demographic variables, and extended regressions with both demographic and psychological variables. Afterwards, results from pooled regressions are presented, in which the United Kingdom and Sweden are analysed in the same regression to include more observations and derive additional significant coefficients.[6] Results will further be discussed in relation to presented literature and theories within the subject to answer the four hypothesises mentioned above.

6.1 RESULTS

6.1.1 HISTOGRAM: ONLINE GAMBLING

Figure 1: Change in online gambling in Sweden during the coronavirus pandemic.
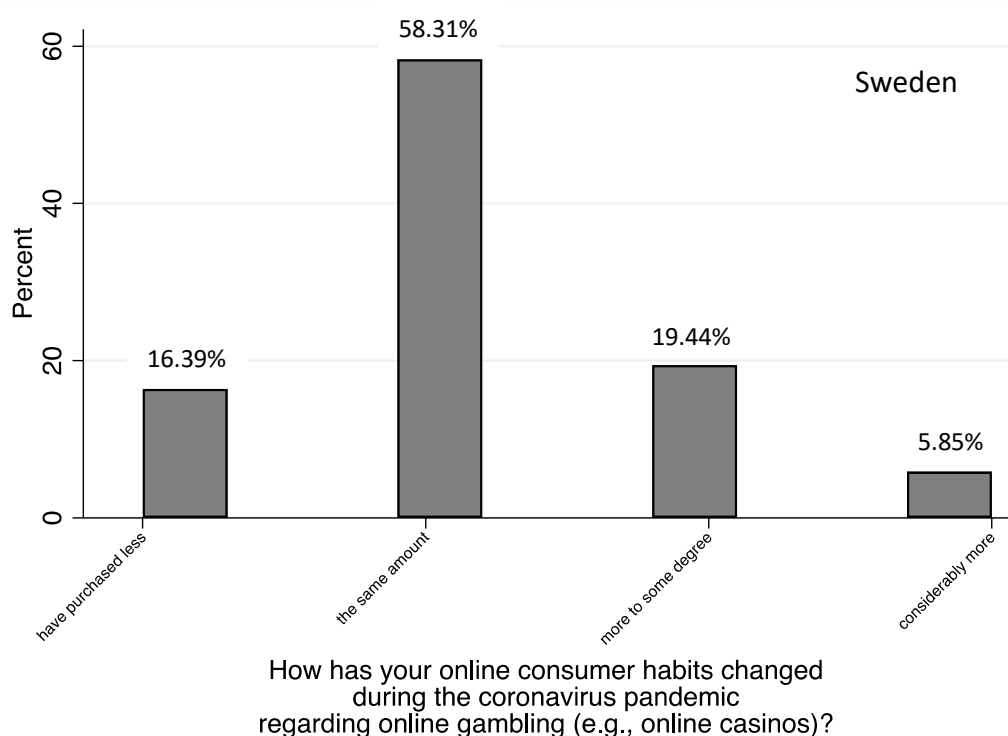
Note: Sample size equals 427

58% of the respondents in Sweden answered that they gambled online the *same amount* during as before the pandemic, whereas 19% answered that they gambled online *more to some degree*, 16% of the respondents answered that they purchased *less* online gambling and 6% answered

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[6] Please note that observations are discarded in this section, which explains why there are fewer observations in this section compared to the descriptive data.

that they purchased *considerably more* online gambling. Thus, the majority of respondents gambled the same amount, while more respondents said they increased their online gambling consumption than said it decreased. An average increase is thereby observed.

Figure 2: Change in online gambling in United Kingdom during the coronavirus pandemic.
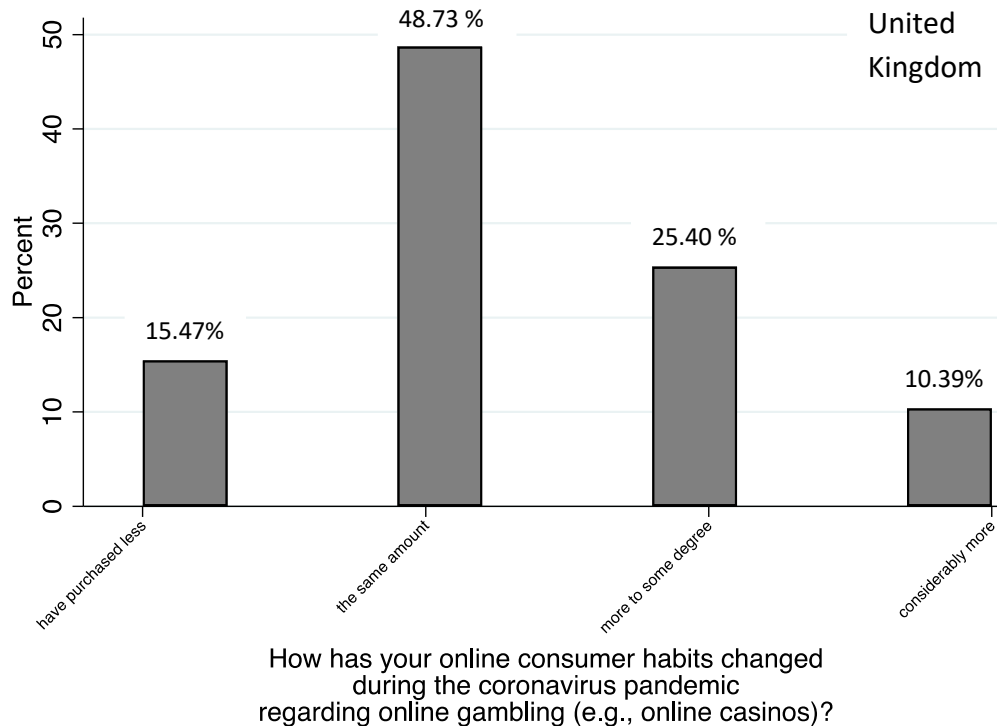
Note: Sample size equals 433

Similar trends occur for United Kingdom where 49% of the respondents answered that they purchased online gambling to *the same amount*, whereas 25% answered that they gambled online *more to some degree*, 16% of the respondents answered that they purchased *less* online gambling and 10% answered that they purchased *considerably more* online gambling. As a result, the majority online gambled the same amount, but more respondents stated an increase in their online gambling than those stated a decrease in the online gambling consumption. An average increase is thereby observed.

6.1.2   DISCUSSION FIGURE 1 & FIGURE 2

Several of the results from the histograms for online gambling can further be discussed. The figures display how a majority of the respondents did not change their behaviour of online gambling in neither of the countries. They *purchased the same amount* of ca 58% in Sweden and ca 49% in United Kingdom. There were however comparably slightly more people that described that they *increased* their consumption (more to some degree alt. considerably more) than those that described that they did not. There has thereby been an average increase of online gambling, which stands in unison with the first hypothesis (H1). United Kingdom differs from Sweden in that a larger shift towards an average increase in online shopping is observed for the

first mentioned country. Circa[7] 36% of the respondents in United Kingdom and 25% in Sweden answered that they; *increased* their online gambling consumption, whereas ca 16% in United Kingdom and 16% in Sweden answered that they *purchased less*. This indicates that the second hypothesis (H2) is fulfilled as well. Implications to why this is observed connects both to previous literature and theories.

Previous literature aligns with our findings. Online gambling increased in popularity during COVID-19, despite the shutdown of betting arenas and the suspension of popular athletic events globally (Narayan, 2020). Gambling corporations were extensively advertising computer-generated "virtual" sports, and online casino games due to sports events being postponed (Davies, 2020). Online gambling affects financial, mental, and social capabilities on both individuals, families, and communities (Langham et al., 2015). Addicts' stress, anxiety levels, and engagement in addictive behaviour (such as problematic online gambling) was higher and made worse during social isolation (Columb et al., 2020). These could have caused psychological hazards due to a lack of deep social ties (Sirola et al., 2023), which in turn may have affected people to use gambling as a maladaptive coping technique to deal with the psychological stress (Avena et al., 2021). The relatively larger increase in United Kingdom could be due to them relying on lockdowns whereas Sweden mainly relied on voluntary suggestions (Mishra et al., 2021). The stricter restrictions in United Kingdom may have led to larger psychological stress there than in Sweden due to the lack of social ties and psychological stress being larger in the first-mentioned country. The restrictions on physical retail channels were higher in United Kingdom due to stricter restrictions, making the push towards online channels bigger there (Watanabe et al., 2020). All these observations indicate why we in the histograms observe a general increase of online gambling in both countries, and why this increase is larger in United Kingdom.

Stricter restrictions in the United Kingdom than in Sweden (Mishra et al., 2020) may have led to a larger increase in online gambling for the first-mentioned country due to a larger increase in the relative price (in wider terms), which in turn could have increased the substitution effect leading to a swap of physical gambling for online gambling. The income effect is expected to be positive in both countries, but larger in United Kingdom, given that Swedes had more options for spending their money outside because of the less strict pandemic policies. A normal good (such as online gambling) will increase in demand due to a positive income effect. Both the positive substitution effect and the positive income effect indicates a shift towards more online gambling during the pandemic compared to before. The relatively higher substitution- and income effect in United Kingdom than in Sweden indicates why we examine a larger change in the first-mentioned country.

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[7] Sweden: 19.44% + 5.85% = 25.29%, United Kingdom: 25.40% + 10.39% = 35.79%

6.1.3 HISTOGRAM: ONLINE SHOPPING

Figure 3: Change in online shopping in Sweden during the coronavirus pandemic.
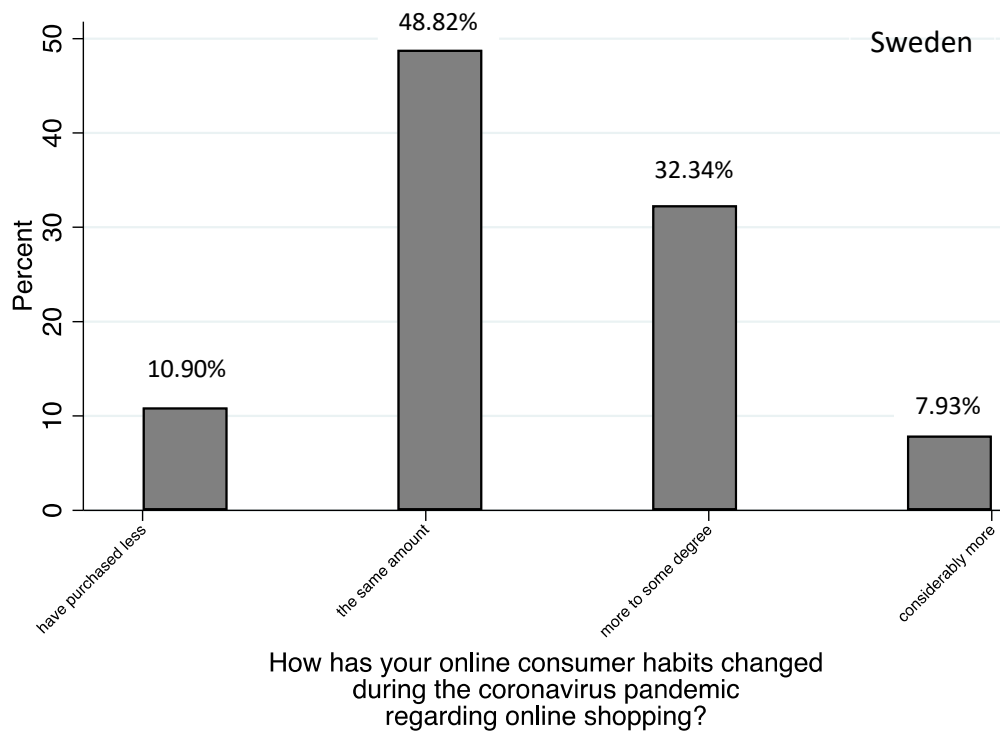
Note: Sample size equals 807

48.82% of the respondents in Sweden answered that they purchased the *same amount* of online shopping during the pandemic as before, whereas 32.34 % answered that they shopped online *more to some degree*, 10.90% of the respondents answered that they consumed *less* online shopping and 7.93% answered that they purchased *considerably more* online shopping. A larger group shopped online to the same extent, but more respondents said they increased their online shopping consumption than said it decreased. An average increase is thereby observed.

Figure 4: Change in online shopping in United Kingdom during the coronavirus pandemic.
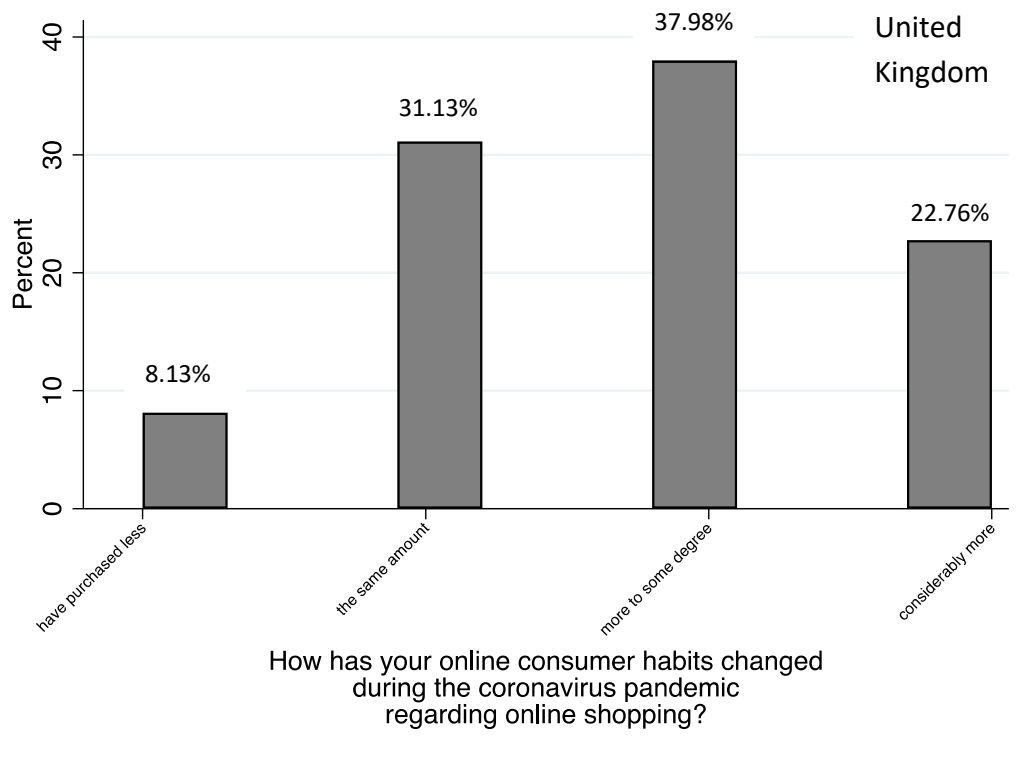
Note: Sample size equals 861

Somewhat different trends occur for United Kingdom where 37.98% of the respondents answered that they shopped online *more to some degree*, whereas 31.13% answered that they shopped online to *the same amount*, 22.76% answered that they shopped online *considerably more* and 8.13% of the respondents answered that they shopped online *less,* thus, a majority shopped online more to some degree, while more respondents answered that they consumed the same amount of online shopping than those that answered that the consumption decreased. United Kingdom differs from Sweden in that a larger shift towards an increase in online gambling is seen for the first mentioned country. More respondents in United Kingdom than in Sweden answered that they; increased their online gambling consumption, whereas fewer answered that they had purchased the same amount and purchased less. An average increase in online shopping is thereby observed.

6.1.4 DISCUSSION FIGURE 3 & FIGURE 4

The results from the histogram section reveals insights to discuss regarding online shopping. First, most individuals who responded to the survey in Sweden did not change their online shopping behaviour. However, in the United Kingdom, a large proportion of respondents indicated that they had increased their online shopping consumption *to some degree* or *considerably more*. More than sixty percent of the United Kingdom sample increased their online shopping, compared to nearly forty percent in Sweden, indicating that the third hypothesis (H3) is supported. This is consistent with the theory and previous literature derived from the fact that the United Kingdom had a stricter lockdown than Sweden and fewer in-store shopping options and opportunities. Based on *consumer theory*, arguments were made that the

perceived relative price of physical shopping would be greater in United Kingdom. The arguments were related to a greater social stigma associated with contracting the virus if going outside and not following the government regulations, as well as other regulations such as the requirement to wear a mask outside, leading to a substitution effect.

6.2   RESULTS FROM REGRESSIONS

This section presents the results of twelve different regression models in purpose to answer the research question.

The results from eight models with two different dependent variables (online gambling and online shopping) and seven independent (demographic) variables (age, university education, high school education, income, gender, city/countryside living) as well as three other independent (psychological) variables (Conc_inc, Trust, Satlife) will be presented. Models with demographic variables are called *simple models*, and models with both demographic and psychological variables are called *extended models*. In addition, two pooled models are added to be able to include additional observations in the regressions, and to further examine the difference between United Kingdom and Sweden. The total of two dependent variables and eleven independent variables are analysed to determine their relationship. Consequently, these regressions examine a multidimensional relationship between variations for individuals' (with different independent variables) online consumption behaviours during COVID-19, to further identify how this differs between United Kingdom and Sweden.

6.2.1 OLS REGRESSION: TABLE 1

Table 1: OLS regression

Country	SWE		SWE		UK		UK	
Type	Simple		Extended		Simple		Extended	
Dependent variable	SHOP	GAMBL	SHOP	GAMBL	SHOP	GAMBL	SHOP	GAMBL
Model (no)	1	2	3	4	5	6	7	8
Age (Year)	0.003	-0.004	0.003	-0.003	0.003	-0.002	0.003	-0.004
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.004)
Net_income (In 10 000 EUR)	0.021	0.014	0.015	0.011	0.030	0.123	0.037	0.116
	(0.044)	(0.045)	(0.045)	(0.046)	(0.063)	(0.081)	(0.063)	(0.081)
Male	0.079	0.047	0.072	0.021	0.079	-0.098	0.077	-0.096
	(0.057)	(0.079)	(0.058)	(0.081)	(0.068)	(0.085)	(0.069)	(0.097)
City	0.066	-0.061	0.090	-0.031	-0.040	-0.068	-0.037	-0.044
	(0.069)	(0.094)	(0.070)	(0.096)	(0.068)	(0.095)	(0.068)	(0.098)
Working	0.081	0.081	0.100	0.105	0.063	-0.097	0.048	-0.103
	(0.060)	(0.083)	(0.062)	(0.087)	(0.070)	(0.098)	(0.071)	(0.100)
Highsch	0.016	0.020	-0.005	-0.000	0.146	0.084	0.152	0.071
	(0.085)	(0.110)	(0.087)	(0.113)	(0.109)	(0.131)	(0.097)	(0.135)
Uni	0.126	0.131	0.103	0.093	0.128	0.078	0.147	0.089
	(0.086)	(0.112)	(0.089)	(0.116)	(0.095)	(0.133)	(0.098)	(0.136)
Alone	-0.103	0.074	-0.078	0.096	-0.192**	-0.006	-0.214**	-0.027
	(0.064)	(0.089)	(0.065)	(0.091)	(0.090)	(0.134)	(0.092)	(0.138)
Conc_inc			0.091	0.165*			0.045	-0.050
			(0.060)	(0.085)			(0.073)	(0.105)
Trust			-0.005	0.071			0.011	-0.152
			(0.060)	(0.080)			(0.067)	(0.094)
Satlife			0.076	0.005			-0.068	0.069
			(0.066)	(0.086)			(0.076)	(0.105)
N	760	394	735	380	772	377	749	361
Adjusted R^2	0.009	-0.003	0.009	-0.002	0.003	-0.008	0.001	-0.007

Rounded to three decimals.

Standard errors in parentheses

*p < 0.1, **p < 0.05, ***p < 0.01

6.2.2 DISCUSSION TABLE 1: ONLINE GAMBLING

Models 1 through 8 yielded a total of three significant coefficients. Concern in income proved to have a significant impact on online gambling in the extended model for Sweden (model 4) since the coefficient 0.165 is significant on a 10% significance level. A respondent with concern for income (i.e., dummy=1) will relatively have a 0.165 "steps" higher consumption of online gambling (on a Likert scale ranging from 1 to 4) than the correspondent individual that does not have concern for income (i.e., dummy=0). COVID-19 may have led to an increase in online gambling as a maladaptive coping technique to deal with the psychological stress (Avena et al., 2021), since studies as mentioned earlier have concluded how COVID-19 increased concern for income, which in turn affects mental health (Wilson et al, 2020). There are also others who further conclude how financial stress is a trigger for mental health difficulties and compulsive gambling (Ronzitti et al., 2018).

6.2.3 DISCUSSION TABLE 1: ONLINE SHOPPING

Looking at the regression output in model 5 and 7, the coefficient for the variable *alone* in the United Kingdom is for the simple model -0.192 and the extended model -0.214 and has a significance of 5%. In other words, a decrease in online shopping for people residing alone (dummy=1) is observed, in comparison to people who do not live alone (dummy=0). A person living alone online shopped 0.192 respectively 0.214 "steps" (on a Likert scale ranging from 1 to 4) less during than before the pandemic in comparison to a person who did not live alone.

There aren't a lot of studies (to our knowledge) that examine the relationship between living alone and online shopping. There is evidence that the demand for offline social interaction affects the demand for online shopping (Kim, 2019) possibly indicating that if someone resides alone, that person might have more demand for offline social interaction which could in turn affect demand for online shopping negatively. This is also in line with what Escandon-Barbarosa et al., (2021) suggests, that living alone may lead to an increase in shopping in-store, as consumers may wish to physically connect with other people. This could be a possible explanation since people in the United Kingdom did not have many physical social interaction platforms because of the lockdown, compared to Sweden.

Another possible explanation for the result is that individuals who live alone may be less concerned about contamination, specifically because they do not risk contaminating those with whom they live. This reduces the relative price of offline shopping, making online shopping less appealing than if you had not lived alone. Given the effect of living alone, residents in the United Kingdom may wanted to take advantage of their only opportunity to meet people as suggested in the section before. The results suggest therefore that the overall substitution effect of online shopping to offline shopping is greater in the United Kingdom than in Sweden.

6.2.4 POOLED OLS REGRESSION: TABLE 2

Table 2: Pooled OLS regression

Type	Simple	Extended	Simple	Extended
Dependent variable	Gambling	Gambling	Shopping	Shopping
Model no	9	10	11	12
Age (Year)	-0.003	-0.003	0.003**	0.003**
	(0.002)	(0.002)	(0.001)	(0.002)
Net_income	0.040	0.040	0.021	0.024
(In 10 000 EUR)	(0.041)	(0.041)	(0.037)	(0.037)
Male	-0.030	-0.038	0.082*	0.081*
	(0.060)	(0.062)	(0.044)	(0.045)
City	-0.066	-0.036	0.002	0.014
	(0.067)	(0.068)	(0.048)	(0.046)
Working	-0.005	0.007	0.070	0.072
	(0.064)	(0.066)	(0.046)	(0.047)
Highsch	0.051	0.048	0.083	0.081
	(0.085)	(0.087)	(0.064)	(0.065)
Uni	0.110	0.111	0.130**	0.127*
	(0.086)	(0.088)	(0.064)	(0.066)
Alone	0.036	0.049	-0.141***	-0.136**
	(0.076)	(0.078)	(0.053)	(0.054)
Conc_inc		0.062		0.064
		(0.067)		(0.047)
Trust		-0.038		0.007
		(0.061)		(0.045)
Satlife		0.041		-0.000
		(0.067)		(0.050)
UK	0.138***	0.136**	0.036***	0.360***
	(0.061)	(0.062)	(0.045)	(0.045)
N	771	741	1532	1484
Adjusted R^2	0.005	0.002	0.056	0.054

Rounded to three decimals.

Standard errors in parentheses

*p < 0.1, **p < 0.05, ***p < 0.01

6.2.5 DISCUSSION TABLE 2: ONLINE GAMBLING

The coefficient UK has proved to have a significant impact on online gambling in both the simple (model 9) and the extended (model 10) models for the pooled regressions. The coefficient 0.138 (model 9) is significant on a 1% significance level, whereas the coefficient 0.136 (model 10) is significant on the 5% significance level. Model 9 indicates that a respondent from the United Kingdom (i.e., dummy=1) will relatively have 0.138 "steps" higher consumption of online gambling (on a Likert scale ranging from 1 to 4) than the correspondent individual that does not live in United Kingdom (i.e., dummy=0). Further, model 10 indicates that a respondent from the United Kingdom (i.e., dummy=1) will relatively have 0.136 "steps" higher consumption of online gambling (on the Likert scale ranging from 1 to 4) than the correspondent individual that does not live in United Kingdom (i.e., dummy=0). It is thereby possible to conclude that the variable *UK* has a significant impact on online gambling in the pooled model. The results concludes that British citizens face a larger risk of increasing their online gambling than their Swedish counterparts, indicating that the second hypothesis (H2) is fulfilled.

Presented results could further be explained with the literature review. The larger increase in United Kingdom could be due to them relying on lockdowns whereas Sweden mainly relied on voluntary suggestions (Mishra et al., 2021). The stricter restrictions in United Kingdom may have led to relatively larger stress, anxiety levels, and engagement in addictive behaviour (such as problematic online gambling) since these behaviours were worse during social isolation (Columb et al., 2020). The restrictions on physical retail channels were higher in United Kingdom due to stricter restrictions, making the push towards online channels bigger there (Watanabe et al., 2020). All these observations indicate why we in the regressions observe a positive change of online gambling in the coefficients and why this increase is larger in United Kingdom. The literature aligns with the findings since *UK* is both significant and positive, indicating that a respondent in the United Kingdom is more likely to increase their online gambling than the Swedish counterpart.

The results can additionally be explained by the theoretical framework. Stricter restrictions in the United Kingdom than in Sweden (Mishra et al., 2020) may have led to a larger increase in online gambling for the first-mentioned country due to a larger increase in the relative price (in wider terms), which in turn could have increased the substitution effect leading to a trade of physical gambling for online gambling. The income effect is expected to be positive in both countries, but larger in United Kingdom, given that Swedes had more options for spending their money outside because of the less strict pandemic policies. A normal good (such as online gambling) will increase in demand due to a positive income effect. Both the positive substitution effect and the positive income effect indicates there was a shift towards more online gambling during the pandemic compared to before. The relatively higher substitution- and income effect in United Kingdom than in Sweden indicates why we examine a larger change in the first-mentioned country.

6.2.6 DISCUSSION TABLE 2: ONLINE SHOPPING

In models 11 and 12, the continuous variable *age's* coefficient for online shopping is found to be significant at the 5% level in both the *simple* and *extended* models. The coefficients are positive 0.003 for both models, indicating that online shopping increases by 0.003 "steps" (on the Likert scale ranging from 1 to 4) per every additional year of age. This effect may appear to be relatively small, but when compared to the difference between a person in their 20s and 70s, a relatively larger number is observed, and rather a coefficient of 0.15 (0.003*(70-20)).

Our result aligns with previous literature suggesting older adults increased their online purchasing during the pandemic. Based on the *economic theories and psychological model*, there could be several potential mechanisms at play here. Older individuals are more susceptible to illness and the virus has a greater impact on them (Mueller, 2020) thus increasing the perceived relative price of in-store consumption, and thereby substituting physical shopping towards online shopping (Erjavec & Manfreda, 2022). Since elderly people during covid-19 rarely left their homes, alternative means of meeting their needs were necessary (Song, 2021). As a result, their need for social interaction and food, among other, increased. Virtual social interactions and online food purchases replaced physical social interactions and in-store food consumption during COVID-19 and older people increased their technology use (Sixsmith, 2022). Technology adoption created demand for digital skills and online shopping and Kovalenko findings suggest that older people have increased their online shopping too (Kovalenko, 2021). Considering our extended view of price and cost and the findings of Sixsmith (2022), elderly people's attitudes and digital usage might have changed, possibly because the adoption of technology in general and this might have increased their digital capabilities and sense of technological control (Theodororu et al., 2023).

In models 11 and 12, additional significant coefficients for online shopping are found. The coefficient for *male* (dummy=1) in the *simple* model is 0.082 and in the *extended* model 0.081 with a significance level of 10% for both models. The results denote that being male (dummy=1) is associated with an increase in online shopping, with males increasing their online shopping 0.082 and 0.081 "steps" (on the Likert scale ranging from 1 to 4) more than women (dummy=0) respectively.

The larger increase in online shopping for males then women is also in line with most of the research conducted within this field suggesting men do shop online more than women. (UNCTAD, 2020; Ivascu, L. 2022). Possible explanations can be found in previous literature where Rodgers and Harris (2003) suggest males purchase more easily than women because they don't evaluate size, materials, or quality and Faqih (2022) also showed that women tend to acquire behavioral *intentions* characterized by a lower level of trust when it comes to adopting behaviors associated with online shopping. Connecting to the *consumer theory*, this suggests the relative price of online shopping for women is higher than for men.

The coefficients for university (dummy=1) in models 11 and 12 with significance levels of 5% and 10%, respectively, are 0.130 for the simple model and 0.127 for the extended model. According to the findings, having a university degree is associated with an increase in online shopping. The increase in online shopping for a person with a university degree (dummy=1) is

0.130 "steps" more (on the Likert scale ranging from 1 to 4), in the simple model and 0.127 "steps" more (on the Likert scale ranging from 1 to 4) in the extended model than for a person without a university degree (dummy=0).

The increase in online shopping among those with a university degree is consistent with previous research indicating that individuals with higher levels of education shop online more frequently and increased their online shopping during the pandemic (Eurostat, 2021; Li et al., 1999). This could be connected to the fact that people with higher education had jobs that could be done from home. During the pandemic, they thus had fewer opportunities to shop in physical stores than commuters who could go to the store from the office (Bonacini, 2021; Megasari, 2021). Those who left their homes frequently could possibly also be less anxious about visiting stores than those who already "protected" themselves by working from home, suggesting the perceived price of online shopping could have decreased for those working from home.

In the same models (11 and 12), the coefficient variable *UK* (dummy=1) in online shopping was positive and has a significance level of 1% for both models. Individuals in United Kingdom (dummy=1) increase their online purchasing by 0.136 steps for the *simple* model and 0.360 steps (on the Likert scale ranging from 1 to 4) for the *extended* model, respectively, more than residents in Sweden (dummy=0). Clearly, online shopping in the United Kingdom increased significantly more than in Sweden. This indicates that the fourth hypothesis (H4) is fulfilled.

In the theory section, based on stricter pandemic regulations, it was argued that the perceived cost of physical shopping increased more in the United Kingdom than in Sweden. This result is in line with the case study made in Italy and Sweden, where a larger increase in online shopping was observed in Italy which had more stringent pandemic rules (just like the United Kingdom) (Andruetto et al., 2023).

6.3 SHORTCOMINGS

The results might be skewed if people's perceptions about certain survey-questions differ. The respondents might be unsure about some of the survey-answers or have different ideas on what is asked about, leading to bias. Another difficulty about people's responses might be that people answer a certain behaviour that they think that they have, instead of the behaviour that they have. This makes it harder to conclude if the respondents have the behaviours presented. Note however that these biases are difficult to avoid, where analysis of this kind in many cases could meet similar struggles. The data might also be skewed due to dropping observations that could not be analysed in this context due to not being on the same scale, since the first answer for the two dependent variables (as previously mentioned) describes a person that does not consume any online gambling nor online shopping. Dropping these observations limits the variation in the observations, which may have induced some bias in the results.

Our sample does not fulfil every OLS assumption, specifically assumptions A1 and A6 (as mentioned in the methodology section). A violation of the assumptions A1 and A6 can result

in biased estimates of the coefficient, specifically, omitted variable bias. There is a possibility that the estimated coefficients do not accurately reflect the true relationship between the independent variables and the dependent variable. If the assumption of normal distribution is violated, the OLS estimators may be inefficient. Inefficiency results in estimates with greater variability and larger standard errors, thereby reducing their precision.

6.4 SOCIETAL IMPLICATIONS

The paper explains how online consumption has increased during the COVID-19 pandemic relative to before, while also noting how the increase was relatively higher in United Kingdom. Increase in online consumption have several societal implications. It may indicate positive factors such as greater technological knowledge compared to before the pandemic, however, there are also risks associated with the increased technological usage. The growth of online usage stresses the importance of internet security even more. A relatively larger increase of online consumption in United Kingdom might also have societal implications such as them either having sprinted ahead Sweden or are in comparably similar position considering individuals' technological knowledge.

6.5 FUTURE RESEARCH

The lack of significance for gender and education connected to *online gambling* was surprising due to earlier studies concluding how being a male (Håkansson, 2020), and having impulsive characteristics and lower levels of education (Frisone, 2020) had a significant impact on the change in problem online gambling before contra during the pandemic. Further, lower levels of trust (Griffiths, 2010), and lower levels of life satisfaction (Responsible Gambling Council, 2020) did in previous studies prove to be connected to a change in online gambling before contra during the pandemic. Supplementary research could be made in examining the connection between high alcohol consumption, impulsive characteristics, and online gambling due to earlier research by Håkansson and Frisone who conclude that these factors affect a person's vulnerability towards engaging in online gambling to a larger degree during the COVID-19 pandemic.

COVID-19 had an impact on mental health and online function use. The pattern for problematic consumption, such as compulsive online gambling or compulsive online shopping, is an interesting case to examine ahead more thoroughly. During times of crisis, it is crucial to predict consumer behavior, as policies should be formulated accordingly. Additional exploration could thereby be made in understanding how supporting policies (other than lockdown and restrictive policies) affect consumption behavior. For example, how did the United Kingdom and Sweden's different policies regarding online gambling (Spelinspektionen, 2020; Gambling Commission, 2020) work to decrease compulsive gambling? This knowledge can help researchers and policy makers in the future to identify risk factors for pandemic responses that result in social isolation, as well as proposing holistic solutions and policies for the future.

Regards to *online shopping*, further research could be conducted on the effect of life satisfaction on consumption. There were many studies investigating the effect of online shopping on life satisfaction, but none (to our knowledge) found for the other way around. We wanted to test trust literature that suggests individuals generate subjective beliefs that transform relational trust into system trust (which applies to internet trustworthiness) (Bierhoff & Vornefeld, 2004). Given the extensive research on how internet trust affects consumers' propensity to buy, it surprised us that "Trust" did not produce a significant result in the analysis for online shopping. Additional research should therefore be in this subject. Further research could also be conducted to examine the relationship between the substitution effect and the income effect, as well as how the effects can vary between different types of goods (normal, inferior, luxury) instead of looking at online shopping as one "good".

It would further be interesting to examine the impact the increased online shopping can have on the environment since more orders result in increased shipments. This stresses the importance of environmentally responsible business models in logistics and transportation.

7 CONCLUSION

The purpose of this study was to investigate the impact of the pandemic on online shopping and gambling, and how it differed between Sweden and the United Kingdom. Both the demographic and psychological variables (income concern, general trust in people, and life satisfaction) differed in significance and effect on online shopping and online gambling, as well as between the two countries. Individuals with a concern about their income showed an increase in online gambling in Sweden's extended model. A significant negative result for the variable alone was also seen in the regression models for online shopping in the United Kingdom, indicating that individuals living alone reduced their online shopping. In the pooled regression, a rise in online shopping with increasing age and higher levels of education was observed. The variable male also produced significant result, indicating that men increased their online shopping more than women.

Based on survey responses, the results showed an average increase in online shopping and online gambling in both the United Kingdom and Sweden. The increase could be explained by differences in consumer behaviour caused by restrictive pandemic policies. The lockdown caused a significant increase in online usage in the United Kingdom, resulting in a larger positive income effect and a substitution effect for physical shopping and gambling to its online alternatives. This was observed as more respondents in the histograms as well as the pooled regressions since the variable *UK* showed significance for both online gambling and online shopping in both the simple and extended models. The larger shift could have been a result of stricter policy responses in the United Kingdom regarding restrictions and lockdowns.

It can be beneficial to gain insights into consumer behavior for potential future pandemics or other situations where social isolation occurs to develop policies accordingly. Also, companies might use this knowledge to segment groups to create marketing towards a specific group.

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APPENDIX

APPENDIX A: ASSUMPTIONS FOR OLS (ORDINARY LEAST SQUARES)

Assumption	Description
A1.	*The conditional distribution of u_i given X_i has a mean of zero.*
A2.	*(X_i, Y_i) $i = 1,..., n$, Are independently and Identically Distributed (random sampling)*
A3.	*Large Outliers Are Unlikely X_i and u_i have nonzero finite fourth moment*
A4.	*There is no multi-collinearity (or perfect collinearity. Full rank assumption)*
A5.	*Var $(u_i \mid X_i)$ σ^2_u, where σ^2_u is a constant. (homoscedasticity).*
A6.	*The conditional distribution of u_i given X_i is normal (normal errors)*

APPENDIX B1: DESCRIPTION FOR ORDINAL & CONTINUOUS VARIABLES

Variable	Type	Question	Alternatives
Onl_shop	Ordinal	*How have your online consumer habits changed during the coronavirus pandemic of online shopping?*	1=I have purchased less, 2=the same amount, 3= more to some degree. 4= considerably more.
Onl_gaml	Ordinal	*How have your online consumer habits changed during the coronavirus pandemic of online gambling games (e.g., online casinos)?*	1=I have purchased less, 2=the same amount, 3= more to some degree. 4= considerably more.
Age	Continuous	*What age (from 18-75)?*	
Net_income	Continuous	*What income (in 10 000 EUR)?*	

APPENDIX B2: DESCRIPTION OF DUMMY VARIABLES

Variable	Description	Alternatives	Dummy
Male	Gender	*1. Male* *2. Female*	*Dummy=1* If male, i.e., if alternative is 1 *Dummy=0* If female, i.e., if alternative is 2
City	Residential area	*1. City* *2.Countryside/Country-urban*	*Dummy=1* If city, i.e., if alternative is 1. *Dummy=0* If Countryside/ Country-urban, i.e., if alternative is 2.
Working	Primary occupation currently	*1.Going to primary school* *2. Vocational school training* *3.High school student* *4. Studying at college* *5. Studying at university* *6. Working* *7. Furloughed from work* *8.Unemployed job seeker* *9.Fulfilling my conscription duties or civilian services* *10.On parental leave* *11. Retired* *12.Not studying, not working, nor looking for work.[8]*	*Dummy = 1* If working, i.e., alternative is 6 *Dummy = 0* If not working, i.e., alternative is 1, 2, 3, 4, 5, 7, 8, 9, 10, 11.
Highsch	Highest level of education	*1. Primary school* *2.Vocational degree* *3.College/high school degree* *4.Undergraduate degree* *5.Masters or Doctor's degree* *6. Don't know*	*Dummy = 1* If high school, i.e., if alternative is 3 *Dummy=0* If not high school i.e., if alternative is 1, 2, 4, 5, & 6
Uni	Highest level of education	*1. Primary school* *2.Vocational degree* *3.College/high school degree* *4.Undergraduate degree* *5.Masters or Doctor's degree* *6. Don't know*	*Dummy=1* If university, i.e., if alternative is 5 *Dummy=0* If not university i.e., alternative is 1, 2, 3, 4, & 6
Alone	Household type	*1. I live with a parent/parent* *2. One person household* *3. I live with one or more roommates* *4. Couple, no children* *5. Couple with children* *6. Single parent and child/children* *7. Other[9]*	*Dummy=1* If living alone, i.e., if alternative is 2. *Dummy=0* If not living alone, i.e., if alternative is 1, 3, 4, 5, & 6.

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[8] Alternative 12 is dropped.
[9] Alternative 7 is dropped.

Conc_inc	How worried are you about the impacts of coronavirus in your income?	*1 = Not worried at all* *2* *3* *4* *5 = Extremely worried*	*Dummy=1* If person is worried about their income, i.e., if alternative is 3,4 or 5. *Dummy=0* If person is not worried about their income, i.e., if alternative is 1 or 2.
Trust	Generally speaking, would you say that most people can be trusted or that you can't be too careful when dealing with people?	*0=Most people can be trusted* *2* *3* *4* *5* *6* *7* *8* *9* *10 = You can't be too careful*	*Dummy = 1* if person believes that most people can be trusted, i.e., if alternative is 0,1,2,3,4. *Dummy = 0* if person believes that you can't be too careful when dealing with people i.e., if alternative is 5,6,7,8,9,10.
Satlife	How satisfied are you with your life in general?	*1 = Not at all satisfied* *2 = Not very satisfied* *3= Fairly satisfied* *4= Very satisfied*	*Dummy = 1* if person is satisfied with life i.e., if alternative is 3 or 4 *Dummy = 0* if person is not satisfied with life i.e., if alternative is 1 or 2.

APPENDIX C1: DESCRIPTIVE STATISTICS FOR SWEDEN

After dropping "0=I have not purchased at all" for online shopping

Variable	Obs	Mean	Median	Std.dev	Min	Max
Onl_shop	807	2.373	2	0.782	1	4
Onl_gaml	803	1.082	0	1.200	0	4
Age (Year)	809	43.661	42	15.095	18	75
Net_income (In 10 000 EUR)	768	0.314	0.203	0.642	0	9
Male	809	0.507	1	0.500	0	1
City	803	0.776	1	0.417	0	1
Working	809	0.600	1	0.490	0	1
Highsch	809	0.414	0	0.493	0	1
Uni	809	0.433	0	0.496	0	1
Alone	808	0.276	0	0.447	0	1
Conc_inc	801	0.591	1	0.492	0	1
Trust	792	0.422	0	0.494	0	1
Satlife	804	0.723	1	0.448	0	1

APPENDIX C2: DESCRIPTIVE STATISTICS FOR SWEDEN

After dropping "0=I have not purchased at all" for online gambling

Variable	Obs	Mean	Median	Std.dev	Min	Max
Onl_shop	431	2.232	2	0.903	0	4
Onl_gaml	427	2.148	2	0.756	1	4
Age (Year)	433	41.111	40	13.605	18	74
Net_income (In 10 000 EUR)	407	0.392	0.21	0.849	0	9
Male	433	0.420	0	0.494	0	1
City	426	0.777	1	0.417	0	1
Working	433	0.635	1	0.482	0	1
Highsch	433	0.409	0	0.492	0	1
Uni	433	0.411	0	0.493	0	1
Alone	432	0.269	0	0.444	0	1
Conc_inc	426	0.667	1	0.472	0	1
Trust	427	0.424	0	0.495	0	1
Satlife	430	0.656	1	0.476	0	1

APPENDIX C3: DESCRIPTIVE STATISTICS FOR UK

After dropping "0=I have not purchased at all" for online shopping

Variable	Obs	Mean	Median	Std.dev	Min	Max
Onl_shop	861	2.754	3	0.897	1	4
Onl_gaml	860	1.137	0	1.305	0	4
Age (Year)	865	43.036	41	15.680	18	75
Net_income (In 10 000 EUR)	811	0.314	0.22	0.548	0	8.5
Male	865	0.501	1	0.500	0	1
City	828	0.564	1	0.496	0	1
Working	863	0.619	1	0.486	0	1
Highsch	865	0.383	0	0.486	0	1
Uni	865	0.441	0	0.497	0	1
Alone	862	0.153	0	0.360	0	1
Conc_inc	864	0.663	1	0.473	0	1
Trust	845	0.419	0	0.494	0	1
Satlife	858	0.737	1	0.441	0	1

APPENDIX C4: DESCRIPTIVE STATISTICS FOR UK

After dropping "0=I have not purchased at all" for online gambling

Variable	Obs	Mean	Median	Std.dev	Min	Max
Onl_shop	437	2.609	3	1.007	0	4
Onl_gaml	433	2.307	2	0.856	1	4
Age (Year)	439	37.376	35	12.623	18	75
Net_income (In 10 000 EUR)	410	0.350	0.233	0.602	0	7
Male	439	0.458	0	0.499	0	1
City	413	0.620	1	0.486	0	1
Working	437	0.657	1	0.475	0	1
Highsch	439	0.399	0	0.490	0	1
Uni	439	0.426	0	0.495	0	1
Alone	437	0.126	0	0.332	0	1
Conc_inc	438	0.742	1	0.438	0	1
Trust	425	0.400	0	0.491	0	1
Satlife	433	0.723	1	0.448	0	1

APPENDIX D1 ORDERED LOGIT REGRESSION

Country	SWE		SWE		UK		UK	
Type	Simple		Extended		Simple		Extended	
Dependent variable	SHOP	GAMBL	SHOP	GAMBL	SHOP	GAMBL	SHOP	GAMBL
Model (no)	1	2	3	4	5	6	7	8
Age (Year)	0.064	-0.011	0.007	-0.006	0.005	-0.005	0.005	-0.009
	(0.005)	(0.007)	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.009)
Net_income (In 10 000 EUR)	0.012	0.012	0.006	0.008	0.057	0.236	0.073	0.222
	(0.112)	(0.132)	(0.113)	(0.136)	(0.126)	(0.157)	(0.128)	(0.159)
Male	0.176	0.206	0.162	0.151	0.162	-0.278	0.159	-0.263
	(0.140)	(0.203)	(0.144)	(0.209)	(0.139)	(0.204)	(0.141)	(0.210)
City	0.141	-0.123	0.195	-0.053	-0.079	-0.143	-0.070	-0.090
	(0.166)	(0.244)	(0.169)	(0.248)	(0.137)	(0.205)	(0.140)	(0.211
Working	0.167	0.240	0.206	0.311	0.153	-0.201	0.122	-0.250
	(0.147)	(0.217)	(0.152)	(0.227)	(0.144)	(0.210)	(0.146)	(0.217)
Highsch	0.029	-0.005	-0.024	-0.033	0.273	0.136	0.288	0.095
	(0.215)	(0.288)	(0.218)	(0.300)	(0.196)	(0.277)	(0.200)	(0.286)
Uni	0.347	0.302	0.294	0.224	0.267	0.165	0.313	0.197
	(0.215)	(0.295)	(0.221)	(0.303)	(0.196)	(0.280)	(0.202)	(0.289)
Alone	-0.257*	0.201	-0.190	0.264	-0.405**(0.184)	0.007	-0.454**	-0.034
	(0.156)	(0.226)	(0.160)	(0.234)		(0.292)	(0.188)	(0.302)
Conc_inc			0.211	0.367*			0.096	-0.150
			(0.146)	(0.221)			(0.149)	(0.221)
Trust			0.008	0.153			0.031	-0.347*
			(0.144)	(0.209)			(0.137)	(0.206)
Satlife			0.195	0.004			-0.150	0.141
			(0.167)	(0.225)			(0.157)	(0.231)
N	760	394	735	380	772	377	749	361
Chi2								

Rounded to three decimals.
Standard errors in parentheses
*p < 0.1, **p < 0.05, ***p < 0.01

APPENDIX D2 POOLED ORDERED LOGIT REGRESSION

Type	Simple	Extended	Simple	Extended
Dependent variable	Gambling	Gambling	Shopping	Shopping
Model no	9	10	11	12
Age (Year)	-0.007	-0.007	0.006*	0.006*
	(0.005)	(0.006)	(0.003)	(0.0034)
Net_income	0.094	0.095	0.031	0.037
(In 10 000 EUR)	(0.100)	(0.101)	(0.082)	(0.083)
Male	-0.054	-0.067	0.173*	0.175*
	(0.141)	(0.145)	(0.098)	(0.100)
City	-0.143	-0.078	0.004	0.029
	(0.156)	(0.159)	(0.105)	(0.107)
Working	0.002	0.026	0.159	0.165
	(0.149)	(0.155)	(0.102)	(0.104)
Highsch	0.076	0.065	0.164	0.160
	(0.197)	(0.203)	(0.143)	(0.147)
Uni	0.247	0.254	0.310**	0.307**
	(0.201)	(0.206)	(0.144)	(0.148)
Alone	0.107	0.146	-0.319***	-0.305**
	(0.176)	(0.181)	(0.118)	(0.120)
Conc_inc		0.108		0.137
		(0.155)		(0.103)
Trust		-0.110		0.025
		(0.144)		(0.099)
Satlife		0.099		-0.003
		(0.157)		(0.113)
UK	0.314**	0.312**	0.806***	0.805***
	(0.144)	(0.147)	(0.100)	(0.102)
N	771	741	1532	1484
chi2	0.193	0.358	0.000	0.026

Rounded to three decimals.
Standard errors in parentheses
*p < 0.1, **p < 0.05, ***p < 0.01

APPENDIX E1: TEST FOR OLS ASSUMPTION 1

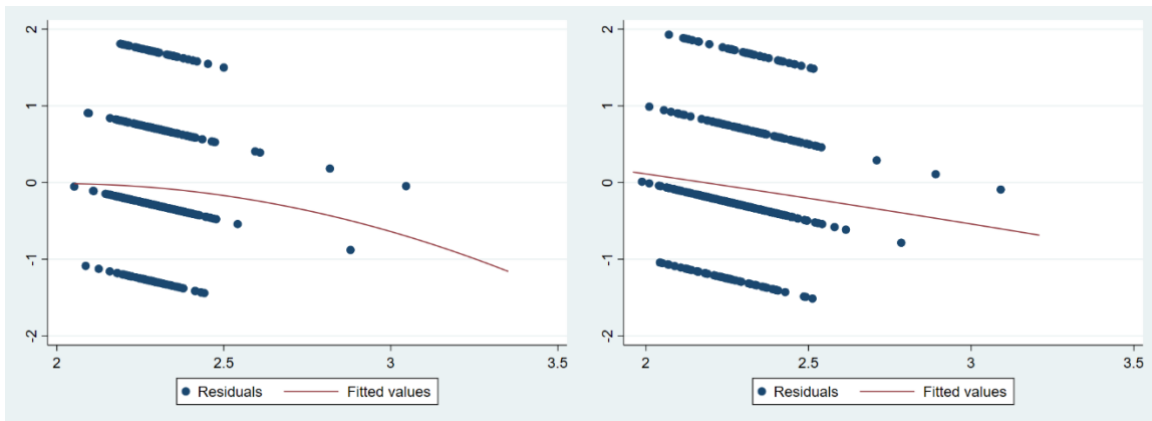Sweden Online shopping: 1. Simple model 2. Extended model
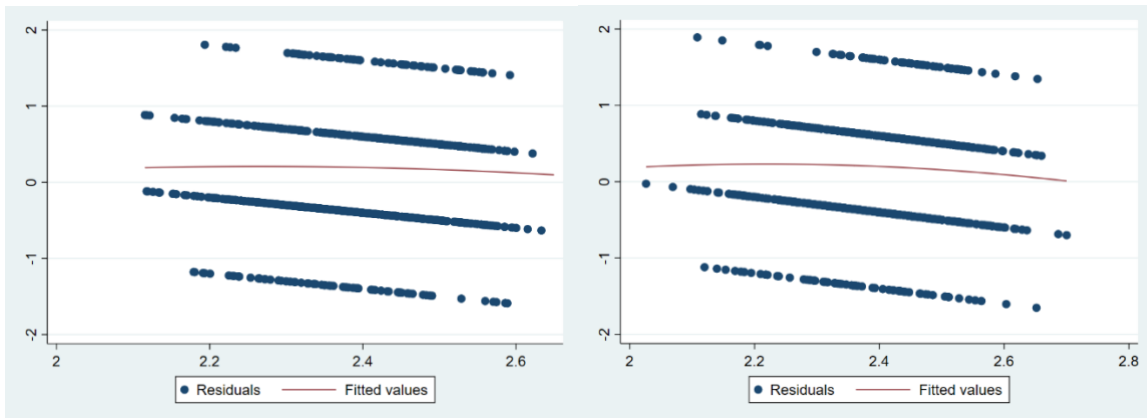
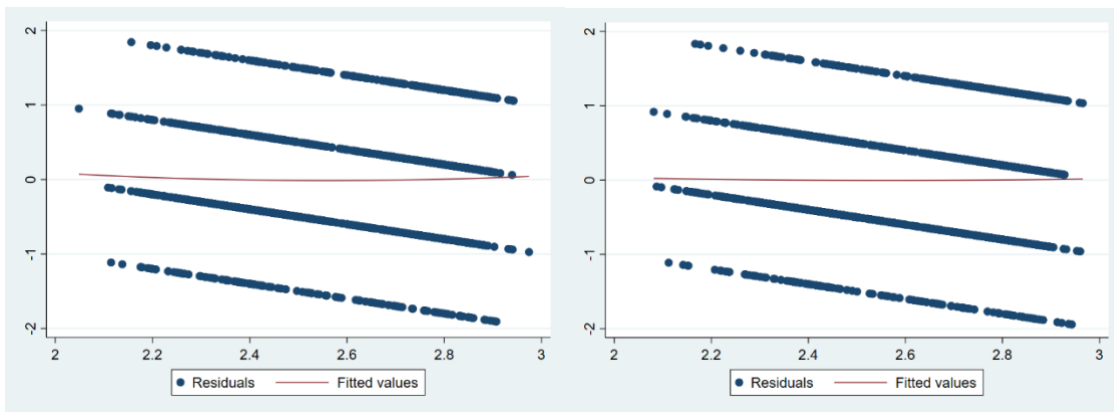Sweden Online gambling: 1. Simple model 2. Extended model
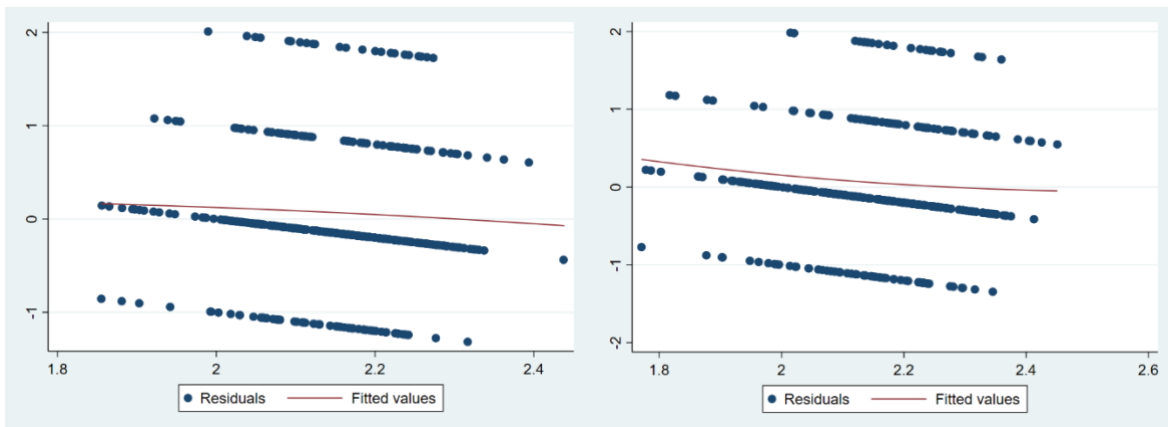
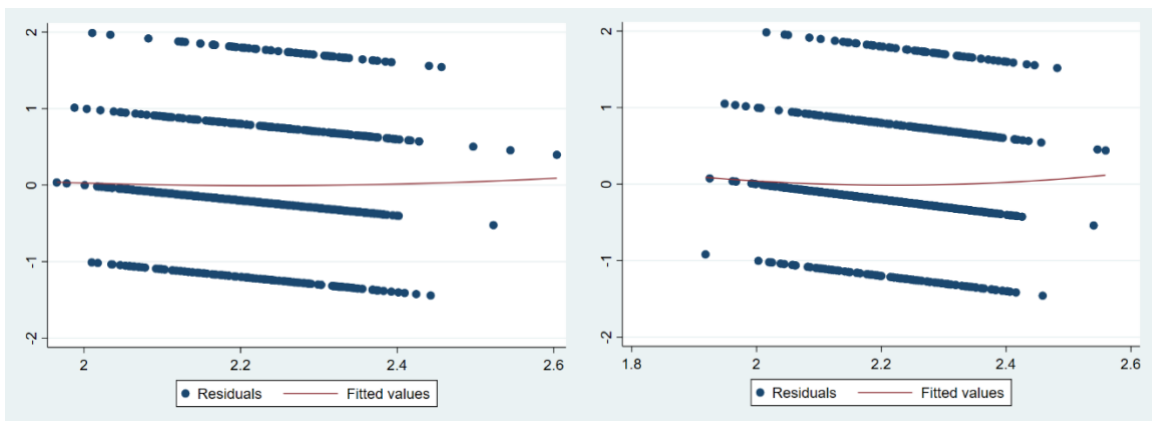United Kingdom Online shopping: 1. Simple model 2. Extended model
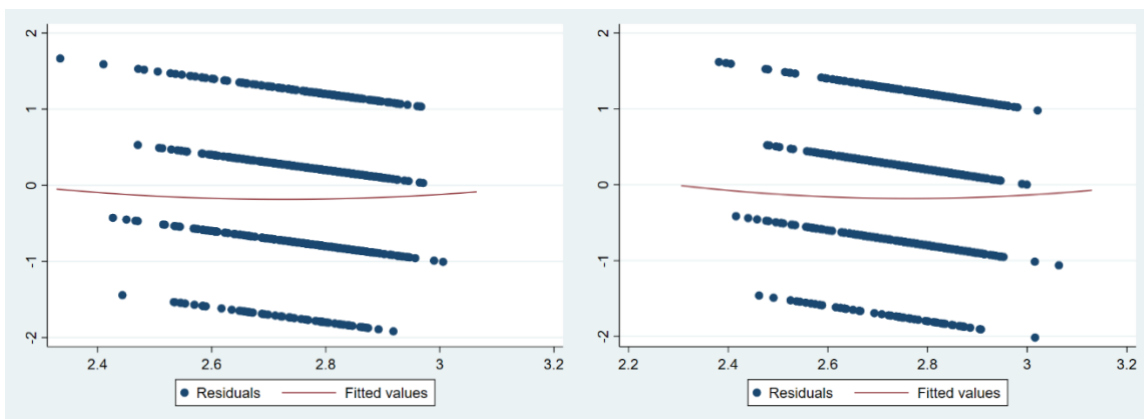
United Kingdom Online gambling: 1. Simple model 2. Extended model

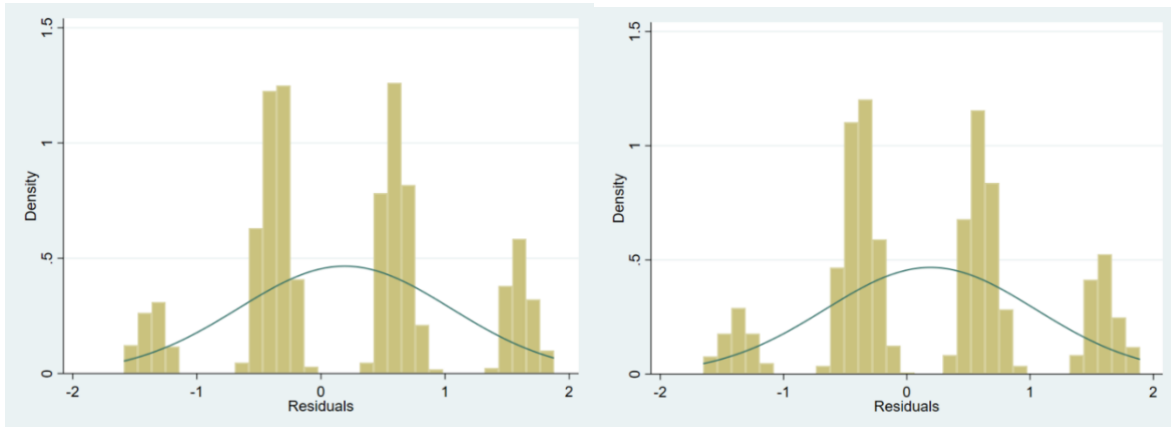Pooled online shopping: 1. Simple model 2. Extended model

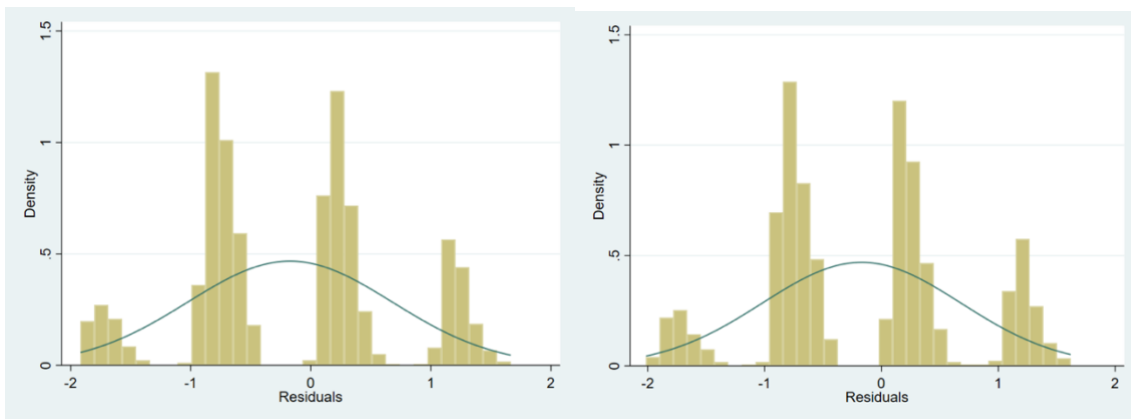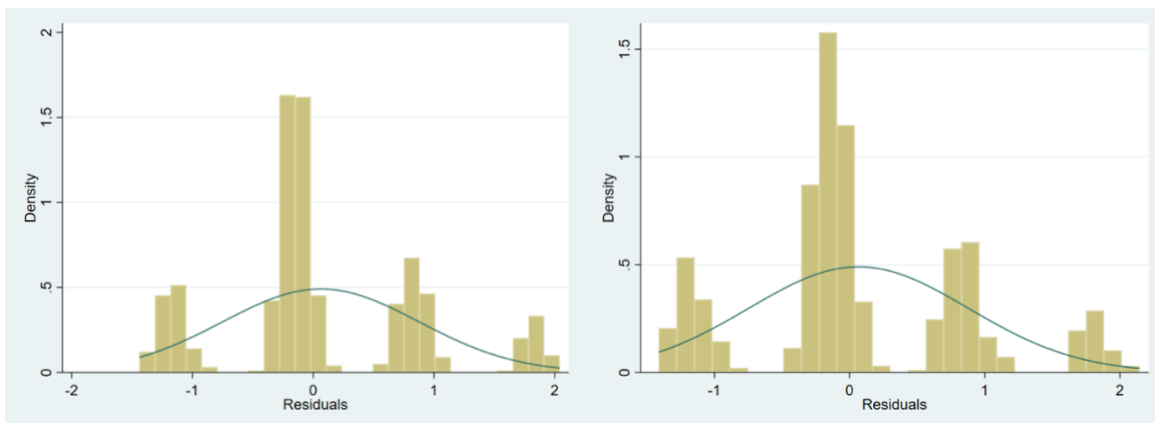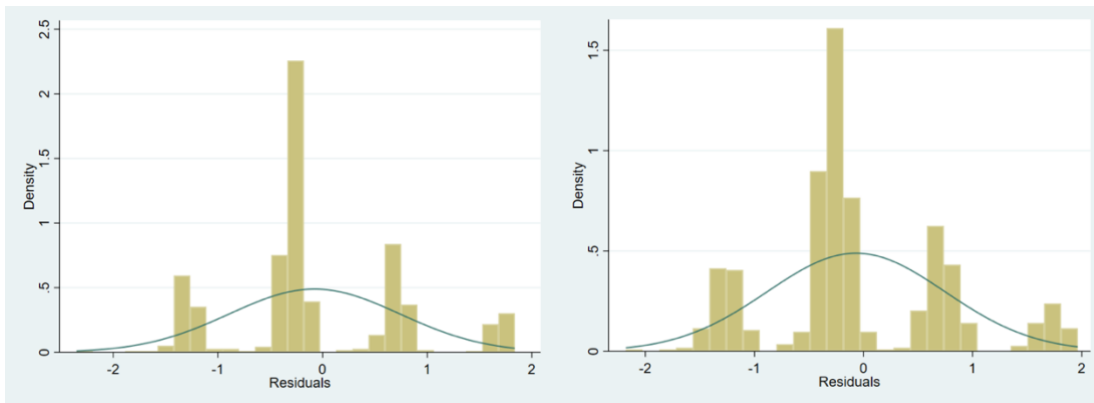Pooled online gambling: 1. Simple model 2. Extended model

APPENDIX E2 TEST FOR OLS ASSUMPTION 6

Sweden Online shopping: 1. Simple model 2. Extended model

Sweden Online gambling: 1. Simple model 2. Extended model
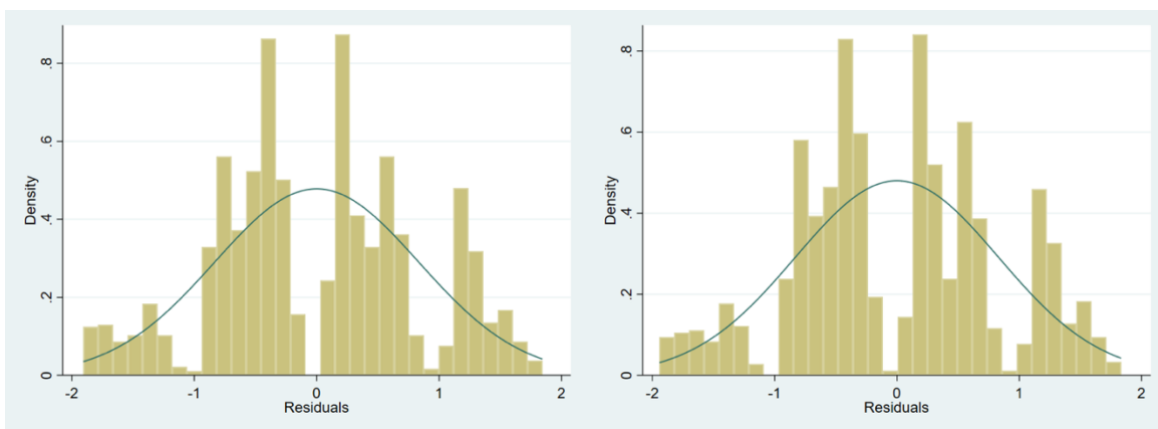

United Kingdom Online shopping: 1. Simple model 2. Extended model

United Kingdom Online gambling: 1. Simple model 2. Extended model

Pooled online shopping: 1. Simple model 2. Extended model

Pooled online gambling: 1. Simple model 2. Extended model