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# **Drinking under Communism: Why do Alcohol Consumption Habits in Eastern Europe Differ from the West in the Long-Run?<sup>1</sup>**

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## **Abstract**

This paper looks into possible explanations for differences between Eastern and Western Europe alcohol consumption behaviour even twenty years after the collapse of the Soviet regime. It suggests these differences can be viewed as an expression of cultural habits. We explore different ways of defining exposure to the communist regime: using number of years a person spent under the regime and also a dummy indicator for spending formative years (18-25) in it. We find both to be strong factors in explaining alcohol consumption behaviour. We consider differences in frequency of alcohol consumption and binge drinking using European Health Interview Survey (EHIS) micro data from Eurostat. Estimations are run with ordered probit model for men and women separately. Evidence suggests a statistically significant effect of experiencing communist regimes, which is larger for women's alcohol consumption frequency than for men's. It is also the most important factor in explaining more frequent male binge drinking. These effects hold after controlling for socio-economic, country level and time characteristics. This suggests the attitudes towards alcohol consumption could be more permissive in the Eastern Bloc countries.

Keywords: alcohol consumption, cultural habits, communism, Eastern bloc, Western Europe,

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<sup>1</sup> This paper is based on data from Eurostat, *European Health Interview Survey (EHIS), wave 1 (2006-2009)*. The responsibility for all conclusions drawn from the data lies entirely with the authors

## 1. Introduction

This study analyses the effect of pre-1990 communist regimes prevailing in Eastern Europe on the drinking behaviour of individuals born and raised under this system (henceforth the Eastern Bloc). It uses two indicators of alcohol consumption – frequency of consumption of alcoholic beverages, and frequency of binge drinking (having more than six alcoholic drinks on one occasion). Our main interest is in the two variables capturing individuals' exposure to the communist regime: one indicating whether an individual lived in the Eastern Bloc between age 18 and 25, the other the number of years lived in a communist regime. We use European Health Interview Survey micro-data and include individuals from both Eastern and Western European countries. The estimation strategy employs ordered probit since the dependent variables are in ordered categories. We find drinking behaviour is significantly related to exposure to Eastern European communist regimes and subject to considerable gender differences. If we consider that drinking alcohol has negative health consequences, represented by soaring male mortality rates before and after Gorbachev's anti-alcohol campaign in Eastern Europe (Yakovlev, 2015; Bhattacharya, 2013), our findings suggest that, as well as economic inefficiency in communist regimes, further costs were incurred by living in those regimes over and above the economic effect.

Drinking behaviour in the former USSR has been subject to myriad of stories and myths, as well as serious research. Gorbachev's initiative against excessive alcohol drinking is a strong indicator of the pervasiveness of alcohol consumption in the former USSR. Given the spread and influence of the Soviet communist regime on its satellite Eastern European countries, one might consider a connection between alcohol drinking and pre-1990 communist regimes as plausible. This paper considers exactly this connection and seeks to investigate whether the USSR and communist regimes of the Eastern Bloc countries were systematically linked to alcohol consumption. Thus, this paper contributes to the literature examining the impact of communist regimes on socio-economic life. Findings in this area suggest that low alcohol prices, neighbourhood effects, specific to communism living arrangements, and habit formation at young age have influenced alcohol consumption levels and patterns in previous Eastern Bloc (Yakovlev, 2018; Yakovlev, 2015). Other research questions include institutional changes in post-communist countries (Roland, 2002), law enforcement in transition economies (Roland, 2003), the effect of communist regimes on redistribution preferences (Alesina and Fuchs-Schuldern, 2007), and returns to education (Münich et al., 2005). To our knowledge, this is the first study to examine how the experience of communist regime in Eastern Bloc affected alcohol consumption later in life. This paper also contributes to health economics research

investigating the effect of political and social circumstances on individuals' alcohol consumption habits and well-being. The caveat of this study is the fact that we cannot say what specifically influences the drinking habits of people from the Eastern Bloc captured by the communism indicators, but we establish the link and offer possible explanations, which could be addressed further in future research.

The paper is organized as follows. Section 2 reviews available literature and suggests potential influences towards alcohol consumption behaviour. Section 3 discusses methodology, section 4 summarizes data and descriptive statistics of the estimation samples. Section 5 presents an analysis of results, while Section 6 offers a discussion of the results and concludes.

## **2. Literature review**

Literature on the effects of various aspects of person's life on alcohol consumption is extensive and offers important insight into the issue under discussion. Closer review informs about important aspects influencing alcohol consumption, and allows us to fine-tune our empirical analysis. We do it in two sections of this paper. Below, we focus on literature, which suggests that drinking patterns in Eastern European countries are linked to communist regimes; while section 3 discusses the literature further and uses it as motivation and justification for including various control variables into the regression specification.

The revolutionary ideas that resulted in the creation of the Soviet Union emerged in the Russian Empire. The Russian Soviet Federative Socialist Republic was the largest and most populous among the Soviet states. It was also the main source or central power for the Soviet Union and its satellite nations, which makes it appropriate to consider its inhabitants' drinking habits. Studies have shown that alcohol has a central role in Russian cultural tradition, which could help explain drinking behaviour. Russian migration toward inland Europe during World War II was a potential way for Eastern Bloc countries to be exposed to Russian native habits and Russia being a source of authority could have facilitated the adoption and spreading of these habits. Here we consider Russians as defined by country boundaries, but we exclude isolated cultural minorities (numerous there simply due to size of the country). However, we have no intention of confining the reason or source of the effect purely to Russian cultural habits.

According to Hinote and Webber (2012), vodka played a fundamental part in Russian social life; by 19<sup>th</sup> century, it was essential in rural festivals, celebrations and gatherings, mainly consumed collectively and characterized by ceremonial binge drinking. Rural, community ties were seen as very important and took precedence over the individual, creating an environment

for drinking alcohol to be imposed as a social norm alongside other control mechanisms. During the late nineteenth century, much of the rural population moved to urban areas due to industrialisation and urbanization, taking along their drinking traditions to the taverns that partially assumed the function of village communes. Low priced alcohol led to more widespread and less monitored consumption, ceremonial practices became recreational and part of the routine. Towards the end of the 20<sup>th</sup> century any social occasion was related to alcohol consumption; drinking on holidays and special occasions was considered traditional and practiced by both Russian men and women (Bobrova et al., 2010).

The Soviet Union period saw opportunities for Russian alcohol consumption patterns to spread through migration, tourism and cultural exposure, such as films, both within and outside the Soviet Union. Stickley et al. (2007) mentions a large migration of Russians into other Soviet republics during the communist period. Popova et al. (2007) states that vodka drinking habits within the Soviet Union were influenced by the Russians and became more similar during the communist regime.

There are several potential reasons for the spread of the habits. Jukkala et al. observed that informal social relations like family ties and friendships can function as channels for behavioural patterns to spread, There is evidence that contact with friends increased the probability of binge drinking by the factor of 2.16 among Russian women, though this effect was not found to be significant in men (Jukkala et al., 2008). Yakovlev (2018) suggests that a close proximity to one's neighbours and low mobility throughout life, defining communist style living arrangements, likely had a significant impact on alcohol consumption, since this type of lifestyle led to all more significant life events being celebrated consuming alcohol with neighbours. Alcohol intake amongst Russians tends to be less frequent *but* with larger amounts consumed per occasion in ethanol content (Jukkala et al., 2008). For example, mean annual intake of alcohol is lower in Russia (4.6 l compared to 8.5 l in Czech Republic), and drinking frequency is lower (67 drinking sessions per year, compared with 179 for Czech men), yet the level of alcohol consumed per session is highest (71 g., compared with 46 g. for Czechs and 45 g. for Poles), the prevalence of binge drinking is also highest (Bobak et al., 2004). Similar drinking patterns probably were the reason for Gorbachev's Anti-Alcohol Campaign. Research shows that this campaign was successful in decreasing mortality rates in Russia while it lasted. Before the campaign, the country was going through a mortality crisis associated with high alcohol consumption rates. After the policy was revoked, alcohol consumption and mortality rates both climbed back up, with similar tendencies also observed in other Eastern Bloc countries (Battacharya, 2013; Yakovlev, 2015). Low prices of alcohol before and after

Gorbachev's Anti-Alcohol Campaign were likely one of the main causes of heavier drinking, since estimations, based on new vodka tax established in Russia in 2011, show heavy drinking is relatively elastic with respect to alcohol price (Yakovlev, 2018), so changes in prices can have a large effect on alcohol intake.

Do we have reason to think that exposure to the Soviet-style communist regimes could have had an effect on the behavioral patterns related to alcohol consumption later in life? Psychology research suggests that a young person between the years of 18 – 25 is potentially easier to influence, as during this period they adopt norms, beliefs, values etc. After this period those newly adopted norms change much less (Krosnick and Alwin, 1989). This implies that exposure to certain values, norms, and attitudes during this critical period of personal formation may influence attitudes and behaviour for the rest of the person's life. In the case of Eastern European communist regimes, the exposure of these countries to the patterns and cultural norms of alcohol drinking during over 40 years of the regimes could affect a vast number of people. There already exists a similar suggestion in the literature, according to Yakovlev (2018), it is likely that habit persistence plays an important role in future alcohol consumption patterns, and that young people (up to the age of 40) are especially responsive to their peer influence. Our research tests the existence of this long-term relationship.

By comparing drinking behaviour of the Eastern Bloc with Western Europe, this study could help discover if there is evidence that living in the Eastern Bloc could have had an impact on alcohol consumption preferences. If, after controlling for personal and circumstantial differences that might affect alcohol intake, we still observe differences in consumption between people we consider 'affected' by the communist regime and those that we see as 'not affected', this would strongly suggest that being raised in the communist Eastern Bloc affected preferences for alcohol consumption. It should also be considered that since higher alcohol intake has detrimental effects on health, our sample is subject to selective mortality, which would imply our findings would be underestimates of potential true effect. Arguably, there might be unobserved individual characteristics we do not control for and which would make the interpreting our finding as causal more difficult. Nevertheless, we believe our analysis discovers important patterns of alcohol consumption related to the Soviet-type communist regimes, thus offering further insight into the aftermath of over forty-year communist experiment on people's preferences, and opening avenues for future studies.

### **3. Methodology**

The main regression specification is as follows:

$$AC_i = \alpha_0 + \alpha_1 CR_i + \alpha_2 PCR_i + \sum_{j=1}^n \alpha_j Controls_i^j + \varepsilon_i \quad (1)$$

where  $AC_i$  stands for alcohol consumption of an individual  $i$ ,  $CR_i$  is a variable capturing exposure to the communist regime and, depending on the specification, it is either a dummy variable indicating ‘communist regime’, or the number of years living under the communist regime and its square.  $Controls_i^j$  are the vector of  $n$  control variables representing socio-economic variables, and  $\varepsilon_i$  is an error term. The control variables include the following groups of socio-economic characteristics: personal characteristics, socio-economic status, social relations, personal habits, geographical/political characteristics and year dummies. We analyse two types of alcohol consumption respectively: frequency of alcohol consumption, and frequency of binge drinking. Both variables are categorical, responses for alcohol consumption frequency range are: 1. Never, 2. Monthly or less, 3. 2 to 4 times a month, 4. 2-3 times a week, 5. 4 to 6 times a week, 6. Every day. Responses for frequency of binge drinking choices are: 1. Never, 2. Less than monthly, 3. Monthly, 4. Weekly, 5. Daily or almost daily. Since the dependent variables are categorical and their response categories are ordered, we estimate equation (1) with ordered probit.

The main explanatory variables of interest for this study are the communism dummy variable, and number of years living under the communist regime. Communism dummy indicates whether the person lived under the communist regime during young adulthood (18-25 - the time of increased socialisation and adoption of norms). This dummy is equal to 1 if they were in an Eastern Bloc country during that time and indicates, conditional on controls, how much the exposure to the communist regime affected their alcohol consumption. Length of time under communist regime was calculated using respondent’s indicated age gap, provided in intervals: 15-17, 18-19, and then five year intervals onwards until 85 and over. We took an average point for each gap, accounted for the year of the respondent’s answers, assumed the same regime end year, 1990, and accounted for different regime starting points for each country, since they did not fall under communist influence at the same time. We have experimented with various functional forms to avoid making strong apriori parametric assumptions and our preferred specification takes the square of this measure to account for a possibility of a non-linear effect.

The control variables include personal characteristics (age dummies, highest educational attainment), socio-economic status (occupation and income quintile dummies), social relations

(dummies for being widowed, a lone parent, having no dependent children, number of persons in the household, number of inactive people of working age in a household), personal habits (involvement in moderate physical exercise measured in days per week, smoking frequency), geographical/political characteristics (level of urbanisation in the place of residence, dummies for consuming above the European average of beer, wine, and spirits within a country and separate country indicators), and year of interview dummies. The choice of the controls was guided by the existing literature which offers justification for their inclusion in the regression analysis.

Gender seems to be a very important factor determining level and frequency of alcohol consumption. It is found that men drink more frequently, consume larger amounts of alcohol and are more likely to binge drink (Keenan et al., 2014; Bobrova et al., 2010); Stickley et al., 2007; Wilsnack et al., 2000; Perlman, 2010). Differences in drinking behaviour between genders seem to be more pronounced in countries with a lower level of social welfare and high gender inequality (Jukkala et al., 2008). Age is another determining factor for alcohol consumption. Heavy drinking is found to be more common among middle-aged people (Keenan et al., 2014; Pomerleau et al., 2008; Perlman, 2010). It is also agreed that women in younger age groups drank more in Russia during the transition period (Perlman, 2010, Jukkala et al., 2008), while Kuntsche et al (2006) states that heavy drinking increased with age in most countries (except the UK and Sweden in the European sample). Heavy drinking was found to be less common in younger men compared to middle-aged males by Perlman (2010), while reported similar between the two groups by Keenan et al (2014).

Education and employment are further important determinants to consider, though the findings are not uniform. Heavy drinking is more common in those with lower levels of education (Keenan et al, 2014; Kuntsche et al., 2006). In Moscow for example, a male with only secondary education has almost twice higher probability of binge drinking compared to one with above secondary level; the same probability is more than twice as high for a woman, as reported by Jukkala et al. (2008). Other studies suggest no obvious relationship between educational attainments and heavy drinking in former Soviet Union (Pomperleau et al., 2008) or frequency of alcohol consumption in Russia (Bobak et al., 1999). Kuntsche et al (2006) reports a finding that employed women tend to drink more heavily in countries with a well-developed welfare system and there are studies reporting a positive relationship between unemployment and heavy drinking (Keenan et al., 2014), especially for men (Pomerleau et al., 2008)).



A documented relationship also exists between alcohol consumption and family status. Some studies include health-related habits in the list of determinants for alcohol consumption. Pomerleau et al. (2008), Bobak et al. (1999) found a positive relationship between heavy drinking and smoking. Cokerham et al. (2006) report a relationship between drinking and stress and found that women tended to feel more psychological stress, which did not translate into consuming more alcohol, though it did for men. Stress was significant for men drinking frequently but not habitually, habitual drinking was found to seemingly promote the feeling of wellbeing.

This research is based on a few assumptions. Firstly, we do not have information about respondents' country of birth, so we cannot guarantee they are nationals of the country in which they reside. It is unlikely however, that large proportions of people in each country would be of foreign nationality as this would probably show up in the survey description. This means we assume that respondents have spent their entire lives in the same country. Even though this is unlikely to be true, present migrant statistics from *Eurostat* show post Eastern Bloc countries having very small European migrant populations. Within our sample, Hungary has a highest rate at 3.3%. These rates are mostly higher for Western European countries. This has a twofold effect: first it makes it unlikely that samples from Eastern Bloc countries would include a lot of foreigners, especially from Western Europe; and since more of the Eastern Europeans could be part of Western European sample, if we find the effect on alcohol consumption habits to be significant, this would imply this effect is more likely to be underestimated. Secondly, we expect the same effect (results being underestimated) from another factor influencing our estimates – selective mortality, which is explained by higher alcohol intake having a detrimental effect on health. This should be true if there is evidence that Eastern Europeans have more permissive drinking habits. Finally, an important caveat of our research is not being able to identify the exact reason, route or channel in which experiencing communist regimes would have impacted alcohol consumption. We only offer possible interpretations and this aspect could be explored more in further research.

#### **4. Data and descriptive statistics**

European Health Interview Survey (EHIS) microdata from Eurostat was used for this study. There is only one wave of data so far, collected in the years 2006-2009. Data was collected from sixteen countries in Europe. Seven were Western European: Austria, Belgium, Cyprus, Spain, France, Greece, Malta; nine were former Eastern Bloc countries: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, Slovenia, and Slovakia. Due to

the availability of alcohol consumption data, countries included in our estimations were: Cyprus, Greece, Malta (Western) and Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovenia, Slovakia (Eastern). Data for the prevalent type of alcohol in each country was constructed using World Health Organisation data of recorded per capita consumption in litres for age 15+ individuals, between 1960 and 2013; separate dummies for above average consumption of wine, beer and spirits indicate above European average consumption of each type.

Tables 1 and 2 (Appendix I) summarize the compositions of the samples used. The full sample in EHIS consists of 94,433 observations for females and 79,812 observations for males, but since some questions were not asked in certain countries and not of all of the respondents who took part in the study, available samples are smaller. Alcohol consumption frequency question sample for women consists of 19,202 and 16,904 for men<sup>2</sup>. Binge drinking frequency samples are much smaller: 2793 for women and 7256 for men. The main reason for this reduced sample size is that binge drinking questions were not asked of those people reporting never drinking alcohol or doing so monthly or less. The binge-drinking question was then asked of the 74% of those who reported consuming alcohol 2-4 times a month, and around 98-99% of those falling into the remaining alcohol consumption categories. This is a logical outcome since binge drinking involves large quantities of alcohol.

Summary statistics of alcohol consumption frequency, one of the dependent variables, shows that on average females tend to consume alcohol less frequently: close to ‘monthly or less’ compared with the male sample average: close to ‘2-4 times a month’. Binge drinking, the second dependent variable, shows a similar trend – both females and males tend to binge drink between ‘never’ and ‘less than monthly’, but for females this is somewhat closer to the midpoint, while for men it is closer to the second category.

In the alcohol consumption frequency samples, 54.6% of females and 50.8% of males had experienced the communist regime during their formative years (18-25). On average, females from the alcohol consumption frequency sample spent around 24 years, and men 21.8 years, in a communist regime (includes all countries in the estimation sample), which also implies higher mean of the square of this measure for females and most likely implies greater longevity. Variables indicating age reveal that the most prominent group of respondents are middle-aged – 43.8% for females and 45.7% for males. The next largest group is older people: 21.3%

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<sup>2</sup> This reduction in sample size is explored in detail in Appendix II, it shows how inclusion of different variables reduces the sample size and also presents core summary statistics that include means of age groups, education and income for both samples; the differences are found to be small so samples are considered comparable and there is no reason to think the effects found in the smaller sample would not apply to the larger sample.

females and 19.8% males, followed by people in their thirties: 17.2% for females and 16% for males, and finally 11.1% and 10.7% of females and males in their twenties. The remainder of each sample are aged 15- 19. The variable for education (hh07) shows average education level for females and males is very similar: between lower and upper secondary education, closer to the latter. On average 0.1% of the female sample and 1.3% of male sample work in military, 5.4% of females and 4.6% of males are unemployed, 31.8% and 27.1% respectively are retired, and 8.7% and 9.8% respectively are students. Average income for both genders is within 3<sup>rd</sup> quintile. 16.1% of females and 4% of males are widowed. The average number of people within the household for both genders is close to 3; 6.4% of females and 3.2% of males are lone parents; a similar proportion of each sample have no dependent children: 53.6% for females and 51.1% for males. On average, both females and males households have less than one inactive person of an economically active age, this is somewhat higher for males. The average person in the sample lives in an area that is closer to being populated with medium density. Around 12% of each sample live in a country that drinks more than the European average of beer, 16.5% of women and 14.3% of men come from a wine drinking country, and 75.2% and 66.9% respectively from a country preferring spirits. Women tend to do moderate physical activities 3.5 days a week, while men are somewhat less active – 3.2. Smoking frequency averages lie between non-smokers and infrequent smokers for both gender samples, with men smoking somewhat more frequently.

Female and male samples for binge drinking show very similar trends in the summary statistics and there are no major deviations. These are available to review in Table 2 in Appendix I.

## **5. Regression Results**

### 5.1 Effect of communism on female drinking habits

Firstly, we discuss female regressions for alcohol consumption frequency and binge drinking. Table 3 summarizes the results of the specification including number of years spent in a communist regime and a square of this measure. Table 4 uses only a dummy variable indicating experiencing the communist regime in formative years (18-25). These tables present the average marginal effects (henceforth AMEs) of each specification with the variables of interest (full specification detailed in methodology section). The tables are arranged to include AMEs for 3 out of 6 possible outcomes in alcohol consumption frequency equations: ‘never’, ‘2-4 times a month’, and ‘every day’, and 4 out of 5 outcomes in binge drinking equations: ‘never’, ‘monthly’, ‘weekly’, and ‘daily or almost daily’.

In tables 3 and 4, the results reveal that both methods of measuring the influence of communism are highly statistically significant and have a sizeable effect for female alcohol consumption frequency. Number of years under communism increases the probability of consuming alcohol 2-4 times a month. There is a smaller increase in the probability of daily consumption, and a negative effect is observed on the probability of never consuming alcohol. With a continuous communism variable, the effect becomes even greater when multiplied by the number of years spent in that regime. The estimates of the square of years under communism indicate that marginally, the frequency of alcohol consumption diminishes with years, but the effect is very small. In table 4 the communism dummy for formative years shows an effect that is significant and large for increasing alcohol consumption frequency compared to the rest of the variables. Only age indicating dummies have a larger positive effect.

The largest statistically significant encouraging effects on female alcohol consumption frequency are being aged in the twenties and thirties. The effects of age dummies are particularly large and significant in the specification with communism dummy. In the specification that accounts for the number of years spent in the regime the only age dummy that remains of high statistical significance at 1% level is being in the twenties. The effect of other age dummies fizzles out and becomes negative with old age, probably because communism indicator is capturing part of this effect. There are only two significant negative effects on female alcohol consumption frequency – of previously mentioned square of years spent in communism, and dummy indicating old age. Education and income, both categorical variables, have a highly significant positive effect (increasing) towards drinking frequency, this effect is fairly large per category and remains unchanged in both specifications. Smoking is another influence related to more frequent alcohol intake in both specifications, as are single parenthood and living in more populated areas. Surprisingly, being unemployed or an increase in household size do not affect the frequency of females drinking alcohol.

Both communism indicators have no statistically significant effect on female binge drinking. This is consistent with suggestions from the literature that excessive drinking was less tolerated for females in communist regimes. The largest significant (reducing) effect on binge drinking is old age. In the specification with continuous communism treatment, being in thirties has a smaller, but still significant negative effect. Smoking and being unemployed are significant in all binge drinking regressions, showing a persistent and drinking encouraging effect. Income is significant at 10% level for the binge drinking categories of ‘never’, ‘monthly’ and ‘weekly, only showing a small reversed effect – higher income is less indicative for binge

drinking for females. The rest of the variables were not found significant in the mentioned regressions.

### 5.2 Effect of communism on male drinking habits

Tables 5 and 6 follow similar principles to those for female drinking habits. Results for the continuous communist regime measure (years in regime) are shown in table 5, and for communism dummy in table 6. Both tables report AMEs for the same drinking and binge drinking frequency categories as for females. The only change is the middle category for alcohol consumption frequency which is now ‘2-3 times a week’ rather than ‘2-4 times a month’. This is because the ‘2-4 times a week’ category is where the effect of a communist regime is most prominent for females (communism has a smaller permissive effect towards categories indicating higher frequency of consumption), while data suggests men tend to drink more frequently and the communism effects are larger in higher frequency categories.

The main variables of interest – communism effects – show different results for alcohol consumption frequency. The number of years spent under communism has a highly statistically significant but small effect on increased alcohol intake frequency. The effect is similar to that of additional education level. The square of the number of years living under communist regime is also highly significant with a negative sign, suggesting a similar pattern to that of women. Communism dummy, on the other hand, is not significant. This suggests that for men, the experience of communism during formative years had no effect on their frequency of drinking, but the number of years in the regime had a small consumption increasing effect. Overall, this implies that men’s drinking habits tend to be relatively similar across the countries.

Age had the strongest influence on drinking frequency for men. Those in their twenties are most likely to drink every day, the effect diminishing with age; middle-aged men are most likely to drink 2-3 times a week compared to other age groups. Similar findings are reported in both specifications, the only difference being that in regressions with communism dummy the age group most likely to drink daily is ‘thirties’, followed by ‘twenties’ followed by the older groups. Smoking frequency has the next largest increasing effect on drinking, followed by unemployment. The smoking effect is larger for men who drink daily, and smaller for the medium frequency category. Unemployment has a highly significant and sizeable effect on men’s alcohol consumption frequency. By comparison, it has no effect on women’s alcohol consumption frequency. This suggests a possibility that men identify themselves through work more than women, so being unemployed might trigger more frequent alcohol consumption as a way to ‘escape’ the negative effect of unemployment. Another possible interpretation is that due to gender-specific differentiation of tasks (male as breadwinner and female looking after

household, children), being unemployed could result in more free time for men than for unemployed women. Higher levels of education and income also are related to somewhat higher frequency of drinking, with income effect being larger. Household size, in contrast to female regressions, is highly significant and reduces the probability of more frequent drinking. This could be explained by the man's assumed role as a breadwinner, implying that larger families need more resources, thus require more working hours by the breadwinner.

Communism indicators have highly statistically significant effects on male binge drinking frequency. In the regressions with a continuous communism treatment it is significant at 1% significance level and the effect is quite sizeable – additional year in communist regime increases the probability of drinking monthly or weekly by 0.4%, the effect on drinking daily is smaller, at 0.1% increase. The square of years in communism suggests a similar levelling-off effect observed for alcohol consumption frequency. In the binge drinking specification, with the communist treatment dummy variable, communism experience has the largest effect for increasing binge-drinking probability compared to the other explanatory variables. In comparison, the effect is twice as large as of smoking (which shows substantive effects for both female and male alcohol consumption frequency and binge drinking): it increases the probability of monthly binge drinking by 4.9%, weekly – 4.7%, and daily or almost – 1.8%. Other sizeable effects that increase binge drinking are being in the twenties or thirties age groups in the specification with the communism dummy. These effects are not significant in the continuous measure regression, which indicates that continuous measure partially absorbs the age affects. Being of old age has the highest binge drinking reducing effect which is highly significant and is of a similar size in both specifications. This effect is similar to that of communism dummy only of the opposite sign. Higher levels of income and education also reduce the probability of alcohol abuse and this effect is of a consistently similar size in both specifications.

### 5.3 Gender comparisons

Gender is an important determinant of alcohol consumption habits. We examine average marginal effects of the communism dummy over age groups by gender. Graphs 1-6 show these AMEs for all six response categories of alcohol consumption frequency, and graphs 7-11 for all five response categories of binge drinking frequency. Age groups are shown on the horizontal axis, probability on the vertical axis, the blue line represents male, and the orange line female.

Initially, the graphs show that exposure to communist regimes affected both genders somewhat differently. This varies considerably according to age. The experience of

'communism' makes both genders unlikely to abstain from drinking. For the first answer category 'Never' (graph 1) all the probabilities are negative, but surprisingly women are less likely to not drink at all compared to men and this difference is largest between years 20-44. Graph 2 shows that women are more likely to consume alcohol monthly or less compared to men, most of men under the influence of 'communism' would be unlikely to fall into this category. In graph 3, women aged between 20 and 69 are estimated to be more likely to drink 2-4 times a month compared to men, this probability lies between 5% and 6%. The pattern looks very similar for both genders for drinking 2-3 times a week, but probability of falling into this category is almost halved for women compared to drinking 2-4 times a week, while for men there is a small increase in probability. Things change more significantly for drinking 4-6 times a week; probability for women falls but remains positive, while it is almost constant for men at 2%. Gender differences become more pronounced in daily drinking. Probability for women falls somewhat compared to the previous category but remains positive. For men under 39 it increases up to 7%, and lies around 2-3% for middle-aged men, and falls further for men in old age. These graphs suggest that women influenced by the communist regimes are most likely to fall into a category of drinking 2-4 times a month. For men, on the other hand, the probability is highest for drinking daily. This difference shows the gender gap in drinking preferences, but may suggest that attitudes towards women's drinking is more permissive than literature would indicate.

There is a similar pattern with binge drinking. The marginal effects for those affected by 'communism' are negative for both genders in the 'never' binge drink category, which would suggest these respondents are more likely to binge drink. The probability of binge drinking 'less than monthly' is higher for women, with rates being similar for both genders at old age. Probability of drinking heavily 'at least monthly' is higher for both genders, at 6-7% for middle-aged men, and 3-4% for middle-aged women; the probabilities fall with age maintaining the gender gap. Marginal effects for binge drinking weekly are even higher: 8-9% for men up until age 39, around 5% for middle-aged men, and lower for old age; probabilities for women remain below men's with the gap closing somewhat with age. 'Daily or almost daily' binge drinking is quite popular (around 5% probability) amongst men under 40, but falls with age, and is much lower throughout all age categories for women, but remains positive. Overall, these findings indicate that attitudes towards heavy drinking for both genders were likely more permissive in the communist regimes even if there are some observable differences between men and women.

#### 5.4 Robustness checks

Tables 7-10 show AMEs for communism treatment variables from various specifications. Tables 7 and 8 summarize results for alcohol consumption frequency regressions, female and male samples respectively, and tables 9 and 10 present results of binge drinking regressions, also female and male respectively.

Five different specifications were used. The first includes only communism indicators and country and year dummies. The second specification includes socio-economic status and personal characteristics: age dummies, education, gender, work in military, being unemployed, being retired, being a student, income quintile. The third specification adds social relations: being a widower, household size, lone parenthood, no dependent children, number of working age inactive people in the household, geographic variables: urbanisation, living in a 'beer, wine, or spirits' country. The fourth specification includes personal habits: days per week of moderate physical exercise, and smoking. We ran these specifications in separate regressions for both communism dummy and years in communism indicators. The last specification uses the same list of explanatory variables as the fourth, except all communism indicators are in the same regression. All regressions employ the same sample of observations by gender and alcohol consumption variable.

Alcohol frequency regressions' results for females and males follow a similar pattern. Specifications 2-4 produce very similar results for both communism year indicator and communist regime dummy for the formative years, indicating that the results are robust. The first specification, which only includes communism indicators and country and year dummies, overestimates the result of years spent in communism in both female and male regressions, a clear reason to suspect missing variable bias. The same rationale applies to the communism dummy for male regressions, but the reverse is observed in female regressions with the communism dummy. Specifications 4 and 5 also produce very similar results, showing that communism indicators could potentially be used as exogenous to each other and indicating different aspects of the experience of the regime.

Binge drinking regressions overall provide very similar results for all specifications, both female and male samples, with a few minor exceptions. All communism indicator variables are insignificant for female equations, apart from the very first specification where the communism dummy is highly significant. This result can be easily disregarded knowing that many other determining variables are missing from the specification, which causes the communism dummy to capture this effect. It also suggests that there are no particular differences in binge drinking among females in the available European sample. In male regressions, the communism dummy also has a different size and significance in the first specification compared to the rest of the



results. The results of the final specification, which includes all communism indicators in one regression are also very different. They show AMEs for years spent in communism regime to be statistically insignificant, even where their direction and magnitude remain very similar compared to previous results. The size, direction and significance of the communism dummy on the other hand, remains almost exactly the same as in previous results, making us question if this suggests that exposure to specific cultural norms and environment during formative years is more important for men in terms of binge drinking habits, than number of years spent in the regime.

## **6. Discussion and Conclusion**

Our results suggest that even after controlling for personal characteristic, socio-economic circumstances, social relations, geographic indicators, personal habits and country and time dummies, both indicators for exposure to communism: (dummy for exposure to the regime during formative years (18-25) and number of years spent in the regime), are statistically significant and important determinants of drinking behaviour later in life.

Even if we cannot pinpoint the exact reason why or the way in which experiencing communist regimes could have influenced drinking norms, the evidence suggests that both variables capturing exposure increase the probability that women consume alcohol more frequently. In the case of men, the number of years spent under communism has a sizeable significant effect. Overall, however, the effect of communism on alcohol consumption frequency is larger for women. Binge drinking, on the other hand, shows interesting gender differences: communist regimes have no effect on women's binge drinking behaviour, but affect men. Binge drinking results for men suggest that exposure during formative years could play a more important role than number of years spent in the regime.

We also report other findings. Age and gender are the main determining factors of alcohol consumption. Frequency of alcohol consumption increases in middle age and old age, but probability of binge drinking is reduced. Drinking attitudes are also related to other personal habits. Smoking increases the frequency of both drinking and binge drinking, which could mean that those with one hazardous habit are more likely to engage in more of them.

These findings indicate the importance of the communist regimes experience in Eastern Bloc for alcohol consumption norms. They provide insight into the effects and long-term consequences of such experience even twenty years after the collapse of the communist regimes, when the survey data was collected. Since alcohol consumption is directly related to consumer health, we can also conclude that years of exposure to communist regimes had a

detrimental effect on population health and wellbeing, which is supported by high male mortality rates in Eastern Europe. Another important conclusion to be drawn from the evidence is that lifestyle choices and exposure to the behavioural norms of communist regimes during the formative years of life could have a significant effect on a person's behaviour for years to come. This suggests a potential channel whereby past communist regimes can exhibit long-run impacts. It could also suggest a need for targeted policies towards encouraging young individuals to avoid negative habits and incentivize positive ones. Future research could examine specific features and channels through which this regime may have affected people's life long after its demise.

## Appendix I: Tables and graphs

**Table 1: Descriptive statistics for alcohol consumption frequency equations**

Variable	Female			Male		
	Mean	SD	Min/Max	Mean	SD	Min/Max
Alcohol consumption frequency	1.917	0.965	1/6	2.863	1.422	1/6
Communism (D)	0.546	0.498	0/1	0.508	0.500	0/1
Communism-years (C)	24.014	17.013	0/46	21.787	17.441	0/46
Communism-years-squared (C)	866.095	797.065	0/2116	778.81	787.56	0/2116
Twenties (D)	0.111	0.314	0/1	0.107	0.309	0/1
Thirties (D)	0.172	0.378	0/1	0.160	0.366	0/1
Middle-aged (D)	0.438	0.496	0/1	0.457	0.498	0/1
Old age (D)	0.213	0.409	0/1	0.198	0.399	0/1
Education	3.826	1.314	1/7	3.911	1.234	1/7
Work in military (D)	0.001	0.034	0/1	0.013	0.113	0/1
Unemployed (D)	0.054	0.225	0/1	0.046	0.210	0/1
Retired (D)	0.318	0.466	0/1	0.271	0.444	0/1
Student (D)	0.087	0.282	0/1	0.098	0.297	0/1
Income	2.538	1.347	1/5	2.769	1.339	1/5
Widowed (D)	0.161	0.368	0/1	0.040	0.197	0/1
Household size (C)	2.733	1.414	1/7	2.931	1.360	1/7
Lone parent (D)	0.064	0.244	0/1	0.032	0.176	0/1
No dependent children (D)	0.536	0.499	0/1	0.511	0.500	0/1
Inactive in household (C)	0.875	0.915	0/6	0.923	0.922	0/6
Urbanisation	1.856	0.915	1/3	1.871	0.917	1/3
Physical exercise	3.505	2.772	1/7	3.221	2.674	1/7
Smoking	1.383	0.748	1/3	1.679	0.908	1/3
Beer country (D)	0.118	0.323	0/1	0.116	0.320	0/1
Wine country (D)	0.165	0.371	0/1	0.143	0.350	0/1
Spirits country (D)	0.752	0.432	0/1	0.669	0.471	0/1
<b>Western Europe:</b>						
Cyprus (D)	0.021	0.144	0/1	0.099	0.298	0/1
Greece (D)	0.081	0.273	0/1	0.059	0.235	0/1
Malta (D)	0.029	0.169	0/1	0.031	0.174	0/1
<b>Eastern Bloc:</b>						
Bulgaria (D)	0.091	0.288	0/1	0.094	0.292	0/1
Czech Republic (D)	0.035	0.183	0/1	0.036	0.185	0/1
Hungary (D)	0.044	0.204	0/1	0.044	0.205	0/1
Poland (D)	0.418	0.493	0/1	0.356	0.479	0/1
Romania (D)	0.158	0.364	0/1	0.161	0.368	0/1
Slovenia (D)	0.040	0.195	0/1	0.040	0.196	0/1
Slovakia (D)	0.083	0.276	0/1	0.080	0.272	0/1
Year 2006 (D)	0.00005	0.007	0/1	0.00006	0.008	0/1
Year 2007 (D)	0.037	0.188	0/1	0.036	0.187	0/1
Year 2008 (D)	0.246	0.431	0/1	0.330	0.470	0/1
Year 2009 (D)	0.717	0.450	0/1	0.634	0.482	0/1
No. of obs.	19,202			16,904		

Note: Specifications defined in methodology section. D – denotes a dummy variable, C – a continuous variable.

**Table 2: Descriptive statistics for binge drinking frequency equations**

Variable	Female			Male		
	Mean	SD	Min/Max	Mean	SD	Min/Max
Binge drinking frequency	1.422	0.732	1/6	1.918	1.011	1/6
Communism (D)	0.464	0.499	0/1	0.476	0.499	0/1
Communism-years (C)	19.327	16.498	0/46	19.878	16.917	0/46
Communism-years-squared (C)	645.63	703.34	0/2116	681.27	727.74	0/2116
Twenties (D)	0.135	0.342	0/1	0.114	0.318	0/1
Thirties (D)	0.206	0.405	0/1	0.176	0.381	0/1
Middle-aged (D)	0.507	0.500	0/1	0.524	0.499	0/1
Old age (D)	0.108	0.311	0/1	0.152	0.359	0/1
Education	4.203	1.344	1/7	4.018	1.224	1/7
Work in military (D)	0.001	0.033	0/1	0.012	0.110	0/1
Unemployed (D)	0.061	0.240	0/1	0.055	0.228	0/1
Retired (D)	0.212	0.409	0/1	0.236	0.425	0/1
Student (D)	0.073	0.261	0/1	0.049	0.215	0/1
Income	2.892	01.429	1/5	2.775	1.386	1/5
Widowed (D)	0.092	0.290	0/1	0.036	0.185	0/1
Household size (C)	2.912	1.413	1/7	2.979	1.392	1/7
Lone parent (D)	0.076	0.265	0/1	0.031	0.173	0/1
No dependent children (D)	0.502	0.500	0/1	0.514	0.500	0/1
Inactive in household (C)	0.916	0.901	0/6	0.939	0.889	0/6
Urbanisation	2.022	0.916	1/3	1.898	0.917	1/3
Physical exercise	3.571	2.717	1/7	3.311	2.656	1/7
Smoking	1.602	0.864	1/3	1.862	0.950	1/3
Beer country (D)	0.214	0.410	0/1	0.157	0.364	0/1
Wine country (D)	0.302	0.459	0/1	0.196	0.397	0/1
Spirits country (D)	0.642	0.480	0/1	0.539	0.498	0/1
<b>Western Europe:</b>						
Cyprus (D)	0.031	0.174	0/1	0.141	0.348	0/1
Greece (D)	0.176	0.381	0/1	0.091	0.288	0/1
Malta (D)	0.063	0.243	0/1	0.042	0.201	0/1
<b>Eastern Bloc:</b>						
Bulgaria (D)	0.128	0.334	0/1	0.122	0.328	0/1
Czech Republic (D)	0.089	0.284	0/1	0.056	0.229	0/1
Hungary (D)	0.051	0.220	0/1	0.052	0.221	0/1
Poland (D)	0.073	0.260	0/1	0.117	0.322	0/1
Romania (D)	0.189	0.392	0/1	0.224	0.417	0/1
Slovenia (D)	0.075	0.263	0/1	0.053	0.225	0/1
Slovakia (D)	0.125	0.331	0/1	0.101	0.302	0/1
Year 2006 (D)	-	-	0/1	0.0001	0.012	0/1
Year 2007 (D)	0.067	0.251	0/1	0.048	0.215	0/1
Year 2008 (D)	0.380	0.485	0/1	0.467	0.499	0/1
Year 2009 (D)	0.553	0.497	0/1	0.485	0.500	0/1
No. of obs.	2,793			7,256		

Note: Specifications defined in methodology section. D – denotes a dummy variable, C – a continuous variable.

**Table 3: Female alcohol consumption frequency and binge drinking – Continuous measure of communism  
AME (average marginal effects) from Ordered Probit**

Variable	Alcohol Consumption Frequency			Binge Drinking			
	Never	2-4 times a month	Every day	Never	Monthly	Weekly	Daily or almost
Communism-years (C)	-0.015*** (0.002)	0.007*** (0.001)	0.001*** (0.000)	-0.004 (0.004)	0.001 (0.001)	0.001 (0.001)	0.0001 (0.000)
Communism-years- squared (C)	0.0003*** (0.000)	-0.0001*** (0.000)	-0.00002*** (0.000)	0.00008 (0.000)	-0.00002 (0.000)	-0.00001 (0.000)	-2.14e-6 (0.000)
Twenties (D)	-0.111*** (0.018)	0.054*** (0.009)	0.013*** (0.003)	0.021 (0.041)	-0.006 (0.011)	-0.003 (0.006)	-0.001 (0.001)
Thirties (D)	-0.052** (0.026)	0.024* (0.013)	0.005* (0.003)	0.093** (0.046)	-0.025** (0.012)	-0.012** (0.006)	-0.002* (0.001)
Middle-aged (D)	-0.031 (0.031)	0.014 (0.014)	0.003 (0.003)	0.101* (0.054)	-0.029* (0.016)	-0.015* (0.008)	-0.003 (0.002)
Old age (D)	0.063* (0.033)	-0.028** (0.014)	-0.005** (0.002)	0.210*** (0.041)	-0.051*** (0.009)	-0.021*** (0.004)	-0.003*** (0.001)
Education	-0.039*** (0.003)	0.018*** (0.001)	0.003*** (0.001)	0.011 (0.007)	-0.003 (0.002)	-0.002 (0.001)	-0.0003 (0.000)
Unemployed (D)	-0.012 (0.013)	0.005 (0.006)	0.001 (0.001)	-0.080** (0.034)	0.024** (0.010)	0.013** (0.006)	0.003 (0.002)
Income	-0.036*** (0.003)	0.016*** (0.001)	0.003*** (0.000)	0.013* (0.007)	-0.004* (0.002)	-0.002* (0.001)	-0.0004 (0.000)
Household size (C)	0.003 (0.004)	-0.001 (0.002)	-0.0003 (0.000)	0.001 (0.010)	-0.0002 (0.003)	-0.0001 (0.001)	-0.00002 (0.000)
Lone parent (D)	-0.042*** (0.012)	0.020*** (0.006)	0.004*** (0.001)	-0.008 (0.031)	0.002 (0.009)	0.001 (0.004)	0.002 (0.001)
Urbanisation	-0.024*** (0.003)	0.011*** (0.001)	0.002*** (0.000)	-0.014 (0.009)	0.004 (0.003)	0.002 (0.001)	0.0004 (0.000)
Smoking	-0.065*** (0.004)	0.030*** (0.002)	0.006*** (0.001)	-0.066*** (0.009)	0.019*** (0.003)	0.009*** (0.002)	0.002*** (0.001)
Country and year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs	19,202			2,793			
Pseudo R2	0.0652			0.0905			

Notes: Source: European Health Interview Survey (EHIS) from Eurostat.

Variables also included in the specification: working in military (D), retired (D), student (D), widowed (D), no dependent children (D), number of economically inactive in household, physical exercise.

D – denotes a dummy variable, C – a continuous variable. Standard errors in parentheses. Significance levels: at 10% - \*, at 5% - \*\*, at 1% - \*\*\*

**Table 4: Female alcohol consumption frequency and binge drinking – Binary measure of communism in formative years**  
**AME (average marginal effects) from Ordered Probit**

Variable	Female						
	Alcohol Consumption Frequency			Binge Drinking			
	Never	2-4 times a month	Every day	Never	Monthly	Weekly	Daily or almost
Communism (D)	-0.091*** (0.017)	0.040*** (0.007)	0.008*** (0.002)	-0.014 (0.036)	0.004 (0.010)	0.002 (0.005)	0.0004 (0.001)
Twenties (D)	-0.156*** (0.016)	0.077*** (0.008)	0.022*** (0.004)	0.012 (0.041)	-0.003 (0.011)	-0.002 (0.006)	-0.0003 (0.001)
Thirties (D)	-0.164*** (0.018)	0.081*** (0.008)	0.021** (0.004)	0.072* (0.042)	-0.020* (0.011)	-0.010* (0.005)	-0.002 (0.001)
Middle-aged (D)	-0.102*** (0.026)	0.047*** (0.011)	0.009*** (0.003)	0.086* (0.051)	-0.024* (0.015)	-0.012* (0.008)	-0.002 (0.002)
Old age (D)	0.011 (0.027)	-0.005 (0.012)	-0.001 (0.002)	0.203*** (0.040)	-0.050*** (0.009)	-0.021*** (0.004)	-0.003*** (0.001)
Education	-0.039*** (0.003)	0.018*** (0.001)	0.003*** (0.000)	0.010 (0.007)	-0.003 (0.002)	-0.001 (0.001)	-0.0003 (0.000)
Unemployed (D)	-0.010 (0.013)	0.005 (0.006)	0.001 (0.001)	-0.080** (0.034)	0.024** (0.010)	0.013** (0.006)	0.003 (0.002)
Income	-0.036*** (0.003)	0.016*** (0.001)	0.003*** (0.000)	0.013* (0.007)	-0.004* (0.002)	-0.002* (0.001)	-0.0004 (0.000)
Household size (C)	0.003 (0.004)	-0.001 (0.002)	-0.0002 (0.000)	0.001 (0.010)	-0.0002 (0.003)	-0.00008 (0.001)	-0.00002 (0.000)
Lone parent (D)	-0.041*** (0.012)	0.019*** (0.006)	0.004*** (0.001)	-0.008 (0.031)	0.002 (0.009)	0.001 (0.004)	0.0002 (0.001)
Urbanisation	-0.024*** (0.003)	0.011*** (0.001)	0.002*** (0.000)	-0.014 (0.009)	0.004 (0.003)	0.002 (0.001)	0.0004 (0.000)
Smoking	-0.066*** (0.004)	0.030*** (0.001)	0.006*** (0.001)	-0.066*** (0.009)	0.019*** (0.003)	0.009*** (0.002)	0.002*** (0.001)
Country and year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs	19,202			2,793			
Pseudo R2	0.0646			0.0903			

Notes: Source: European Health Interview Survey (EHIS) from Eurostat.

Variables also included in the specification: working in military (D), retired (D), student (D), widowed (D), no dependent children (D), number of economically inactive in household, physical exercise.

D – denotes a dummy variable, C – a continuous variable. Standard errors in parentheses. Significance levels: at 10% - \*, at 5% - \*\*, at 1% - \*\*\*

**Table 5: Male alcohol consumption frequency and binge drinking –continuous measures of communism  
AME (average marginal effects) from Ordered Probit**

Variable	Male						
	Alcohol Consumption Frequency			Binge Drinking			
	Never	2-3 times a week	Every day	Never	Monthly	Weekly	Daily or almost
Communism-years (C)	-0.007*** (0.001)	0.003*** (0.00)	0.004*** (0.001)	-0.011*** (0.003)	0.004*** (0.001)	0.004*** (0.001)	0.001*** (0.000)
Communism-years- squared (C)	0.0001*** (0.000)	-0.00006*** (0.000)	-0.00009*** (0.000)	0.0002*** (0.000)	-0.00005*** (0.000)	-0.00005*** (0.000)	-0.00002*** (0.000)
Twenties (D)	-0.100*** (0.007)	0.043*** (0.003)	0.105*** (0.012)	-0.045 (0.032)	0.016 (0.011)	0.016 (0.011)	0.006 (0.005)
Thirties (D)	-0.101*** (0.011)	0.043*** (0.004)	0.097*** (0.015)	-0.014 (0.040)	-0.005 (0.013)	0.004 (0.013)	-0.002 (0.005)
Middle-aged (D)	-0.130*** (0.016)	0.053*** (0.006)	0.088*** (0.012)	0.075* (0.042)	-0.025* (0.014)	-0.025* (0.014)	-0.010* (0.006)
Old age (D)	-0.086*** (0.014)	0.035*** (0.005)	0.077*** (0.017)	0.174*** (0.047)	-0.057*** (0.015)	-0.046*** (0.010)	-0.014*** (0.003)
Education	-0.007*** (0.002)	0.003*** (0.001)	0.004*** (0.001)	0.015*** (0.004)	-0.005*** (0.002)	-0.005*** (0.001)	-0.002*** (0.001)
Unemployed (D)	-0.034*** (0.008)	0.015*** (0.004)	0.026*** (0.007)	-0.039* (0.020)	0.013* (0.007)	0.013* (0.007)	0.005* (0.003)
Income	-0.015*** (0.002)	0.006*** (0.001)	0.010*** (0.001)	0.011** (0.005)	-0.004** (0.002)	-0.004** (0.002)	-0.001** (0.001)
Household size (C)	0.010*** (0.002)	-0.004*** (0.001)	-0.006*** (0.002)	0.009 (0.005)	-0.003 (0.002)	-0.003 (0.002)	-0.001 (0.001)
Lone parent (D)	-0.021** (0.009)	0.009** (0.004)	0.015** (0.007)	-0.007 (0.023)	0.002 (0.008)	0.002 (0.008)	0.001 (0.003)
Urbanisation	0.001 (0.002)	-0.0005 (0.001)	-0.001 (0.001)	0.003 (0.005)	-0.001 (0.002)	-0.001 (0.002)	-0.0003 (0.001)
Smoking	-0.046*** (0.002)	0.019*** (0.001)	0.030*** (0.001)	-0.069*** (0.005)	0.024*** (0.002)	0.022*** (0.002)	0.008*** (0.001)
Country and year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs	16,904			7,256			
Pseudo R2	0.0471			0.1003			

Notes: Source: European Health Interview Survey (EHIS) from Eurostat.

Variables also included in the specification: working in military (D), retired (D), student (D), widowed (D), no dependent children (D), number of economically inactive in household, physical exercise.

D – denotes a dummy variable, C – a continuous variable. Standard errors in parentheses. Significance levels: at 10% - \*, at 5% - \*\*, at 1% - \*\*\*

**Table 6: Male alcohol consumption frequency and binge drinking – Binary measure of communism in formative years  
AME (average marginal effects) from Ordered Probit**

Variable	Male						
	Alcohol Consumption Frequency			Binge Drinking			
	Never	2-3 times a week	Every day	Never	Monthly	Weekly	Daily or almost
Communism (D)	-0.005 (0.010)	0.002 (0.004)	0.003 (0.006)	-0.147*** (0.022)	0.049*** (0.007)	0.047** (0.007)	0.018*** (0.003)
Twenties (D)	-0.116*** (0.006)	0.048*** (0.002)	0.133*** (0.012)	-0.083*** (0.030)	0.028*** (0.010)	0.030** (0.012)	0.012** (0.005)
Thirties (D)	-0.134*** (0.007)	0.054*** (0.002)	0.151*** (0.013)	-0.078** (0.032)	0.027** (0.011)	0.027** (0.012)	0.011** (0.005)
Middle-aged (D)	-0.177*** (0.013)	0.067*** (0.004)	0.124*** (0.011)	0.056 (0.037)	-0.019 (0.012)	-0.018 (0.012)	-0.007 (0.005)
Old age (D)	-0.111** (0.011)	0.042*** (0.003)	0.109*** (0.016)	0.148*** (0.043)	-0.049*** (0.014)	-0.040*** (0.010)	-0.013*** (0.003)
Education	-0.007*** (0.002)	0.003*** (0.001)	0.004*** (0.001)	0.016*** (0.004)	-0.005*** (0.002)	-0.005*** (0.001)	-0.002*** (0.001)
Unemployed (D)	-0.033*** (0.008)	0.014*** (0.004)	0.025*** (0.007)	-0.035* (0.020)	0.012* (0.007)	0.012* (0.007)	0.005 (0.003)
Income	-0.014*** (0.002)	0.006*** (0.001)	0.009*** (0.001)	0.011** (0.005)	-0.004** (0.002)	-0.004** (0.002)	-0.001** (0.001)
Household size (C)	0.009*** (0.002)	-0.004*** (0.001)	-0.006*** (0.002)	0.008 (0.005)	-0.003 (0.002)	-0.003 (0.002)	-0.001 (0.001)
Lone parent (D)	-0.019** (0.009)	0.008** (0.004)	0.014* (0.007)	-0.003 (0.023)	0.001 (0.008)	0.001 (0.008)	0.0004 (0.003)
Urbanisation	0.001 (0.002)	-0.0004 (0.001)	-0.001 (0.001)	0.003 (0.005)	-0.001 (0.002)	-0.001 (0.002)	-0.0003 (0.001)
Smoking	-0.047*** (0.002)	0.019*** (0.001)	0.031*** (0.001)	-0.069*** (0.005)	0.023*** (0.002)	0.022*** (0.002)	0.008*** (0.001)
Country and year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs	16,904			7,256			
Pseudo R2	0.0462			0.1014			

Notes: Source: European Health Interview Survey (EHIS) from Eurostat.

Variables also included in the specification: working in military (D), retired (D), student (D), widowed (D), no dependent children (D), number of economically inactive in household, physical exercise.

D – denotes a dummy variable, C – a continuous variable. Standard errors in parentheses. Significance levels: at 10% - \*, at 5% - \*\*, at 1% - \*\*\*



**Table 7: AMEs for continuous and dummy communism treatment indicators for alcohol consumption frequency equations, female sample**

Spec. no.	Variable	Never	2-3 times a week	2-4 times a month	Every day	No of obs.
1)	Communism-years	-0.024***	0.011***	0.003***	0.002***	19,202
	Communism-years-sq	0.001***	-0.0002***	-0.0001***	-0.00004***	
	Communism (D)	0.015**	-0.007**	-0.002**	-0.001**	
2)	Communism-years	-0.016***	0.007***	0.002***	0.001***	19,202
	Communism-years-sq	0.0002***	-0.0001***	-0.00004***	-0.00002***	
	Communism (D)	-0.106***	0.047***	0.016***	0.010***	
3)	Communism-years	-0.016***	0.007***	0.002***	0.001***	19,202
	Communism-years-sq	0.0003***	-0.0001***	-0.00004***	-0.00003***	
	Communism (D)	-0.101***	0.045***	0.015***	0.009***	
4)	Communism-years	-0.015***	0.007***	0.002***	0.001***	19,202
	Communism-years-sq	0.0003***	-0.0001***	-0.00004***	-0.00002***	
	Communism (D)	-0.091***	0.040***	0.014***	0.008***	
5)	Communism-years	-0.011***	0.005***	0.002***	0.001***	19,202
	Communism-years-sq	0.0002***	-0.0001***	-0.00003***	-0.00002***	
	Communism (D)	-0.079***	0.035***	0.012***	0.007***	

Notes: Source: see the text. D – denotes a dummy variable. Other variables included in the specifications – details in Results/Robustness checks.

Significance levels: at 5% - \*\*, at 1% - \*\*\*.

**Table 8: AMEs for continuous and dummy communism treatment indicators for alcohol consumption frequency equations, male sample**

Spec. no.	Variable	Never	2-3 times a week	2-4 times a month	Every day	No of obs.
1)	Communism-years	-0.018***	0.005***	0.007***	0.012***	16,904
	Communism-years-sq	0.0003***	-0.0001***	-0.0001***	-0.0002***	
	Communism (D)	-0.054***	0.016***	0.022***	0.034***	
2)	Communism-years	-0.008***	0.002***	0.003***	0.005***	16,904
	Communism-years-sq	0.0002***	-0.00005***	-0.0001***	-0.0001***	
	Communism (D)	-0.018*	0.005*	0.007*	0.011*	
3)	Communism-years	-0.008***	0.002***	0.003***	0.005***	16,904
	Communism-years-sq	0.0002***	-0.00005***	-0.0001***	-0.0001***	
	Communism (D)	-0.015	0.005	0.006	0.010	
4)	Communism-years	-0.007***	0.002***	0.003***	0.004***	16,904
	Communism-years-sq	0.0001***	-0.00004***	-0.0001***	-0.0001***	
	Communism (D)	-0.005	0.002	0.002	0.003	
5)	Communism-years	-0.007***	0.002***	0.003***	0.004***	16,904
	Communism-years-sq	0.0001***	-0.00004***	-0.0001***	-0.0001***	
	Communism (D)	-0.002	0.001	0.001	0.001	

Notes: Source: see the text. D – denotes a dummy variable. Other variables included in the specifications – details in Results/Robustness checks.

Significance levels: at 10% - \*, at 1% - \*\*\*.

**Table 9: AMEs for continuous and dummy communism treatment indicators for binge drinking frequency equations, female sample**

Spec. no.	Variable	Never	Monthly	Weekly	Daily or almost	No of obs.
1)	Communism-years	0.003	-0.001	-0.0004	-0.0001	2,793
	Communism-years-sq	0.00003	-7.52e-6	-3.7e-6	-7.51e-7	
	Communism (D)	0.077***	-0.022***	-0.011***	-0.002***	
2)	Communism-years	-0.004	0.001	0.001	0.0001	2,793
	Communism-years-sq	0.0001	-0.00003	0.00001	-2.51e-6	
	Communism (D)	-0.016	0.004	0.002	0.0004	
3)	Communism-years	-0.005	0.001	0.001	0.0001	2,793
	Communism-years-sq	0.0001	-0.00003	-0.00001	-2.75e-6	
	Communism (D)	-0.016	0.004	0.002	0.0004	
4)	Communism-years	-0.004	0.001	0.001	0.0001	2,793
	Communism-years-sq	0.0001	-0.00002	-0.00001	-2.14e-6	
	Communism (D)	-0.014	0.004	0.002	0.0004	
5)	Communism-years	-0.004	0.001	0.001	0.0001	2,793
	Communism-years-sq	-0.0001	-0.00002	-0.00001	-2.08e-6	
	Communism (D)	-0.004	0.001	0.001	0.0001	

Notes: Source: see the text. D – denotes a dummy variable. Other variables included in the specifications – details in Results/Robustness checks.

Significance levels: at 1% - \*\*\*.

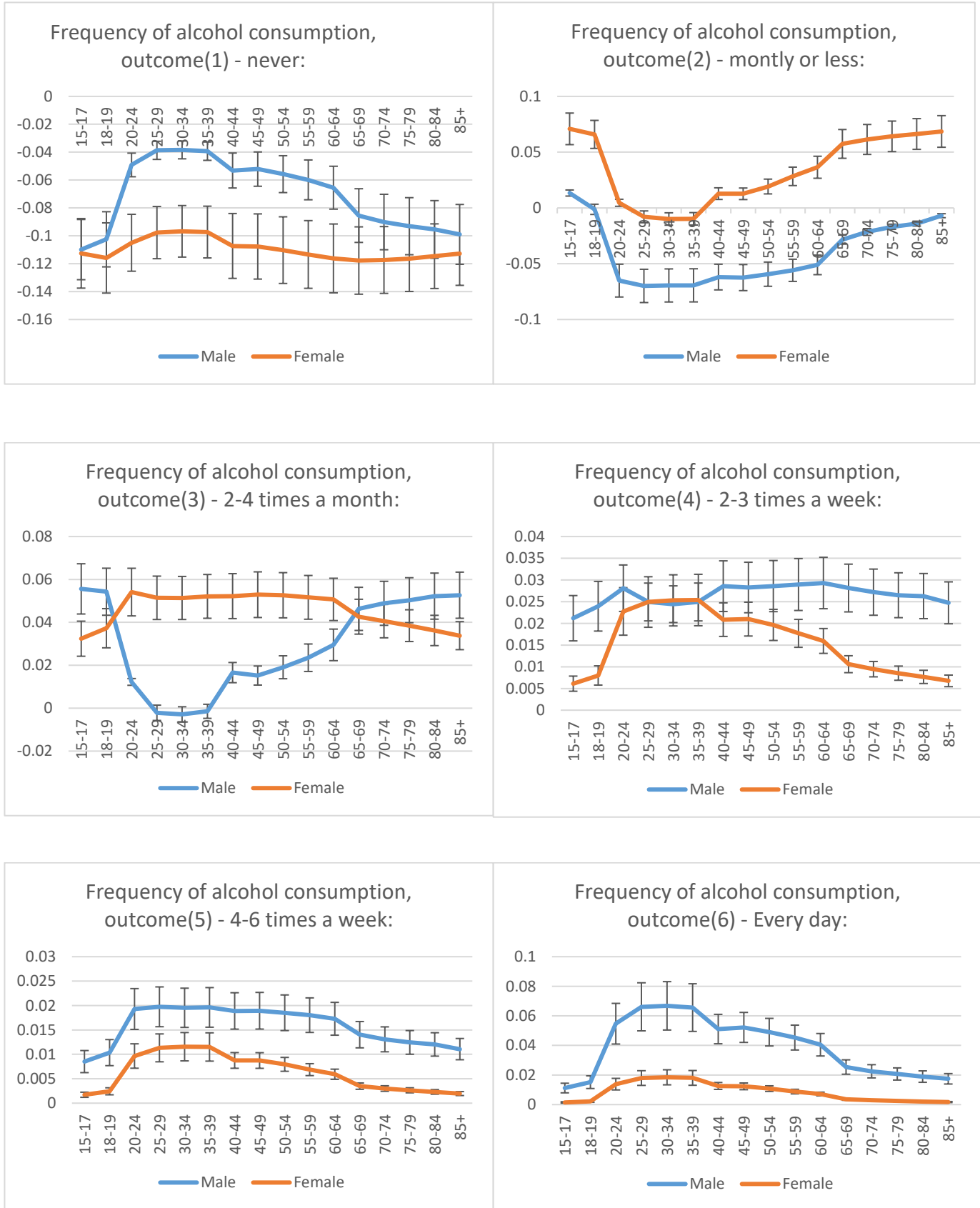
**Table 10: AMEs for continuous and dummy communism treatment indicators for binge drinking frequency equations, male sample**

Spec. no.	Variable	Never	Monthly	Weekly	Daily or almost	No of obs.
1)	Communism-years	-0.008***	0.003***	0.003***	0.001***	7,256
	Communism-years-sq	0.0002***	-0.0001***	-0.0001***	-0.00002***	
	Communism (D)	0.006	-0.002	-0.002	-0.001	
2)	Communism-years	-0.012***	0.004***	0.004***	0.001***	7,256
	Communism-years-sq	0.0002***	-0.0001***	-0.0001***	-0.00002***	
	Communism (D)	-0.157***	0.053***	0.050***	0.020***	
3)	Communism-years	-0.012***	0.004***	0.004***	0.001***	7,256
	Communism-years-sq	0.0002***	-0.0001***	-0.0001***	-0.00002***	
	Communism (D)	-0.154***	0.052***	0.049***	0.019***	
4)	Communism-years	-0.011***	0.004***	0.004***	0.001***	7,256
	Communism-years-sq	0.0002***	-0.0001***	-0.0001***	-0.00002***	
	Communism (D)	-0.147***	0.049***	0.047***	0.018***	
5)	Communism-years	-0.003	0.001	0.001	0.0004	7,256
	Communism-years-sq	0.0001	-0.00002	-0.00002	-7.48e-6	
	Communism (D)	-0.146***	0.049***	0.046***	0.018***	

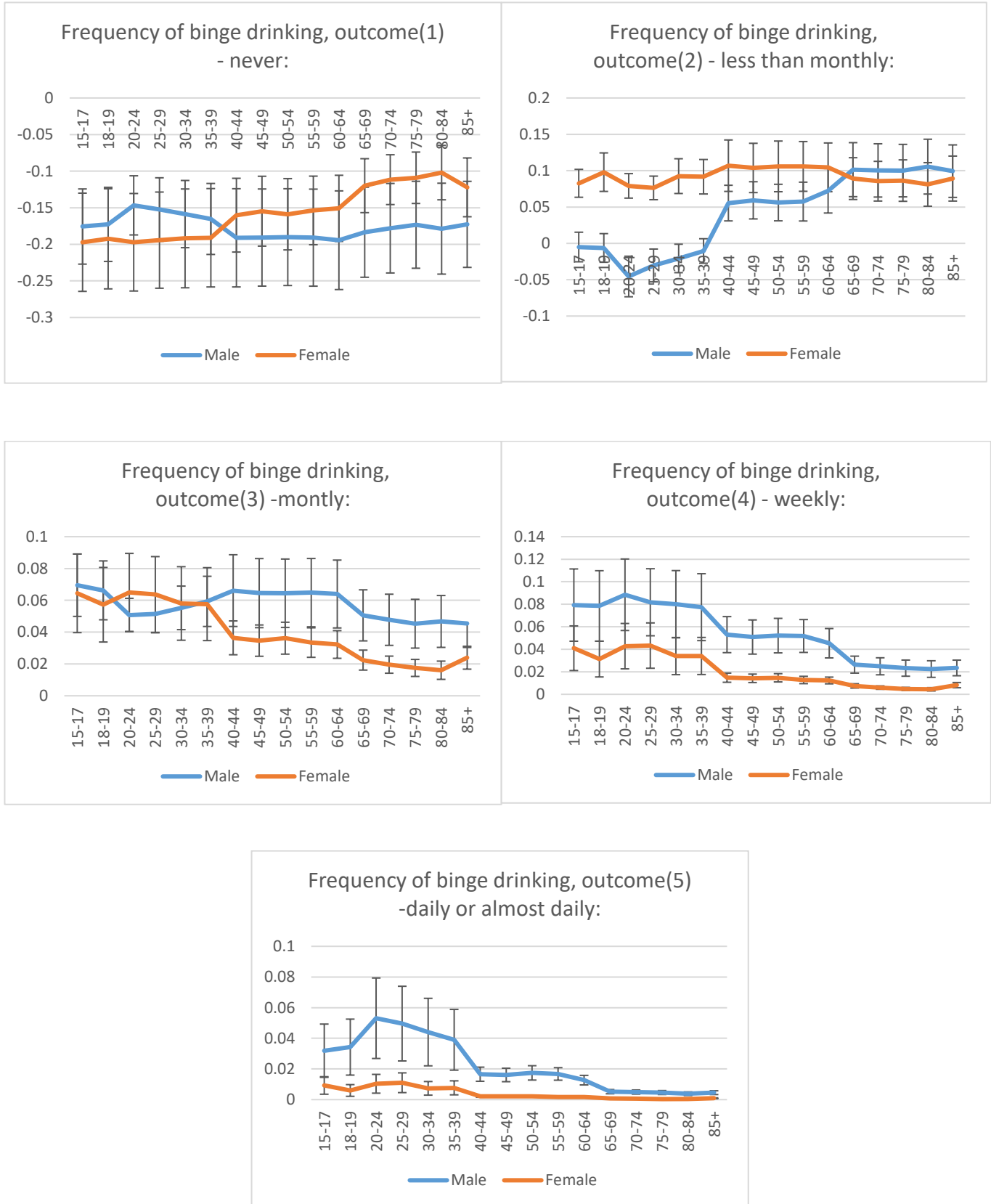
Notes: Source: see the text. D – denotes a dummy variable. Other variables included in the specifications – details in Results/Robustness checks.

Significance levels: at 1% - \*\*\*.

**Graphs 1-6: Communism AMEs by gender over age for alcohol consumption frequency equations**



**Graphs 7-11: Communism AMEs by gender over age for binge drinking frequency equations**



## Appendix II

### Information on variables

Variable/name in EHIS dataset	Answer choices / explanation
Alcohol consumption frequency / al01	1. Never, 2. Monthly or less, 3. 2 to 4 times a month, 4. 2 to 3 times a week, 5. 4 to 6 times a week, 6. Every day
Frequency of binge drinking (6 or more drinks on one occasion)/ al03	1. Never, 2. Less than monthly, 3. Monthly, 4. Weekly, 5. Daily or almost daily
Age dummies	Twenties, Thirties, Middle-age years (40-64 years old), and Old age years (65+) (respondents of the teenage years: 15-17 and 18-19 then are a reference group, they were not included to avoid dummy variable trap)
Age	age groups: 15-17, 18-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+ (this variable was not included in regressions, but was used in some descriptive statistics)
Education / hh07	1. No formal education, 2. Primary, 3. Lower secondary, 4. Upper secondary, 5. Post-secondary but non-tertiary, 6. First stage of tertiary, 7. Second stage of tertiary
Occupation dummies	Work in military, Unemployed, Retired, Student (1. If person belong to the category and, 0. If not)
Income / in04	1. Below 1 <sup>st</sup> quintile, 2. Between 1 <sup>st</sup> and 2 <sup>nd</sup> quintiles, 3. Between 2 <sup>nd</sup> and 3 <sup>rd</sup> quintiles, 4. Between 3 <sup>rd</sup> and 4 <sup>th</sup> quintiles, 5. Above 4 <sup>th</sup> quintile
Family situation dummies	Widowed, Lone parent, No dependent children (1. If Yes, 0. If No)
Household size / hhsiz	Number of persons in household (answer range: 1-7, 7 indicating 7+ persons)
Number of inactive persons in household / hhinact	Persons aged 16-64 in the household, (answer range: 1-9, 9 being 9+ inactive people in the household)
Urbanisation	1. Thinly populated, 2. Intermediate, 3. Densely populated
Prevalent alcohol types dummies	Country level dummies for above average consumption of each type (beer, wine, spirits), based on macro data of alcohol consumption (World Health Organisation, recorded per capita consumption, 15+ age, in litres, 1960-213)
Moderate physical exercise (days per week) / pe03	1-7 days
Smoking	1. Not at all, 2. Yes, occasionally, 3. Yes, daily

### Information on sample definition

	Female	Male
Full sample	94,433	79,812
Alcohol cons. frequency	74,043	60,512
+country	74,043	60,512
+year of interview	65,639	54,109
+age	65,637	54,107
+education, occupation, income	54,160	45,128
+urbanisation	54,141	45,101
+widowed, children variables	30,697	26,772
+household information	21,470	19,097
+habits	19,202	16,904

### Core descriptive statistics of the full sample and sample used in alcohol consumption frequency specifications

	Female		Male	
	Full sample	Specification sample (19,202)	Full sample	Specification sample (16,904)
Twenties (D)	0.118 (94,433)	0.111	0.139 (79,812)	0.107
Thirties (D)	0.146 (94,433)	0.172	0.155 (79,812)	0.160
Middle-aged (D)	0.407 (94,433)	0.438	0.419 (79,812)	0.457
Old age (D)	0.269 (94,433)	0.213	0.212 (79,812)	0.198
Education	3.637 (94,203)	3.826	3.789 (79,605)	3.911
Income	2.716 (68,391)	2.538	2.932 (58,512)	2.769

Note: numbers show means for each variable by sample, numbers of observations in the sample for each variable are in parentheses. D – denotes a dummy variable, other variables categorical.

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