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ABSTAINING FROM ALCOHOL AND LABOUR MARKET UNDERPERFORMANCE – Have we forgotten the “dry” alcoholics?

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ABSTRACT: Prior research on the relationship between alcohol consumption and labour market success has generally found that abstainers do worse on the labour market than moderately drinking individuals. Some authors have argued that these results are consistent with medical research finding that moderate alcohol consumption is associated with improved health, and that this improved health also carries over to improved labour market success. However, very seldom, if ever, has attention been paid to the fact that a part of the abstainers are ex-alcoholics, who have quit drinking owing to alcohol problems. In this paper we show, using the new Finnish “Health 2000” dataset, that the underperformance of abstainers in a labour market sense is almost entirely due to the fact that some abstainers are ex-drinkers who have been diagnosed with alcoholism. Finnish men who have never drunk alcohol are not doing worse than drinkers.

KEY WORDS: Alcoholism, Abstinence, Work probability

JEL: I120, J690

1 Introduction

Recent research on the relationship between alcohol consumption and labour market success has generally found that moderately drinking individuals do better on the labour market than abstainers (Barret 2002, Berger & Leigh 1988, French & Zarkin 1995, Hamilton & Hamilton 1997, Heien 1996, Zarkin et al. 1998, McDonald & Shields 2001).

Several explanations have been put forward for this phenomenon. First, some authors have argued that these results are consistent with medical research finding moderate alcohol consumption is associated with improved health¹ and that this improved health also carries over to the labour market (e.g. Barret 2002, McDonald & Shields 2001). Thus, moderate drinking improves an individual's health capital, which in turn generates labour market success. If this explanation is correct, the policy implications are startling, because it means that abstainers should be encouraged to start consuming moderate amounts of alcohol.

Another explanation is that results are due to a missing variables problem. Perhaps it is the case that some personality trait, such as "sociability" is positively correlated both with labour market success and moderate drinking. Thus according to this explanation, abstainers are actually doing worse on the labour market owing to their perhaps "difficult" personality.

A third explanation is that alcohol in some cases is a "social lubricant". An example of this would be that companies' meetings with clients take the form of social events, involving alcohol consumption. An abstainer may have a disadvantage in these circumstances, which later shows up as lower bonuses, and fewer promotion opportunities etc.

¹ Interestingly, these results on the positive labour market effects of moderate alcohol consumption are reminiscent of medical studies that have reinforced the consistent finding of a J-shaped inverse association between alcohol consumption and cardiovascular disease morbidity and mortality, primarily due to an association between alcohol consumption and coronary heart disease. Epidemiological studies are surprisingly consistent in showing that light to moderate alcohol intake has an inverse association with the risk of cardiovascular disease morbidity and mortality compared with those who do not drink at all. The depth and width of the J-shaped inverse association is largely dependent upon the underlying lowered risk of coronary disease. Alcohol likely reduces the risk of cardiovascular disease through increases in plasma high density lipoprotein-cholesterol (HDL) levels (Sesso 2001). Further support for the HDL hypothesis comes from the lack of a differential effect of alcohol by beverage type, suggesting that ethanol is responsible for the protective effect. While other mechanisms for a reduced risk of cardiovascular disease by alcohol have been suggested - including hemostatic markers and improvements and insulin sensitivity - evidence remains preliminary (Yamada et al. 2003).

A fourth explanation is that some abstainers are in fact ex-drinkers, who have stopped drinking due to health or other problems caused by excessive drinking. Thus, it may be the case that abstainers actually are worse off on the labour market because they face problems owing to their (prior) alcoholism. And, of course, it is a well-known fact that alcoholics tend to do much worse on the labour market than non-alcoholics (Mullahy & Sindelar, 1991, 1993, 1996, Kenkel & Ribar 1994, Johansson et al. 2004).

To our knowledge, no paper has fully pursued this fourth explanation. Heien (1996) and French and Zarkin (1995) are the two papers that go some way along this approach. Heien, using data from the 1979 and 1984 waves of the National Household Survey on Alcohol Use, included a dummy indicating whether an individual was an ex-drinker in his Mincer-type regressions. However, it turned out that this had no effect on wages. French and Zarkin used data from a database from four worksites to test whether alcohol consumption affects wages. They included dummy variables indicating whether an individual was an ex-drinker and whether an individual was someone who has never drunk alcohol. They found that the ex-drinker dummy had a much larger negative effect on individual wages than the dummy indicating that someone never had drunk alcohol.

Thus, it seems that there is some support for the importance of differentiating between abstainers who have used alcohol, and those who have quit drinking. However, not all people who quit drinking do it because of alcohol problems, so just to control for the fact that someone has quit drinking, does not tell us the whole story. And importantly, no paper has explained why just those who quit drinking would be doing badly on the labour market.

In this paper we therefore go one step further than Heien (1996) and French & Zarkin (1995), as we investigate whether abstainers fare worse on the labour market because they are ex-drinkers with alcohol problems.

We do this in the simplest possible way by, in addition to dummies indicating whether someone is an ex-drinker or not, investigating whether interaction terms indicating that an individual is an ex-drinker and is alcohol dependent can explain failure on the labour market.

In order to accomplish that, we use the newly created Finnish Health 2000 data set, which is a comprehensive data set describing the health, functional ability, and health behaviour of the

Finnish population over the age of 30². The major advantage of this dataset is that it contains a vast amount of information on alcohol consumption, alcoholism, and drinking behaviour. However, the major drawback is that it does not contain information on individual wages. Owing to this data problem, we therefore concentrate on probabilities of full time work. Indeed, the probability of full time work is a cruder measure of labour market success than for instance individual hourly wages. However, it is nevertheless of considerable importance. And the same human and health capital factors tend to affect the probability of working full time and individual hourly wages in a similar fashion.

2 Data

As already mentioned, this study is based on the “Health 2000” population survey dataset³. This dataset has been constructed in order to give a comprehensive picture of the health and functional ability of the working-age and old-aged Finnish population. The basic dataset comes from a random sample of 10 000 individuals from the entire country, and the information has been collected during the year 2000 by means of personal interviews, telephone interviews, and professional health examinations. Supplementary information has been obtained from various government registers. Due to the fact that the data set includes results from clinical examinations, the sampling design had to include regional clustering. A stratified two-stage sampling design was used with local Health Center Districts (comprising one or several municipalities) as the first-stage sampling units (i.e. regional clusters). There were a total of 249 regional clusters in the population. A total of 15 certainty strata (the 15 largest towns) were first formed as clusters with the probability of one. The remaining 234 clusters were then divided into five regional strata, covering the whole (mainland) Finland. A total of 65 clusters were drawn from these strata by systematic PPS sampling with inclusion probabilities proportional to the size of the target population in a cluster. Thus, the total number of strata and first-stage sample clusters was 20 and 80, respectively.

The second-stage sample (about 8,000 people aged 30 years or over) was allocated proportionally to the strata. People aged 80 or over were over-sampled with a double

² In this paper we focus on males only. One reason for doing so is that alcoholism and problem drinking in general is much more common among men than among women. Indeed, in the “Health 2000” dataset some 16% of the men and some 4% of the women between 30 and 65 years old are classified as alcohol dependent

³ See Aromaa & Koskinen (2002) for a comprehensive description of the “Health 2000” dataset.

inclusion probability relative to the younger age groups. Finally, individual persons were selected from each stratum with systematic sampling from an implicitly stratified frame register. About 88% of the sample persons were interviewed, 80% attended a comprehensive health examination and 5% attended a condensed examination at home. The most essential information on health and functional capacity was obtained from 93% of the subjects.

Of course, estimation without taking into account the sampling structure of the Health 2000 dataset makes it possible that the estimates are biased. Consequently, in all estimations in this paper, the sampling structure has been taken into account by using appropriate survey estimation methods.

Table 1 gives a description and descriptive statistics of the variables used. For abstainers, of which there are 255 in the sample we use the variables lifetime abstainer, and quit drinking, which are based on interview answers. A lifetime abstainer is someone who has never drunk alcohol. The dummy variable “Quit drinking * alcoholism” is a variable that interacts the quit drinking variable with a dummy that indicates whether an individual has been diagnosed as alcohol dependent. The variable “quit drinking * not alcoholism” takes the value 1 if an individual has quit drinking but is not diagnosed with alcohol dependence. An individual is considered to be alcohol dependent if he or she fulfils DSM-IV (American Psychiatric Association, 1994) diagnostic criteria for alcohol dependence. The CIDI (Composite International Diagnostic Interview) was applied to ascertain lifetime DSM-IV diagnoses for substance abuse diagnoses, including alcohol dependence. A Finnish translation of the German, computerised version of the CIDI (M-CIDI) was used. It should be noted that it is fully possible that an individual is diagnosed as alcohol dependent despite the fact that he or she does not currently drink alcohol.

The rest of the variables are more straightforward. All individuals are between 30 and 65 years old in the sample. The health and marital status indicators are based on interview answers. For the education dummies, we have used the ISCED definitions⁴.

⁴ ISCED (Unesco International Standard Classification of Education) is classification of education levels, constructed in order to make education levels in different countries comparable. For a further information, see for example OECD (1999).

Table 1. Variable descriptions and descriptive statistics.

Variable	Description	Mean (st. dev.)	
		Drinkers	Abstainers
Lifetime abstainer	Dummy var. 1 if individual never drunk alcohol.		0.480
Quit drinking	Dummy var. 1 if individual. has been a drinker but has stopped.		0.520
Quit drinking * not alcoholism.	Dummy var. 1 if individual. has been a drinker but has stopped, and is not alcohol dependent.		0.297
Quit drinking * alcoholism	Dummy var. 1 if individual has stopped drinking and is alcohol dependent.		0.222
Working full time	Dummy var. 1 if individual works full time.	0.747	0.482**
Age	Age in years	46.102 (9.55)	50.164** (10.08)
Age squared	Age in years squared.	2216.467 (893.99)	2617.555** (975.30)
Primary education	Dummy var. 1 if individual's level of education conforms to ISCED levels 0-2	0.016	0.332**
Secondary education	Dummy var. 1 if individual's level of education conforms to ISCED levels 3-4	0.695	0.598**
Tertiary education	Dummy var. 1 if individual's level of education conforms to ISCED levels 5-8	0.070	0.141**
Very good health	Dummy var. 1 if individual reports very good health.	0.374	0.311**
Rather good health	Dummy var. 1 if individual reports rather good health.	0.308	0.260
Average health	Dummy var. 1 if individual reports average health.	0.235	0.280
Rather bad health	Dummy var. 1 if individual reports rather bad health.	0.064	0.079
Very bad health	Dummy var. 1 if individual reports very bad health.	0.019	0.071
Mental illness	Dummy var. 1 if individual reports having mental illness	0.096	0.227**
Married	Dummy var. 1 if individual is married	0.633	0.569**
Cohabiting	Dummy var. 1 if individual is cohabiting	0.144	0.066**
Divorced	Dummy var. 1 if individual is divorced	0.085	0.106
Widowed	Dummy var. 1 if individual is widowed	0.011	0.016
Single	Dummy var. 1 if individual is single	0.126	0.243**
Spouse working	Dummy var. 1 if individual's spouse is working	0.427	0.267**
Children	Number of children	0.778 (1.07)	0.711 (1.49)

Note: ** Difference significant on the 1%-level. * Difference significant on the 5%-level.

An inspection of the means for the variables reveals that there are substantial differences between abstainers and drinkers (of which there are 2063) in the sample. Based on a simple comparison of means, abstainers are working full time considerably less often than do drinkers. Further, it is also clear that abstainers' health is worse than drinkers' health, particularly mental health. For mental health, the difference is striking with 9.6% of drinkers and an astonishing 22.7% of abstainers reporting that they suffer from some kind of mental illness. Abstainers are also single much more often than drinkers, and their spouses are working much less often. Abstainers also have lower levels of education, on average.

3 Results

Table 2 shows the results of probit regressions, where the dependent variable takes the value 1 if the individual is working full time and 0 if not. The coefficients shown are marginal effects, which means that the coefficients show the change in the probability that an individual is working full time given a change from 0 to 1 for a dummy variable, and for an infinitesimal change in continuous variables. As already mentioned, the regressions have been corrected for the design of the survey.

Column 1 shows that abstaining from alcohol is associated with about 19% lower probability of working full time. We then proceed by adding more health, human capital, and marital status variables to the vector of explaining variables in columns 2-4. The coefficients of these variables have the expected signs. The coefficients for the health dummies are positive compared to the reference category (very poor health), and having some kind of mental illness is detrimental to the probability of working full time. Having acquired more education than primary level education is also associated with a higher probability of working full time. Divorced and single men are also less likely to be working full time. And, interestingly, if the spouse is working full time, the individual has a 12% higher probability of working full time himself. Further, the coefficient for the "abstainer" dummy is decreasing in size as we add more explaining variables. This is not surprising, given the data presented in table 1. Abstainers have worse health etc. than drinkers, so that some of the negative effects of being an abstainer run through the human and health capital channels. However, controlling for these variables, abstainers are still about 10% less likely to be working full time than men who drink alcohol.

Table 2: Probit estimates of the probability of full time work for men.

	(1)	(2)	(3)	(4)
Abstainer	-0.189 (-5.54)**	-0.150 (-4.26)**	-0.132 (-3.80)**	-0.095 (-2.93)**
Age	0.100 (8.94)**	0.112 (9.95)**	0.112 (9.92)**	0.091 (7.90)**
Age squared	-0.001 (-10.52)**	-0.001 (-11.32)**	-0.001 (-11.26)**	-0.001 (-9.15)**
Very good health		0.341 (7.40)**	0.322 (6.98)**	0.304 (6.60)**
Rather good health		0.293 (6.75)**	0.280 (6.41)**	0.269 (6.37)**
Average health		0.244 (6.35)**	0.238 (6.22)**	0.228 (6.08)**
Rather poor health		0.096 (1.84)	0.091 (1.76)	0.085 (1.68)
Mental problem		-0.225 (-5.53)**	-0.233 (-5.66)**	-0.194 (-4.66)**
Secondary education			0.059 (2.28)*	0.038 (1.51)
Tertiary education			0.146 (5.48)**	0.112 (3.88)**
Cohabiting				0.031 (0.93)
Divorced				-0.072 (-1.52)
Widowed				0.043 (0.63)
Single				-0.171 (-3.70)**
Children				0.011 (0.86)
Spouse working				0.119 (4.18)**
Observations	2321	2317	2317	2317

Note: t-statistics in parentheses. ** Significant on the 1%-level. * Significant on the 5%-level.

In table 3, we make further investigations by splitting the “abstainer” dummy into one dummy indicating that someone has never drunk alcohol, and one dummy indicating that someone is an ex-drinker. Otherwise, the regressions have the same specification as that of column 4 in table 2. In column 1, we can see that if we compare those who have never drunk to all others, we cannot find that they would do any worse in terms of the probability to work full time. In column 2 we compare those who are abstainers but have been drinkers to everyone else. Interestingly, we can see that ex-drinkers have some 16% lower probability of being in full time work. And finally, in column 3, we compare those who have quit drinking and those who

have never drunk to drinkers, but the coefficient for the “quit drinking” dummy is more or less unchanged compared to column 2.

Table 3: Probit estimates of the probability of full time work for men.

	(1)	(2)	(3)
Lifetime abstainer	-0.016 (-0.39)		-0.028 (-0.67)
Quit drinking		-0.161 (-3.34)**	-0.164 (-3.38)**
Age	0.092 (7.96)**	0.093 (8.05)**	0.093 (8.01)**
Age squared	-0.001 (-9.25)**	-0.001 (-9.32)**	-0.001 (-9.26)**
Secondary education	0.045 (1.81)	0.040 (1.61)	0.039 (1.54)
Tertiary education	0.120 (4.33)**	0.111 (3.90)**	0.110 (3.84)**
Very good health	0.311 (6.70)**	0.298 (6.41)**	0.298 (6.43)**
Rather good health	0.276 (6.51)**	0.266 (6.21)**	0.266 (6.22)**
Average health	0.235 (6.32)**	0.225 (5.93)**	0.225 (5.92)**
Rather poor health	0.095 (1.91)	0.084 (1.63)	0.083 (1.61)
Mental problem	-0.206 (-4.97)**	-0.182 (-4.33)**	-0.182 (-4.36)**
Cohabiting	0.034 (1.03)	0.032 (0.95)	0.031 (0.93)
Divorced	-0.073 (-1.53)	-0.071 (-1.49)	-0.071 (-1.49)
Widowed	0.045 (0.65)	0.050 (0.74)	0.048 (0.72)
Single	-0.182 (-3.85)**	-0.182 (-3.91)**	-0.178 (-3.80)**
Children	0.008 (0.62)	0.010 (0.80)	0.011 (0.83)
Spouse working	0.122 (4.31)**	0.117 (4.13)**	0.117 (4.13)**
Observations	2317	2317	2317

Note: See notes to table 2.

Thus, it clearly looks like the association between abstention from alcohol and labour market underperformance is due to those who have quit drinking. Lifetime abstainers are not doing any worse than drinkers. This result is reminiscent of the result in French & Zarkin (1995) which stated that the underperformance, in a labour market sense, of those abstainers who have quit drinking is larger than the underperformance of those absolutists that have never drunk.

Table 4: Probit estimates of the probability of full time work for men.

	(1)	(2)	(3)
Quit drinking*alcoholism	-0.262 (-2.94)**	-0.267 (-3.01)**	-0.269 (-3.03)**
Lifetime abstainer	-0.022 (-0.52)		-0.027 (-0.65)
Quit drinking* not alcoholism		-0.093 (-1.66)	-0.095 (-1.70)
Age	0.093 (8.02)**	0.093 (8.06)**	0.093 (8.02)**
Age squared	-0.001 (-9.29)**	-0.001 (-9.33)**	-0.001 (-9.27)**
Secondary education	0.039 (1.54)	0.038 (1.54)	0.037 (1.47)
Tertiary education	0.111 (3.84)**	0.110 (3.78)**	0.109 (3.72)**
Very good health	0.308 (6.73)**	0.302 (6.54)**	0.301 (6.55)**
Rather good health	0.275 (6.56)**	0.270 (6.37)**	0.270 (6.38)**
Average health	0.234 (6.37)**	0.229 (6.11)**	0.229 (6.11)**
Rather bad health	0.091 (1.81)	0.086 (1.69)	0.085 (1.67)
Mental problem	-0.179 (-4.26)**	-0.174 (-4.13)**	-0.175 (-4.16)**
Cohabiting	0.034 (1.02)	0.033 (0.98)	0.032 (0.96)
Divorced	-0.073 (-1.54)	-0.072 (-1.51)	-0.072 (-1.51)
Widowed	0.050 (0.74)	0.052 (0.76)	0.050 (0.74)
Single	-0.184 (-3.90)**	-0.185 (-3.96)**	-0.181 (-3.85)**
Children	0.009 (0.72)	0.010 (0.78)	0.010 (0.81)
Spouse working	0.118 (4.20)**	0.116 (4.14)**	0.116 (4.13)**
Observations	2317	2317	2317

Note: See notes to table 2.

In table 4 we introduce the interaction terms “quit drinking * alcoholism” and “quit drinking * not alcoholism in order to test whether the result from table 3 that those abstainers who have quit drinking suffer on the labour market because they have quit drinking owing to alcohol problems. There seems to be quite a bit of evidence in favour of that hypothesis. Column 1 highlights the point that lifetime abstainers are not worse off on the labour market, but that those who have quit drinking and are diagnosed as alcohol dependent have some 26% lower

Table 5: Probit estimates of the probability of full time work for men.

	(1)	(2)	(3)
Quit drinking*alcoholism	-0.275 (-3.04)**	-0.283 (-3.13)**	-0.286 (-3.17)**
Lifetime abstainer	-0.030 (-0.73)		-0.037 (-0.89)
Quit drinking*not alcoholism		-0.101 (-1.81)	-0.105 (-1.87)
Age	0.084 (6.98)**	0.084 (7.00)**	0.084 (6.96)**
Age squared	-0.001 (-8.25)**	-0.001 (-8.25)**	-0.001 (-8.20)**
Secondary education	0.033 (1.28)	0.032 (1.28)	0.031 (1.20)
Tertiary education	0.099 (3.50)**	0.097 (3.44)**	0.096 (3.35)**
Very good health	0.289 (5.84)**	0.281 (5.62)**	0.280 (5.64)**
Rather good health	0.255 (5.60)**	0.248 (5.39)**	0.246 (5.39)**
Average health	0.227 (5.94)**	0.221 (5.68)**	0.220 (5.66)**
Rather bad health	0.077 (1.35)	0.071 (1.22)	0.069 (1.19)
Mental problem	-0.176 (-4.01)**	-0.168 (-3.81)**	-0.169 (-3.83)**
Cohabiting	0.053 (1.58)	0.052 (1.54)	0.051 (1.52)
Divorced	-0.048 (-0.96)	-0.045 (-0.91)	-0.045 (-0.92)
Widowed	0.051 (0.80)	0.052 (0.84)	0.050 (0.80)
Single	-0.181 (-3.71)**	-0.182 (-3.79)**	-0.177 (-3.62)**
Children	0.011 (0.86)	0.012 (0.92)	0.013 (0.97)
Spouse working	0.126 (4.43)**	0.125 (4.37)**	0.124 (4.36)**
Observations	2024	2024	2024

Note: See notes to table 2.

probability of being in full time work. In column 2, we compare those who have quit drinking and have been diagnosed with alcohol dependence and those who have quit drinking but have not been diagnosed with alcohol dependence with everyone else. This shows that those who have quit drinking and have been diagnosed with alcohol dependence are about 27% less likely to have a full time job. Having quit drinking but not being diagnosed as alcohol dependent is associated with a 9% lower probability of being employed full time, and the effect is only close

to being significant at conventional levels. In the third column we also add the “lifetime abstention” dummy to the same specification. This does not alter the results just presented.

Thus, we cannot find any evidence in favour of lifetime abstainers faring worse than drinkers. However, one reason for this may be that the “drinker” group not only includes moderate drinkers, but also alcoholics. These alcoholics may have problems on the labour market, and the “lifetime abstainer” group may look unjustifiably good in this comparison. In order to investigate this possibility, we reran all regressions presented in table 4, but excluding individuals that are drinkers and diagnosed with alcoholism. However, this hardly changes the results (table 5).

4 Concluding remarks

Judging from the results presented in this paper, it looks like being an abstainer is associated with worse labour market performance. However, it is important to distinguish between individuals who are ex-drinkers and individuals who have never drunk, because it is quite clear that those men who have never drunk are not underperforming in the sense that they have lower employment probabilities. It also seems clear that a major explanation for the fact that those who have quit drinking are performing worse on the labour market is that they are also alcohol dependent.

This finding has implications for future research on the relationship between alcohol consumption and labour market success. In this literature, one explanation proposed for the fact that moderately drinking individuals are performing better than abstainers has been that moderately drinking individuals’ health is improving owing to their drinking, and that this improved health carries over also to greater labour market success. However, it may be the case that the labour market success of moderately drinking individuals is actually not any better than that of abstainers who have not been forced to quit drinking because of alcoholism. Then, encouraging abstainers to start drinking in order to improve their labour market performance would not be an appropriate policy recommendation.

In future studies that compare the labour market success of drinkers and non-drinkers, more attention should be paid to these “dry alcoholics”. One strategy would be to reclassify this

group of individuals into some kind of “heavy drinking” category, or exclude them from the analysis altogether. The likely result of such a strategy would be that the perceived labour market benefits of moderate drinking would be smaller.

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