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What is the impact of alcohol consumption on labor market outcomes?

Introduction

Drinking alcohol, whether for social gatherings or as a way of relaxing, has been a topic of interest to statisticians and economists for some time. Nearly a hundred years ago, Congress passed the National Prohibition Act, making alcohol illegal to sell. The prevailing belief was that alcohol consumption was what caused most poverty and crime, so making alcohol illegal would reduce crime. One of the country's leading economists, Irving Fisher, wrote heavily in favor of prohibition. Our understanding of how alcohol consumption affects us has changed a lot since the 20s. There have been honest efforts in trying to state how much of an effect alcohol has on our lives, and how successful we are. As researchers have found out, defining this relationship is not easy. It is very easy to misattribute the effects of other factors onto alcohol consumption. This is what I have explored in this paper. I have run regressions with and without controls to measure the relative impact of alcohol consumption on yearly income and yearly hours worked.

Literature Review

There is a lot written on the relationship between alcohol consumption and labor market outcomes. While trying to see if there was a consensus on whether alcohol consumption does impact productivity and yearly income, I have seen many articles written on how income level influences alcohol consumption, rather than the other way around. The consensus is higher income and more highly educated workers are more likely to drink more, or at least report as doing so on survey. According to Gallup's annual Consumption Habits poll, 78% of American households which earn \$75,000 or more consume alcohol, while those living in households with an income less than \$30,000 answered only 45%. 80% surveyed with a college degree say that they drink, while those with a high school degree or less answered 52%. The mean for national adults is 64%. One study, *Alcoholism; Clinical and Experimental Review*, found that at lower incomes, there was much more variation in how much alcohol is consumed. Again, higher income groups were more likely to drink, but were less likely to binge. The CDC found results similar to this: "Binge drinking is more common among people with household incomes of \$75,000 or more than among people with lower incomes. However, people with lower incomes binge drink more often and consume more drinks when they do" (Kanny, 2013).

Results were similar when measuring the effect of alcohol consumption on income. A study in 2002 which analyzed full-time male workers used the Australian National Health Survey 1989-90 and found that moderate drinking leads to higher earnings when compared to abstention and abuse. Another study by Donald Kenkel and David Ribar on young adults found that alcohol problems have a negative effect on labor supply.

Data

Data is taken from the National Longitudinal Survey of Youth 1979 (NLSY79) program. This data set includes detailed information from family background to measures from an intelligence test that will be useful in measuring the relative impact of alcohol consumption.

The labor market variables I've chosen to run regressions on are the natural log of the respondent's total wage and salary income for the past year, and the natural log of the respondent's total number of hours worked in the past calendar year. If alcohol, or other variables have an impact on productivity, they will show up in either both, or one of these measures.

Empirical Methodology

There are some biases that I will run into when running these tests. First, people with little income may find the cost of alcohol prohibitive. This is easy to imagine, as someone with no income will consume less of everything, including alcohol, versus someone with an income. If I'm running a regression between a measure of productivity and a measure of alcohol consumption, we should expect the coefficient on alcohol consumption to be more positive than it otherwise would be.

A second bias that I will be investigating are variables correlated both with alcohol consumption, as well as measures of productivity, like income and hours worked. Perhaps it's not the alcohol directly impacting productivity, but other factors like a person's family background that causes distress, and consequently less production and a higher likelihood of alcohol abuse.

This is the bias I would like to investigate in this paper. I am going to compare the coefficients on measures of alcohol consumption, first with no controls, then with controls on personal

characteristics, then with controls on background, then with controls on schooling and results from an intelligence test, then with these controls combined. In the next section, I will go into more detail on what is included in the controls. I will conclude with a comparison of the level of differences in these coefficients. These can tell us whether the consumption of alcohol itself has a big impact on productivity, relative to other factors like family background or level of education.

Results

I've created three groups of control variables. Control group A includes the individual's age, sex, height, weight, and a dummy variable indicating whether they have a health problem that limits the kind of work they can do. Control group B includes dummy variables indicating whether at age 14, the respondent lived in the south, had a working dad in the household, had a working mom in the household, and the unemployment rate in the respondent's current state of residence. Control group C includes the percentile score of an intelligence test given during the respondent's first year of completing this survey, and the respondent's completed years of schooling.

First, a test for the numbers of times in the past month the respondent had 6 or more drinks in one sitting, 0=never, 1=once, 2=2 or 3 times, 3=4 or 5 times, 4=6 or 7 times, 5=8 or 9 times, 6=10 or more times. This is regressed with the natural log of income in a year and the natural log of the number of hours worked in a year.

“Drnk6m”

$\ln(\text{earnings/year})$

$\ln(\text{hours worked/year})$

No Controls	-.07113 (.0081072)	-.0076708 (.0053011)
Controls A added	-.0857205 (.007839)	-.0214336 (.0052229)
Controls B added	-.0527999 (.0080957)	-.0016346 (.005375)
Controls C added	-.0242364 (.0078499)	.0052413 (.0053681)
Controls combined	-.0307987 (.0076655)	-.0049583 (.0053385)

Test for numbers of days in the past month the individual had at least one drink. This is regressed with the natural log of income in a year and the natural log of the number of hours worked in a year.

“Days”	ln(earnings/year)	ln(hours worked/year)
No Controls	.0258749 (.0016181)	.0076683 (.0010544)

Controls A added	.016766	.0037594
	(.0015777)	(.0010483)
Controls B added	.0215432	.0064521
	(.0016271)	(.0010764)
Controls C added	.015738	.0048863
	(.0015575)	(.0010616)
Controls combined	.0081941	.0013765
	(.0015407)	(.0010697)

Test for the average number of drinks per day when the individual drinks. This is regressed with the natural log of income in a year and the natural log of the number of hours worked in a year.

“Perday”	ln(earnings/year)	ln(hours worked/year)
No Controls	-.0016505	.0025707
	(.0029419)	(.0019449)
Controls A added	-.0037337	.0004094
	(.0027995)	(.0018866)

Controls B added	-.0014426	.0029727
	(.0029006)	(.0019471)
Controls C added	.0003149	.0030675
	(.0027909)	(.0019294)
Controls combined	-.0020905	.0012629
	(.0026683)	(.0018792)

For Test 1, on the numbers of times in the past month the respondent had 6 or more drinks in one sitting, the results are in line with previous studies. The coefficient with no controls was -.07113. So, every additional score upwards in the number of times the respondent had 6 or more drinks in the past month is correlated with a 7% lower yearly income. This is a significant decline if attributed solely to alcohol consumption, and with a standard error of only .0081072, this coefficient is statistically significant. With all controls placed on the regression, this coefficient is reduced by over half to -.0307987 and a standard error of .0076655. So over half of the correlation with yearly income that could be attributed to alcohol consumption when run with no controls, turns out to be explained by other variables correlated with both alcohol consumption and yearly income. Declines of the same magnitude are found in the yearly number of hours worked with controls added, but the standard errors are too high to make these coefficients statistically significant.

Test 2, on numbers of days in the past month the individual had at least one drink, yield interesting results. The coefficient with no controls was .0258749, so every additional day the respondent had at least 1 drink in the last month was correlated with 2.6% *increase* in yearly income. According to this result, if a respondent had at least one drink in 10 of the last 30 days last month, they are likely earning 10% more every year versus a respondent who drank only 6 of the last 30 days. But with all the controls added, this coefficient shrinks to .0081941, a significant decrease. One possible reason this coefficient is still positive may be the economic effect mentioned earlier. It's only the people earning relatively more money who would be able to afford to drink alcohol on a regular basis. Like in test 1, adding controls moves the coefficient closer to 0. There was also a similar affect on hours worked, with a coefficient of .0076683 with no controls, shrinking to .0013765 with controls added.

Test 3, on the average number of drinks per day when the individual drinks yielded results unlike both test 1 and test 2, in that the coefficients before and after controls were added were not statistically different than 0. No real correlation was found between the average number of drinks per day, when the respondent drinks, and yearly income and hours worked.

Conclusion

I have found that adding controlling variables has significantly changed the coefficient on variables measuring alcohol consumption's effect on income and hours worked. In almost every case, the coefficient has moved closer to 0. This result is in line with other studies, and it is important to restate that there are many other variables correlated with both alcohol consumption

and productivity that may end up overstating alcohol consumption's effect on productivity when not controlled for.

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