Everything in Moderation: Separating State Dependence from Unobserved Heterogeneity Between Alcohol and Employment

Online Appendix

Monica Deza

Department of Economics

Syracuse University and NBER

Extension to Trivariate Ordered Logit for Employment, Alcohol and Cigarette Use

Trivariate Ordered Logit

While the relationship between cigarettes and employment is beyond the scope of this study, I extend the bivariate ordered logit model into a trivariate ordered logit by adding a third equation corresponding to the latent utility for cigarettes in order to address any potential confounding effects that arise as alcohol and cigarettes may be related (Decker and Schwartz, 2000).

The levels for alcohol and employment are defined as before. I use state-and-year specific cigarette taxes as the variable that enters the latent utility for cigarettes without altering the utility for employment or alcohol (Z_{ijt}). I define cigarette abstention as no cigarettes in the last month, heavy smoking is defined as at least ten cigarettes in the last month, and moderate smoking is defined as those that are neither cigarette abstainers nor cigarette heavy smokers[1].

Online Appendix Table 2 (Panel A)presents the coefficients γ_{kj}^{Low} and γ_{kj}^{High} for k, j={alcohol, cigarette, employment}, and the coefficients can be summarized as follows. First, all three outcomes exhibit strong state dependence *within* outcome, which increases in magnitude with dosage level. That is, $\gamma_{jj}^{Low} > 0$, $\gamma_{jj}^{High} > 0$, and $\gamma_{jj}^{High} > \gamma_{jj}^{Low}$. In particular, $\gamma_{a,a}^{Low} = 1.587$ $(SE = 0.037)$, $\gamma_{a,a}^{High} = 4.388$ $(SE = 0.173)$, $\gamma_{e,e}^{Low} = 0.997$ $(SE = 0.037)$, $\gamma_{e,e}^{High} = 2.381$ $(SE = 0.034)$, $\gamma_{c,c}^{Low} = 1.659$ $(SE = 0.057)$, $\gamma_{c,c}^{High} = 4.227$ $(SE = 0.069)$.

Second, regarding the coefficients associated with the state dependence *between* alcohol and employment the results are in line with the bivariate ordered logit model, as lagged moderate alcohol consumption increases future employment while heavy alcohol consumption does not

[1] Online Appendix Table 1 shows stylized facts, which indicate strong persistence in cigarette use in the raw data.

have a statistically significant effect on employment ($\gamma_{a,e}^{Low} > 0$, $\gamma_{a,e}^{High} = 0$). In particular, $\gamma_{a,e}^{Low} = 0.304$ (SE $= 0.035$), $\gamma_{a,e}^{High} = 0.068$ (SE $= 0.143$). In line with the results of the bivariate ordered logit model, the coefficients do not suggest a statistically significant effect from lagged employment to future alcohol use, as, $\gamma_{e,a}^{Low} = 0.245$ (SE $= 0.051$), $\gamma_{e,a}^{High} = 0.299$ (SE =0.042).

Third, the coefficients associated with the state dependence between cigarettes and employment indicate that cigarette consumption, whether moderate or heavy, is detrimental to future employment ($\gamma_{c,e}^{Low} < 0$, $\gamma_{c,e}^{High} < 0$).). In particular, $\gamma_{c,e}^{Low} = -0.204$ (SE $= 0.054$), $\gamma_{c,e}^{High} = -0.244$ (SE $= 0.058$).

Fourth, regarding determinants of cigarette consumption, moderate alcohol consumption and full-time employment decrease the probability of cigarette consumption, as $\gamma_{a,c}^{Low} = -0.1273$ (SE $= 0.0487$), $\gamma_{e,c}^{High} = -0.1572$ (SE $= 0.0488$).

Fifth, results remain consistent as I estimate this analysis without restricting it to poorly educated individuals (Panel B), restricting it to those "likely former alcohol misuser," defined as individuals that went through that dramatic change of stopping alcohol consumption entirely at any point (Panel C) and those who went through that change at any point between the waves of interest 2002-2011 (Panel D). The results also remain consistent with an alternative definition of heavy drinker, which define them as those who consumed alcohol at least 20 days in the last month but only 70 percent of those days involve binge drinking (Panel E). Online Appendix Table 3 displays the full set of coefficients for the preferred trivariate ordered logit specification.

Average Partial Effects

Following the main study, I compute the average partial effects (APEs) using the structural estimates in order to directly interpret the effect of alcohol and cigarettes by dosage level on employment, holding preferences constant. Given that individuals are only observed in one possible scenario ($Y_{i,c,t-1}^{None} = 1$ or $Y_{i,c,t-1}^{Low} = 1$, or $Y_{i,c,t-1}^{High} = 1$), observed data would only allow me to compute either $P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{Low} = 1]$ or $P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{High} = 1]$ or $P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{None} = 1]$. Therefore, I hold all parameters constant and artificially set lagged cigarette consumption to moderate for everyone to compute $P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{Low} = 1|\alpha_i]$, and then I can artificially set lagged cigarette consumption to heavy consumption for everyone to compute $P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{High} = 1|\alpha_i]$ and average it over individuals and periods.

The APE from the trivariate ordered logit models are displayed in Online Appendix Table 4 and can be summarized as follows. First, the APEs are consistent with the bivariate ordered logit model, as there is evidence of strong state dependence for alcohol and employment. In addition, the APE indicates that if all respondents were to artificially consume heavy levels of cigarettes in any given period holding their preferences constant, the probability of being heavy smokers in next period would increase by 40 percentage points relative to the counterfactual where they are abstainers.[2] It is worth to note that the observed $P\left[Y_{i,c,t}^{High} = 1\middle|Y_{i,c,t-1}^{High} = 1\right] = 0.79$ while the simulated $P[Y_{i,c,t}^{High} = 1|Y_{i,c,t-1}^{High} = 1|\alpha_i^c]$=0.425, and this large gap supports the notion that the observed persistence is highly driven by unobserved heterogeneity.

[2] $P[Y_{i,c,t}^{High} = 1|Y_{i,c,t-1}^{High} = 1|\alpha_i^c]$ - $P[Y_{i,c,t}^{High} = 1|Y_{i,c,t-1}^{None} = 1|\alpha_i^c]$=0.42-0.02=0.4

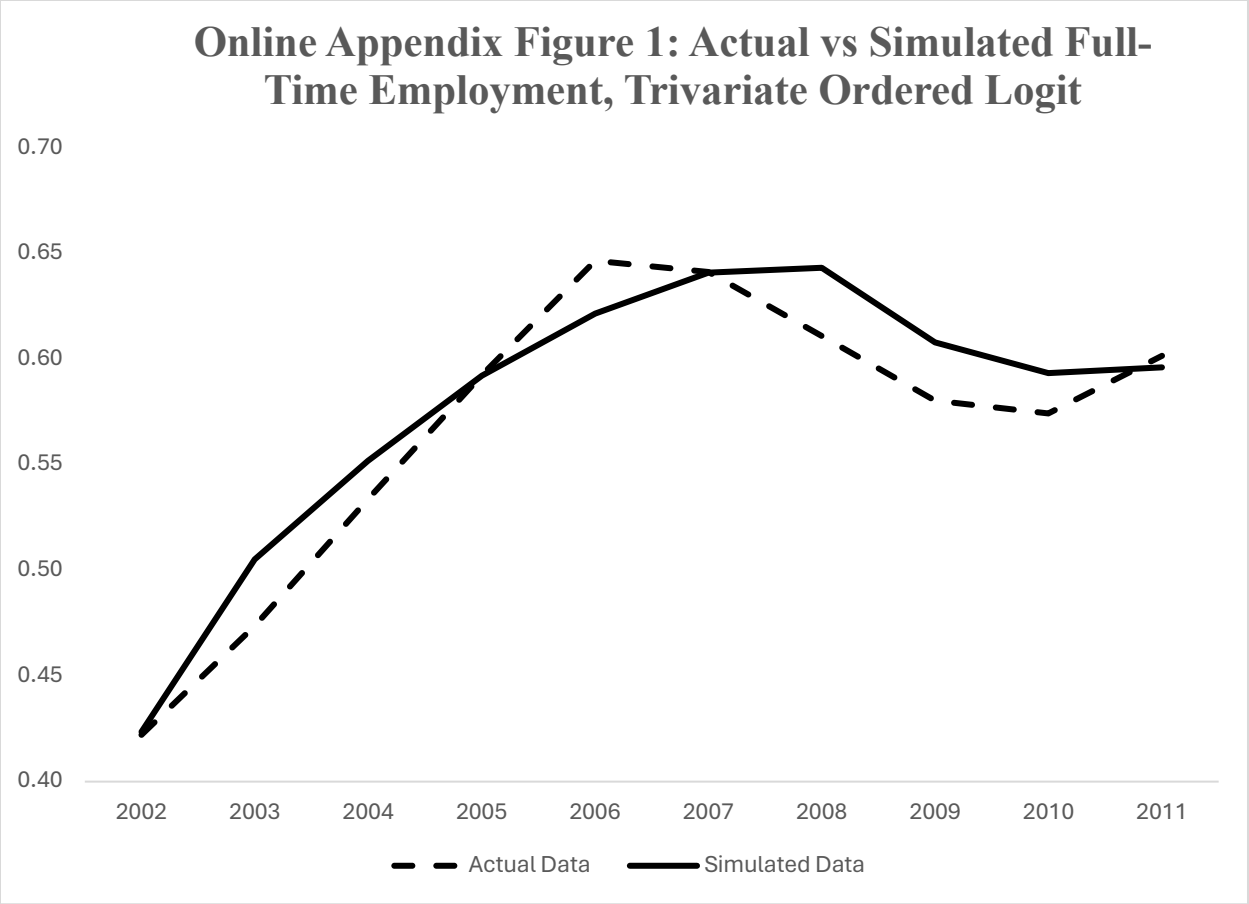
Second, the APEs are consistent with the bivariate ordered logit model, as full-time employment is higher among those with moderate alcohol consumption in the past period than among alcohol abstainers or heavy users. Third, the APEs indicate that full-time employment is higher among those who abstain from cigarettes, and any dosage level of cigarette consumption decreases the likelihood of full-time employment. In particular, the model predicts that the probability of full-time employment is highest if respondents are assigned abstention from cigarettes in the previous period ($P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{None} = 1|\alpha_i]$=0.6). That probability decreases to $P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{High} = 1|\alpha_i]$=0.56 and $P[Y_{i,e,t}^{High} = 1|Y_{i,c,t-1}^{Low} = 1|\alpha_i]$=0.57 when artificially assigned high and moderate levels of cigarette consumption. Overall, any level of cigarette consumption is detrimental to future full-time employment.

Policy Counterfactuals

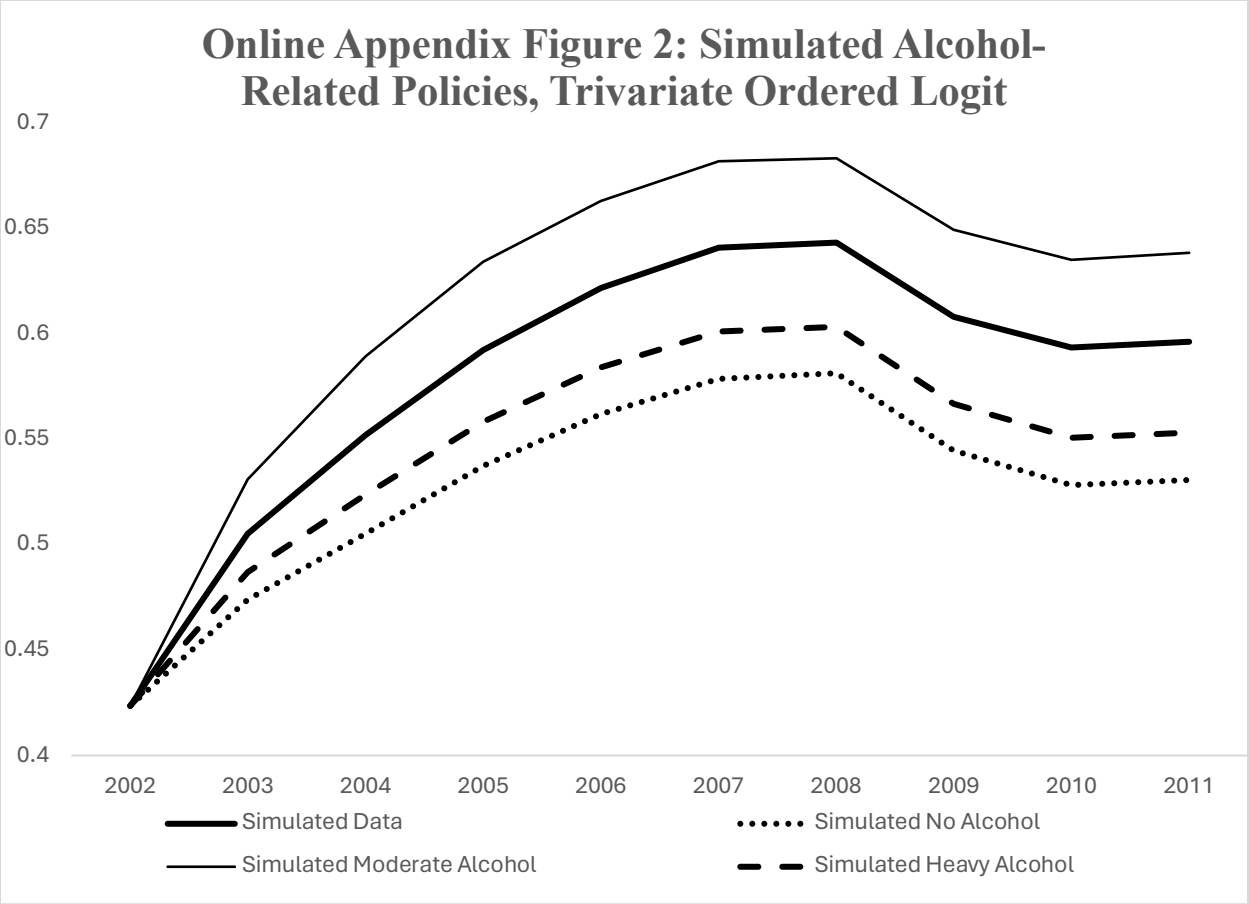
I revisit this exercise using parameter estimates from the trivariate ordered logit model after confirming that the simulated data reflects the patterns of full-time employment in the data (Online Appendix Figure 1). The policy simulations presented in Online Appendix Figure 2 are in line with our previous results that artificially replacing alcohol outcomes with moderate alcohol consumption increases full-time employment relative to the baseline, and even more so relative to alternative policy counterfactuals where all respondents are artificially assigned either to alcohol abstention or heavy alcohol consumption. Interestingly, policy simulations indicate that cigarette consumption at any dosage level is detrimental to full-time employment. That is, abstention increases full-time employment relative to the baseline, and cigarette consumption (moderate or heavy) decreases (Online Appendix Table 5)

Taken together, these policy counterfactuals indicate that, holding preferences constant, moderate alcohol consumption increases full-time employment while any dosage level of

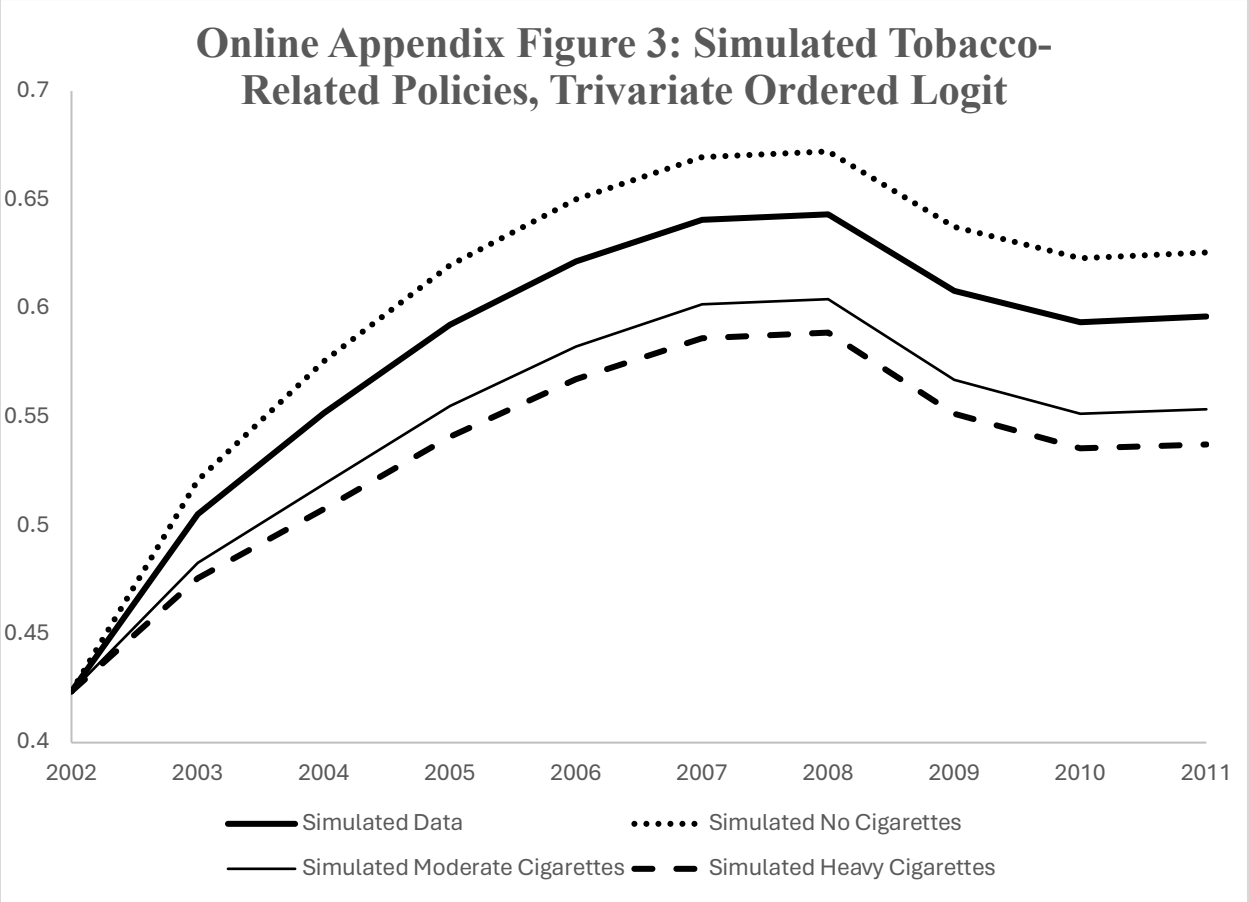
cigarette consumption is detrimental to full-time employment. A potential mechanism is that moderate alcohol consumption may be associated with building social capital through networking, unlike heavy alcohol consumption or smoking. However, the mechanisms are beyond the scope of this study.



Note: This figure presents the observed and simulated probability of full-time employment using the parameters estimated by the trivariate ordered logit model.



Note: This figure presents the simulated probability of full-time employment using the parameters estimated by the trivariate ordered logit model. In addition, it shoes the simulated probability of full-time employment under three counterfactual scenarios, where I hold all estimated parameters constant and artificially change the alcohol consumption dosage level for all respondents before simulating full-time employment in the next period: (i)A scenario where alcohol abstention is assigned to every respondent at every period, (ii) a scenario where moderate alcohol consumption is assigned to every respondent at every period, and (iii) a scenario where heavy alcohol consumption is assigned to every respondent at every period. See Table 9 for the respective coefficients.



Note: This figure presents the simulated probability of full-time employment using the parameters estimated by the trivariate ordered logit model. In addition, it shoes the simulated probability of full-time employment under three counterfactual scenarios, where I hold all estimated parameters constant and artificially change the cigarette consumption dosage level for all respondents before simulating full-time employment in the next period: (i)A scenario where cigarette abstention is assigned to every respondent at every period, (ii) a scenario where moderate cigarettel consumption is assigned to every respondent at every period, and (iii) a scenario where heavy cigarette consumption is assigned to every respondent at every period. See Table 9 for the respective coefficients.

Online Appendix Table 1: Stylized Facts

Panel A: Persistence of High Cigarettes	
P(High Cigarettes|No Cigarettes)	0.016
P(High Cigarettes|Lag Low Cigarettes)	0.153
P(High Cigarettes|Lag High Cigarettes	0.790
Panel B: Transition to FT Employment from Cigarettes	
P(High Employment|No Cigarettes)	0.591
P(High Employment|Lag Low Cigarettes)	0.572
P(High Employment|Lag High Cigarettes)	0.569
Observations	2,781

Online Appendix Table 2: Trivariate Ordered Logit for Alcohol, Cigarettes and Employment

	Alcohol	Employment	Cigarette
Panel A: Main Specification			
Lag Moderate Alcohol ($\gamma_{a,j}^{Low}$)	1.59	0.30	-0.13
	(0.04)	(0.04)	(0.05)
Lag Part-time Employment ($\gamma_{e,j}^{Low}$)	0.25	1.00	-0.08
	(0.05)	(0.04)	(0.06)
Lag Moderate Cigarettes ($\gamma_{c,j}^{Low}$)	-0.07	-0.20	1.66
	(0.06)	(0.05)	(0.06)
Lag Heavy Alcohol ($\gamma_{a,j}^{High}$)	4.39	0.07	0.16
	(0.17)	(0.14)	(0.18)
Lag Full-Time Employment ($\gamma_{e,j}^{High}$)	0.30	2.38	-0.16
	(0.04)	(0.03)	(0.05)
Lag Heavy Cigarettes ($\gamma_{c,j}^{High}$)	-0.16	-0.24	4.23
	(0.06)	(0.06)	(0.07)
Observations		2781	
Panel B: Entire Sample (Low and High Skilled)			
Lag Moderate Alcohol ($\gamma_{a,j}^{Low}$)	1.73	0.32	-0.18
	(0.03)	(0.03)	(0.05)
Lag Part-time Employment ($\gamma_{e,j}^{Low}$)	0.26	1.02	-0.11
	(0.04)	(0.03)	(0.05)
Lag Moderate Cigarettes ($\gamma_{c,j}^{Low}$)	-0.04	-0.15	1.74
	(0.05)	(0.04)	(0.05)
Lag Heavy Alcohol ($\gamma_{a,j}^{High}$)	4.74	0.09	0.08
	(0.16)	(0.13)	(0.15)
Lag Full-Time Employment ($\gamma_{e,j}^{High}$)	0.26	2.55	-0.15
	(0.04)	(0.03)	(0.04)
Lag Heavy Cigarettes ($\gamma_{c,j}^{High}$)	-0.28	-0.22	4.47
	(0.06)	(0.05)	(0.06)
Observations		4050	

(Continued) Online Appendix Table 2: Trivariate Ordered Logit for Alcohol, Cigarettes and Employment

	Alcohol	Employment	Cigarette
Panel C: Likely Alcohol Misuser			
Lag Moderate Alcohol ($\gamma_{a,j}^{Low}$)	1.54	0.30	-0.14
	(0.04)	(0.04)	(0.05)
Lag Part-time Employment ($\gamma_{e,j}^{Low}$)	0.24	0.99	-0.09
	(0.05)	(0.04)	(0.06)
Lag Moderate Cigarettes ($\gamma_{c,j}^{Low}$)	-0.08	-0.19	1.68
	(0.06)	(0.05)	(0.06)
Lag Heavy Alcohol ($\gamma_{a,j}^{High}$)	4.38	0.07	0.16
	(0.18)	(0.15)	(0.18)
Lag Full-Time Employment ($\gamma_{e,j}^{High}$)	0.30	2.36	-0.17
	(0.04)	(0.03)	(0.05)
Lag Heavy Cigarettes ($\gamma_{c,j}^{High}$)	-0.17	-0.24	4.23
	(0.07)	(0.06)	(0.07)
Observations		2709	
Panel D: Likely Alcohol Misuser During Survey			
Lag Moderate Alcohol ($\gamma_{a,j}^{Low}$)	1.53	0.30	-0.16
	(0.04)	(0.04)	(0.05)
Lag Part-time Employment ($\gamma_{e,j}^{Low}$)	0.25	0.99	-0.09
	(0.05)	(0.04)	(0.06)
Lag Moderate Cigarettes ($\gamma_{c,j}^{Low}$)	-0.12	-0.20	1.65
	(0.06)	(0.06)	(0.06)
Lag Heavy Alcohol ($\gamma_{a,j}^{High}$)	4.38	0.06	0.13
	(0.18)	(0.15)	(0.18)
Lag Full-Time Employment ($\gamma_{e,j}^{High}$)	0.29	2.39	-0.16
	(0.04)	(0.03)	(0.05)
Lag Heavy Cigarettes ($\gamma_{c,j}^{High}$)	-0.21	-0.22	4.20
	(0.07)	(0.06)	(0.07)
Observations		2654	

(Continued) Online Appendix Table 2: Trivariate Ordered Logit for Alcohol, Cigarettes and Employment

	Alcohol	Employment	Cigarette
Panel E: Alternative Alcohol Dosage Definition			
Lag Moderate Alcohol ($\gamma_{a,j}^{Low}$)	1.58	0.30	-0.13
	(0.04)	(0.04)	(0.05)
Lag Part-time Employment ($\gamma_{e,j}^{Low}$)	0.25	1.00	-0.08
	(0.05)	(0.04)	(0.06)
Lag Moderate Cigarettes ($\gamma_{c,j}^{Low}$)	-0.08	-0.21	1.67
	(0.06)	(0.05)	(0.06)
Lag Heavy Alcohol ($\gamma_{a,j}^{High}$)	4.25	0.20	-0.18
	(0.14)	(0.12)	(0.14)
Lag Full-Time Employment ($\gamma_{e,j}^{High}$)	0.29	2.38	-0.16
	(0.04)	(0.03)	(0.05)
Lag Heavy Cigarettes ($\gamma_{c,j}^{High}$)	-0.15	-0.25	4.24
	(0.06)	(0.06)	(0.07)
Observations		2781	

Note: These parameters are estimated by a trivariate ordered logit model. The parameters γ_{kj}^{Low} and γ_{kj}^{High} in the first, second and third column correspond to the latent utility for alcohol, employment and cigarettes from equation 1, respectively. Standard errors were computed by taking the inverse of the numerical Hessian at the estimated parameter values. For each of the outcomes, there are three dosage levels as described in the paper: None, Low and High. For employment, these dosage levels are no employment, full-time employment and part-time employment. For alcohol and cigarettes, these dosage levels are abstention, moderate and heavy.

Online Appendix Table 3: Full set of Coefficients,Trivariate Ordered Logit Model (First-Order State Dependence)

	Alcohol	Employment	Cigarettes	Initial Conditions		
				Alcohol	Employment	Cigarettes
Lower Threshold c1	0.52	-0.27	3.01			
	(0.12)	(0.10)	(0.17)			
Upper Threshold c2	6.49	0.71	5.55			
	(0.14)	(0.10)	(0.17)			
Trend	0.01	-0.01	-0.02			
	(0.01)	(0.01)	(0.02)			
Lag Moderate Alcohol ($\gamma_{a,j}^{Low}$)	1.58	0.30	-0.14			
	(0.04)	(0.04)	(0.05)			
Lag Part-time Employment ($\gamma_{e,j}^{Low}$)	0.24	1.00	-0.09			
	(0.05)	(0.04)	(0.06)			
Lag Moderate Cigarettes ($\gamma_{c,j}^{Low}$)	-0.07	-0.21	1.67			
	(0.06)	(0.05)	(0.06)			
Lag Heavy Alcohol ($\gamma_{a,j}^{High}$)	4.38	0.07	0.16			
	(0.17)	(0.14)	(0.17)			
Lag Full-Time Employment ($\gamma_{e,j}^{High}$)	0.30	2.38	-0.17			
	(0.04)	(0.03)	(0.05)			
Lag Heavy Cigarettes ($\gamma_{c,j}^{High}$)	-0.16	-0.25	4.24			
	(0.06)	(0.06)	(0.07)			
Male	0.42	0.47	0.17	0.39	0.36	-0.02
	(0.04)	(0.03)	(0.05)	(0.09)	(0.07)	(0.10)
Resident father	0.16	0.14	-0.01	0.28	0.29	0.11
	(0.04)	(0.03)	(0.05)	(0.10)	(0.08)	(0.11)

(Continued) Online Appendix Table 3: Full set of Coefficients, Trivariate Ordered Logit Model (First-Order State Dependence)

	Alcohol	Employment	Cigarettes	Initial Conditions		
				Alcohol	Employment	Cigarettes
Lower Threshold c1 Initial Conditions				-0.64	-1.75	0.46
				(0.16)	(0.14)	(0.38)
Upper Threshold c2 Initial Conditions				4.73	-0.71	2.25
				(0.25)	(0.14)	(0.38)
$\alpha^{j}_{\text{type 2}}$	0.09	-0.14	3.05	0.86	-0.19	3.63
	(0.07)	(0.06)	(0.09)	(0.10)	(0.09)	(0.16)
$\alpha^{j}_{\text{type 3}}$	-2.39	-0.27	-0.39	-2.32	-0.55	-0.15
	(0.07)	(0.06)	(0.18)	(0.18)	(0.11)	(0.26)
ϕ_2	0.24					
	(0.05)					
ϕ_3	-0.56					
	(0.07)					
Age 18-20	-0.27	-0.53	0.04			
	(0.11)	(0.08)	(0.13)			
Age 21-23	0.19	-0.27	0.05			
	(0.08)	(0.06)	(0.09)			
Age 24-26	0.11	-0.14	0.00			
	(0.05)	(0.04)	(0.06)			
Age 18-19 Initial Conditions				-0.87	-1.06	-0.36
				(0.13)	(0.11)	(0.14)
Age 20-21 Initial Conditions				-0.27	-0.46	-0.01
				(0.13)	(0.11)	(0.14)

(Continued) Online Appendix Table 3: Full set of Coefficients, Trivariate Ordered Logit Model (First-Order State Dependence)

	Alcohol	Employment	Cigarettes	Initial Conditions		
				Alcohol	Employment	Cigarettes
Beer Tax	-0.36			-1.32		
	(0.09)			(0.29)		
Unemp Rate		-0.06			-0.10	
		(0.01)			(0.01)	
Cig Tax			-0.03			-0.33
			(0.01)			(0.06)
Observations	2781					

Note: The parameters in the first column correspond to the latent utility for j=alcohol, the second column correspond to the latent utility for j=employment, and the third column correspond to the latent utility for j=cigarettes from equation 1, which are estimated by the trivariate ordered logit model. The parameters in the fourth, fifth and sixth column correspond to the latent utility for the initial conditions for alcohol, employment, and cigarettes respectively. Standard errors were computed by taking the inverse of the numerical Hessian at the estimated parameter values. For each of the outcomes, there are three dosage levels as described in the paper: None, Low and High. For employment, these dosage levels are no employment, full-time employment and part-time employment. For alcohol and cigarettes, these dosage levels are abstention, moderate and heavy.

Online Appendix Table 4: Average Partial Effects for Trivariate Logit Model for Alcohol, Cigarettes and Employment

Panel A: Persistence of Full-Time Employment	**Actual**	**Simulated**	**APE**
P(Full-time Employment | Lag Full-time Employment)-P(Full-time Employment | Lag No Employment)			0.516
P(Full-time Employment | Lag Full-time Employment)-P(Full-time Employment | Lag Part-time Employment)			0.300
P(Full-time Employment | Lag Part-time Employment)-P(Full-time Employment | Lag No Employment)			0.216
P(Full-time Employment |Lag Full-time Employment)	0.791	0.789	0.780
P(Full-time Employment |Lag Part-time Employment)	0.379	0.469	0.481
P(Full-time Employment | Lag No Employment)	0.265	0.239	0.264
Panel B: Persistence of Heavy Alcohol			
P(Heavy Alcohol | Lag Heavy Alcohol)-P(Heavy Alcohol | Lag Abstain Alcohol)			0.144
P(Heavy Alcohol | Lag Heavy Alcohol)-P(Heavy Alcohol |Lag Moderate Alcohol)			0.135
P(Heavy Alcohol | Lag Moderate Alcohol)-P(Heavy Alcohol | Lag Abstain Alcohol)			0.009
P(Heavy Alcohol | Lag Heavy Alcohol)	0.256	0.194	0.146
P(Heavy Alcohol | Lag Moderate Alcohol)	0.012	0.013	0.011
P(Heavy Alcohol | Lag Abstain Alcohol)	0.001	0.001	0.002
Panel C: Persistence of Heavy Cigarettes			
P(Heavy Cigarettes |Lag Heavy Cigarettes)-P(Heavy Cigarettes | Lag Abstain Cigarettes)			0.401
P(Heavy Cigarettes |Lag Heavy Cigarettes)-P(Heavy Cigarettes | Lag Moderate Cigarettes)			0.316
P(Heavy Cigarettes |Lag Moderate Cigarettes)-P(Heavy Cigarettes | Lag Abstain Cigarettes)			0.085
P(Heavy Cigarettes |Lag Heavy Cigarettes)	0.790	0.780	0.425
P(Heavy Cigarettes |Lag Moderate Cigarettes)	0.153	0.201	0.109
P(Heavy Cigarettes |Lag Abstain Cigarettes	0.016	0.010	0.024

(Continued) Online Appendix Table 4: Average Partial Effects for Trivariate Logit Model for Alcohol, Cigarettes and Employment

Panel D: Transition to FT Employment from Alcohol	**Actual**	**Sim**	**APE**
P(Full-time Employment |Lag Heavy Alcohol)-P(Full-time Employment |Lag Abstain Alcohol)			0.016
P(Full-time Employment |Lag High Alcohol)-P(Full-time Employment |Lag Moderate Alcohol)			-0.039
P(Full-time Employment |Lag Moderate Alcohol)-P(Full-time Employment |Lag Abstain Alcohol)			0.055
P(Full-time Employment |Lag Heavy Alcohol)	0.619	0.617	0.571
P(Full-time Employment |Lag Moderate Alcohol)	0.636	0.641	0.610
P(Full-time Employment |Lag Abstain Alcohol)	0.501	0.520	0.555
Panel E: Transition to Full-time Employment from Cigarettes			
P(Full-time Employment |Lag Heavy Cigarettes)-P(Full-time Employment |Lag Abstain smoke)			-0.042
P(Full-time Employment | Lag Heavy Cigarettes)-P(Full-time Employment |Lag Moderate Cigarettes)			-0.005
P(Full-time Employment | Lag Moderate Cigarettes)-P(Full-time Employment |Lag Abstain Cigarettes)			-0.036
P(Full-time Employment | Lag Heavy Cigarettes)	0.569	0.557	0.565
P(Full-time Employment | Lag Moderate Cigarettes)	0.572	0.568	0.570
P(Full-time Employment | Lag Abstain Cigarettes)	0.591	0.613	0.606

Note: The first, second, and third column show the observed probability, simulated probability and the average partial effects respectively. For P(Full-time Employment | Lag No Employment), the first (second) column is the observed (simulated) probability of full-time employment among those whose observed (simulated) lagged outcome was no employment in the previous period; the third column presents the average partial effect where I use the parameters estimated by the trivariate ordered logit model for all individuals, where I artificially change the lagged employment outcome to no employment for everyone while leaving all other parameters constant. Since individuals are observed under "no employment," or "part-time employment," or "full-time employment" as mutually exclusive lagged outcomes, the probability gaps (first three rows of each panel) cannot be computed from observed data.

Online Appendix Table 5: Policy Counterfactuals with Trivariate Logit, Simulated Full-Time Employment

	Actual	Simulated	Simulated Policy 1	Simulated Policy 2	Simulated Policy 3	Simulated Policy 4	Simulated Policy 5	Simulated Policy 6
			No Alcohol	Moderate Alcohol	Heavy Alcohol	No Cigarette	Moderate Cigarette	Heavy Cigarette
2002	0.422	0.424	0.424	0.424	0.424	0.424	0.424	0.424
2003	0.474	0.505	0.474	0.531	0.487	0.521	0.483	0.476
2004	0.534	0.552	0.505	0.589	0.524	0.576	0.519	0.508
2005	0.593	0.592	0.537	0.634	0.558	0.620	0.555	0.541
2006	0.647	0.622	0.562	0.663	0.584	0.650	0.582	0.567
2007	0.641	0.641	0.579	0.682	0.601	0.670	0.602	0.586
2008	0.611	0.643	0.581	0.683	0.603	0.672	0.604	0.589
2009	0.580	0.608	0.545	0.649	0.567	0.637	0.567	0.551
2010	0.574	0.593	0.528	0.635	0.551	0.623	0.552	0.535
2011	0.602	0.596	0.531	0.638	0.553	0.626	0.553	0.537

Note: The first column presents the observed probability of full-time employment averaged over respondents by year. The second column shows the simulated probability of full-time employment using parameter estimates from the trivariate ordered logit model averaged over respondents by year. Columns 3, 4 and 5 show the simulated probability of full-time employment under three counterfactual scenarios for alcohol-related simulated policies, where I hold all estimated parameters constant and artificially change the alcohol consumption dosage level for all respondents before simulating full-time employment in the next period: (i)A scenario where alcohol abstention is assigned to every respondent at every period, (ii) a scenario where moderate alcohol consumption is assigned to every respondent at every period, and (iii) a scenario where heavy alcohol consumption is assigned to every respondent at every period. Columns 6, 7 and 8 show the simulated probability of full-time employment under three counterfactual scenarios for cigarette-related simulated policies, where I hold all estimated parameters constant and artificially change the cigarette consumption dosage level for all respondents before simulating full-time employment in the next period: (i)A scenario where cigarette abstention is assigned to every respondent at every period, (ii) a scenario where moderate cigarette consumption is assigned to every respondent at every period, and (iii) a scenario where heavy cigarette consumption is assigned to every respondent at every period.