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Addiction, Debt and Moral Hazard:
Evidence from Alcohol Prohibition Policies in India

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Addiction, Debt and Moral Hazard: Evidence from Alcohol Prohibition Policies in India ^{*}

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Abstract

Two distinct trends in the recent decade have been widely documented in India - (a) one of the highest increases in per-capita alcohol consumption worldwide and (b) a substantial jump in household debt and default rates. In this paper, we examine whether, and the extent to which, the former explains the latter. The panel structure of the India Human Development Survey allows us to address unobserved heterogeneity at the household level. In addition, we exploit the variation in alcohol sale and consumption policies across the states of India to address the remaining concerns of simultaneity and measurement error. Our estimates imply that an additional expenditure of 1 INR on alcohol, increases a household's outstanding debt by roughly 100 INR. We find further evidence that the ease of borrowing and costs of defaulting determine the extent to which households are willing to spend more on alcohol even at the cost of over-borrowing and defaulting, suggesting the presence of moral hazard.

Keywords: Alcohol; Household Finance; Debt; Instrumental Variable

JEL codes: K12, L26, O17

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1 Introduction

Two distinct trends have been widely documented across policy writings, media and academia, in India. First, there has been a secular increase in household debt and default. For instance, Figure 1 shows that household debt as a fraction of GDP grew by close to 4 percentage points between 2010 and 2020. Between 2013 and 2017, personal loans, only from formal sources, went up by 89% (RBI, 2018). Of these, the most significant growth was seen in an undefined category termed other personal loans, which could not be categorized as consumption, vehicles, durables, housing or education (Ninan, 2019). In addition, defaults on agricultural loans and subsequent debt waiver policies have received massive coverage in media and in academic studies (Chakraborty and Gupta, 2017a; Mukherjee et al., 2018).

Second, and distinct from the first, is the concern that alcohol consumption is on a steady rise in India despite the wide-ranging regulations, from higher minimum legal age of drinking [MLDA] to a complete ban on alcohol sales and consumption, imposed across India. A Lancet report, by Manthey et al. (2019), notes that India has experienced one of the highest increases in per-capita alcohol consumption worldwide between 2010-2017, recording a 38% jump. Their study goes on to predict that, at current rates, half of all adults will consume alcohol in India by 2030. Even in our data, we observe a significant increase in average expenditure on intoxicants between 2005-2012 across most states (see Figure 4).

Policymakers often face a dilemma when deciding on policies aimed at alcohol sales and consumption. On the one hand, alcohol taxes constitute a large share of a state's tax revenue. For instance, for the states of India without an alcohol ban, excise duty on alcohol contributes around 10-15% of a state's own tax revenue on average. For some states this number goes up to 20% as of 2018-2019 financial year (RBI, 2019). However, there is extant evidence regarding the health cost of excessive alcohol consumption. Alcohol is considered to be a leading cause of disease burden and mortality worldwide. (WHO, 2019; Rehm and Imtiaz, 2016; Rehm et al., 2017; Griswold et al., 2018). For instance, alcohol consumption has been causally linked to more than 200 distinct diseases, as per International Classification of Disease (Manthey et al., 2019), in addition to obesity (French et al., 2010). In the presence of publicly provided healthcare, increasing health costs raise the burden on a state's finances. In addition to the substantial health burden, recent research also points to the influence of alcohol consumption on the decision making capability of individuals. Alcohol, and intoxicants in general, can be categorised as a 'temptation good' i.e, goods which generate utility only at the point of consumption (Banerjee and Mullainathan, 2010). Excessive alcohol consumption has been shown to distort decisions by generating myopic behaviour (Steele and Josephs, 1990). This distortion has long run consequences for economic well-being through its impact on labour market outcomes (Berger and Leigh, 1988; Mullahy and Sindelar, 1996; Zarkin et al., 1998; Barrett, 2002; MacDonald and Shields, 2004), savings behavior in low income workers (Schilbach, 2019), investments on

human capital accumulation (Lye and Hirschberg, 2010), among others. Access to alcohol has also been shown to adversely affect human capital outcomes, like academic performance, in college students (Lindo et al., 2013; Williams et al., 2003). Hence, policy interventions, in the market for alcohol, need to weigh the revenue benefits against all the potential socio-economic costs.

However, in the Indian context, the literature on alcohol consumption is devoted to the estimation of its health impact. Much less is known about the socio-economic impact of alcohol addiction in India. Luca et al. (2015) is one study that estimates the effect of alcohol access on the prevalence of sexual violence. While their study improves the understanding of the policy interventions that might be effective in reducing sexual violence, it also adds value to the analysis of costs and benefits of policies that discourage alcohol consumption. We add to this literature by studying the effect of alcohol consumption on a household's financial situation the financial well-being of a household in India. To our knowledge, the only other study which estimates the impact of increased availability of alcohol on the financial well-being of individuals is by Ben-David and Bos (2021). They analyse the effect of alcohol consumption on indebtedness and default risk of individuals using an alcohol sales policy in Sweden. We also study the effect of alcohol consumption on indebtedness and default risk but in the context of India. An important difference between developed and developing countries is in the nature of financial markets. Informal finance is an integral part of financial markets in developing countries and it is possible that people differentiate between informal and formal markets depending on the purpose of their debt. For instance, if monitoring is higher in informal networks, people might use the formal loans for unproductive consumption and the informal loans for productive activities. This could have different implications for moral hazard in the formal financial markets - formal credit is likely to have a higher default risk in developing than in developed markets. We study these possibilities in Section 4.3.

We investigate whether two apparently distinct trends, viz. rising debts and increasing alcohol consumption of Indian households, are causally linked. We estimate whether increasing alcohol addiction of Indian households cause them to accumulate high debts and subsequently default on them. There is a widespread belief in India that poor households overspend due to alcohol addiction. There is some correlational evidence to support this hypothesis (Prabhu et al., 2010). A widely cited study by Saxena et al. (2003), based on roughly 200 poor households in Delhi, shows that households that have a drinking member were more likely to be in debt and had a lower expenditure on food and education compared to households that do not have a drinking member. In another work, Benegal et al. (2000), studied a sample of 113 patients enrolled in a de-addiction program and found that on average they spent roughly 16% more on alcohol than their earnings.

Increasing alcohol consumption could lead to increasing household debt for multiple reasons. First, risk preferences could explain both higher levels of borrowing and higher level of drinking. External conditions, like adverse macroeconomic

shocks can also lead to excessive alcohol consumption (Ruhm, 1995; Freeman, 1999; Davalos et al., 2012) and high household debt. Second, there could also be a reverse causality. It is well established that stress is a risk factor that increases vulnerability to addiction and more frequent and higher alcohol consumption may be a response to the anxiety of accumulating debt (Sinha, 2008). Third, households with higher alcohol consumption could end up spending more on health costs resulting in higher debts. Finally, alcoholism could directly affect the employment and earnings potential by constraining labour market participation of an individual in turn affecting household debt (Mullahy and Sindelar, 1993). The presence of multiple channels through which alcoholism may affect debt burden of households implies that the causal direction is not clear. An observed positive relationship could either mean reverse causality - individuals take up drinking in response to accumulating debts - or omitted variables like risk attitudes.

We use a panel data on more than 41000 households from across India to estimate whether, and the extent to which, household debt is determined by alcohol consumption. In addition, we exploit quasi-random variations in alcohol prohibition policies across Indian states to identify the extent to which increasing alcohol expenditure contributes to increasing debt burden in India. We find a substantial impact of alcohol use on indebtedness of Indian households. Our instrumental variable estimates imply that an increase in a household's alcohol expenditure by 1 INR increases a household's debt by roughly 100 INR. However, we find significant heterogeneity too in the distribution of this effect. It is a predominantly a rural phenomenon. While increasing debt is likely to translate

2 Data

We use the India Human Development Survey (IHDS) for our analysis and supplement it with administrative records on alcohol prohibition laws across the states of India. The India Human Development Survey (IHDS) is a nationally representative, multi-topic survey that covered 42152 households in 1420 villages and 1042 urban neighborhoods across 384 districts of India in its second round in 2011-12. The IHDS data follows individuals in two rounds over a period of roughly 8 years. The first survey round was conducted in 2004-05 with a follow up round in 2011-12. With some attrition, some intra-household separations and some new households, the second round of the survey had 42152 households. Overall, around 85% of the households covered in 2005 were re-interviewed in 2012. Our study sample includes all the major states in India. We exclude the North Eastern states of Nagaland, Manipur, Tripura, Meghalaya, Mizoram, Sikkim and Arunachal Pradesh. In addition, we exclude the union territory (UT) of Daman and Diu because most households from this state appear in only one round and the effective sample in the balanced panel is small and selected.

IHDS has an extensive section on expenditure of households across various categories of consumption. One of these elicits a household's expenditure on intoxicants which includes Alcohol, Tobacco, Cigarette, Bidi (traditional Indian tobacco), Paan and other similar substances. Our main variable of interest is a household's total expenditure on intoxicants in the preceding month. The aim of this study is to estimate the effect of alcohol expenditure on the indebtedness of a household. However, we are unable to separately calculate the expenditure on alcohol as it is grouped with other intoxicants. Hence, in the baseline, we estimate the impact of a household's intoxicant expenditure on the indebtedness of households. However, in Section 5 we provide instrumental variable estimates which specifically identifies the effect of alcohol expenditure on household debt.

Our outcome variable is total outstanding household debt which is the sum total of debt outstanding from all borrowings of the household. Finally, the rich household data enables us to control for a range of economic and demographic characteristics of the household viz. land possession, asset ownership, household size, age, education and income of the household head and gender composition of the household. Panel-A of Table 1 summarizes these variables in our data.

¹We use 2005 and 2012 to refer to the time period of the first (2004-05) and second (2011-12) survey round respectively

²Every household in the IHDS sample is uniquely identified using a household ID. To trace a household over two time periods we used the linking file provided in IHDS. For all households from 2005, the linking file contains the details from 2012 of all variables used to create the household ID. Using these details and following IHDS documentation, we create a corresponding 2012 household ID for all households. For some households there was a mismatch in the household ID created in the linking file and the household ID present in the 2012 dataset. These households for whom we could not create a balanced panel came primarily from the states of Nagaland, Manipur, Tripura, Meghalaya, and Daman and Diu.

The average household has a debt of approximately 22900 INR in 2005 and 49600 INR in 2012

Figure 2 shows the percentage change in a household's monthly intoxicant expenditure, between 2005 and 2012. We see a substantial increase in intoxicant expenditure across the country. With the exception of a few, nearly all states have witnessed a rise in per month household intoxicant expenditure over time, albeit to different levels. Figure 4 shows the distribution of increase in mean household intoxicant expenditure across the different Indian states, during the time period of our study.

Figure 3 plots the state level averages of household debt against household intoxicant expenditure over 2005 and 2012. While our primary interest is how alcohol expenditure affects household debt, Figure 3 gives a rough idea about this correlation, assuming that intoxicant expenditure reflects, in part, expenditure on alcohol. It shows that there is an overall positive association between total household debt and intoxicant expenditure. Our analysis in rest of the paper investigates the extent to which this association is causal.

3 Empirical Framework

Comparison of households across the spectrum of intoxicant expenditure to estimate the effect of intoxicant expenditure on borrowing behavior, as in Figure 3, is unable to account for household level unobserved heterogeneity. For instance, households that are more risk taking might drink more frequently and at the same time tend to borrow more. The panel structure of the IHDS data helps us to account for time-invariant household characteristics that might confound the linear effect of intoxicant expenditure on household debt. The richness of the IHDS data allows us to further control for a range of time varying household characteristics that are potentially correlated with household borrowing behavior as well as their drinking habits.

We start by estimating the following model with household fixed effects.

$$Debt_{hst} = \alpha_0 + \alpha_1 Intoxicant-Expenditure_{hst-1} + \alpha_2 X_{hst}^H + \eta_h + \tau_t + \mu_{hst} \quad (1)$$

Where $Debt_{hst}$ is the total debt of household h in states and survey year t . $Intoxicant-Expenditure_{hst-1}$ is the total expenditure incurred by the same household on all intoxicants in the preceding month. $Debt$ and $Intoxicant-Expenditure$ are measured in 1000 INR, capture household specific fixed effects, capture survey-year fixed effects that are same across all households. Thus, any change in expenditure that is due to inflation, across India, over the 8-year period is accounted for by these time specific fixed effects. X_{hst}^H are time varying household characteristics that include assets, household head's income, landholding and gender composition of household and time t .

Equation 1 compares the same household over the 8-year period of the two rounds of the IHDS to estimate whether higher intoxicant expenditure leads to greater indebtedness of the household, after accounting for India-wide price inflation. What still could confound the estimate is the simultaneous determi-

4 Results

4.1 Baseline

The baseline results from the estimation of Equation 1 are reported in Table 2. Column 1 reports the estimates of the effect of intoxicant expenditure on household debt from a bivariate model that only eliminates year fixed effects. In general, intoxication would raise both debt and intoxicant expenditure, making it necessary to control for intoxication. The year fixed effects account for intoxication over the two rounds of the IHDS between 2005-2012. The estimate in column 1 implies that households which spend more on intoxicants also have higher levels of debt. An increase in intoxicant expenditure by a rupee increases a household's debt by 18 INR. These estimates are likely to be upwardly biased if, for instance, households that are more risk taking spend more on intoxicants as well as borrow more. Column 2 eliminates these time invariant household specific effects. As expected this reduces the size of the effect from column 1. Column 3-6 further includes time varying household characteristics sequentially. Asset and land ownership show a positive association with debt, possibly indicating their value as collateral. A higher fraction of adults in the household lead to a larger outstanding debt. Older heads of the household have lower levels of debt. The positive relation with income of the household head once again indicates that higher household income possibly makes it easier for the household to get a loan. Education of the household head does not seem to affect household debt significantly. Most importantly for us, the size of the effect of intoxicant expenditure on household debt remains the same once household fixed effects have been accounted for. The estimates in the full specification in column 6 indicates that a one INR increase in a household's intoxicant expenditure increases household debt by 8 INR on average.

4.2 Number of Loans

Table 2 indicates that higher intoxicant expenditure leads to higher debt of households. However, a higher average debt could indicate a higher number loans taken by a household or a higher size of loan or both. If a household uses borrowed money to sustain higher expenditure on intoxicants, then it is likely to take loans citing various purposes and from multiple sources since taking a larger loan for a single purpose might be more difficult to justify. Table 3 explores whether households that spend more on intoxicants take a higher number of loans. The dependent variable used in Table 3 is the total number of loans taken by the household in the last five years. The results indicate that households which spend more on intoxicants indeed take a higher number of loans. Further, the coefficient size remains unchanged across all columns.

4.3 Heterogeneity

Table 2 estimates the size of the effect of intoxicant expenditure on household debt for all households on average. However, the extent to which higher intoxicant expenditure increases default rates would depend on the cost associated with defaulting. For instance, banks or money lenders might be less likely to provide loans in the future to individuals with a history of default. We explore this mechanism in this section. While the individual cost of defaulting is difficult to observe and measure, it is likely that in general the cost of defaulting would vary depending on the underlying characteristics of households and underlying terms of borrowing. We test this possibility in Table 4 and discuss potential mechanisms implied by our findings. For ease of reading, Figure 6 depicts the coefficients from Table 4.

Columns 1 and 2 of Table 4 suggest that the average effect is entirely driven by the rural population. One reason for this could be that, with the expansion of rural credit and repeated agricultural loan waiver programs, the cost of defaulting is likely to be lower in rural areas compared to urban areas (Chakraborty and Gupta, 2017a).

The cost of defaulting also depends on the source of borrowing. Indian households can take loans from broadly two sources - formal and informal. Formal sources comprises of institutional lending channels like government and private banks, cooperatives, Regional Rural Banks etc. Informal sources comprise of non institutional channels like borrowing money from friends, relatives, money lenders etc. Column 3 and 4 explore variation in the average effect depending on the source of the loan taken by the household. We see that the effect is driven entirely by borrowing from formal lending sources. One possible explanation for this could be that defaulting on formal loans is likely to involve less stringent penalty compared to defaulting on a loan taken from say a moneylender where the stakes are usually higher. This makes cost of default on formal loans much lower compared to those from informal sources. Studies show that households that borrow from formal sources are less likely to repay the loan as it is mostly spent for unproductive expenditure (Chakraborty and Gupta, 2017b). This, points to the existence of moral hazard in the credit market as loans taken from formal sources are more likely to be misused for purchasing intoxicants.

We further explore whether there is heterogeneity in the size of the effect by caste of a household, in columns 5, 6 and 7. We find that while higher intoxicant

the minimum legal drinking age (MLDA) varies widely across others. The map in Panel-I of Figure 5 shows the distribution of minimum legal drinking age across the states of India during the period of our study 2005-2012.

For instance during our sample period, Gujarat experienced blanket prohibition on sale and consumption of alcohol. On the other hand, the minimum legal drinking age has varied from 18 to 25 in other states. Extant literature reveals

alcohol expenditure comes both from a household's state of residence, as well as whether the household has a man above the legal drinking age. Hence, we define an indicator for whether a household has at least one male member above the minimum legal drinking age [MLDA] and use it to instrument for the expenditure on intoxicants.

Since the minimum legal drinking age varies by state, our instrumental variable in effect varies along two dimensions. First, it varies across two households with otherwise similar demographic composition, but happen to reside in two different states with different minimum legal drinking age. Second, it varies across two households within the same state which happen to have different demographic composition. The map in Panel-II of Figure 5 shows the distribution of our instrumental variable across the states of India. As expected, the distribution of effective alcohol policy exposure at the state level varies from the MLDA policy shown in in Panel-I of Figure 5.

has a much stronger effect on household debt compared to other intoxicants. The instrumental variable estimates imply that an increase in a household's alcohol

6 Conclusion

In this paper we examine the trend of increasing indebtedness of Indian households and study the extent to which this is connected to the secular increase in a household's alcohol expenditure that has been widely reported in the media.

making defaults less costly for them. Default on formal loans are less likely to face severe contractual punishments and are more likely to be covered by loan waiver programs. Households from SC-ST categories are more likely to face widespread discrimination in access to credit compared to households from General and OBC categories. In summary, the underlying incentives determine the extent to which households are willing to spend more on alcohol even at the cost of over-borrowing and defaulting. In other words, our findings point to the existence of moral hazard in the credit market.

A commonly practiced policy to discourage alcohol consumption is taxation. However, given the findings of this paper, households tend to consume more alcohol even at the cost of higher indebtedness.

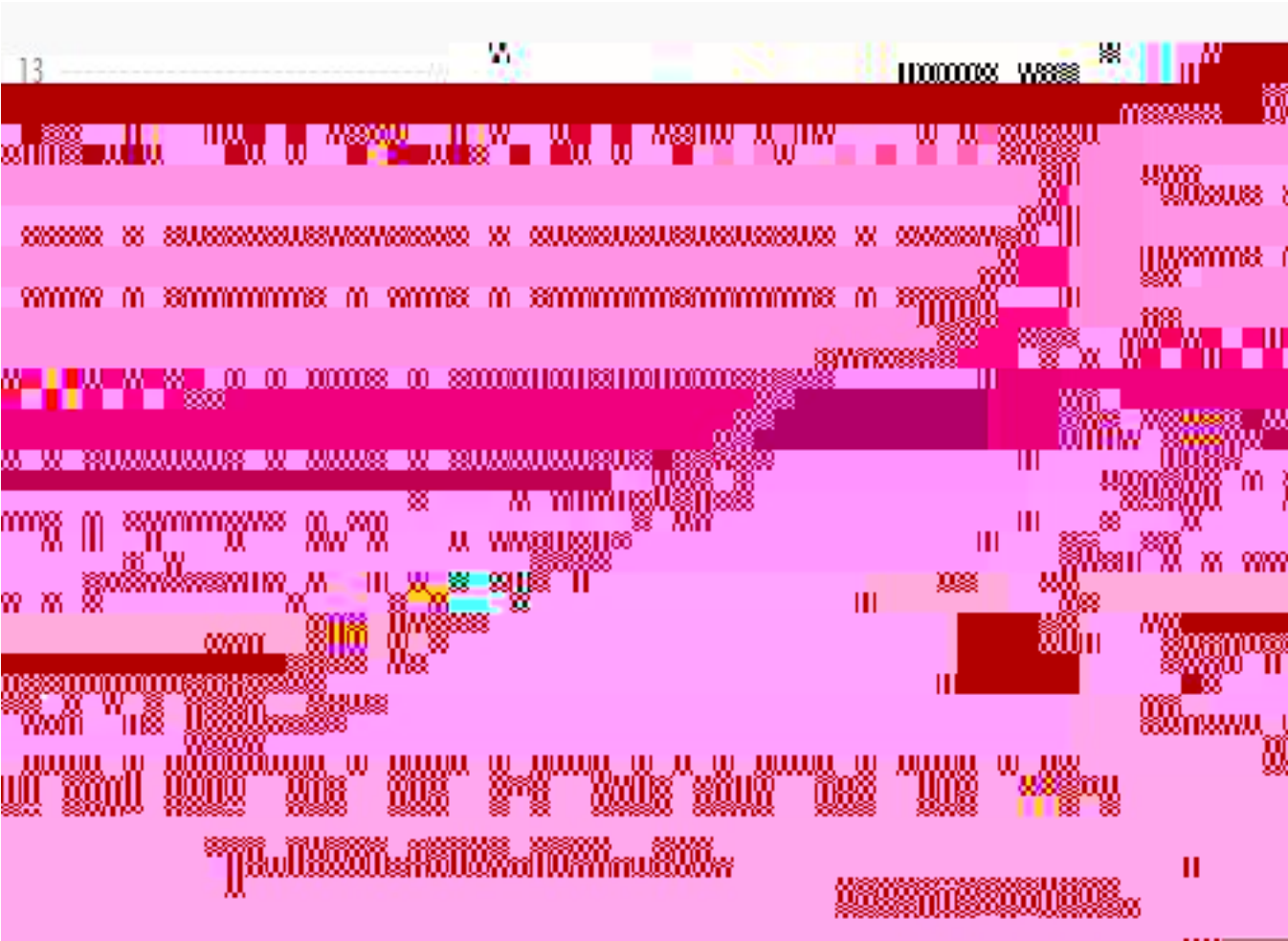
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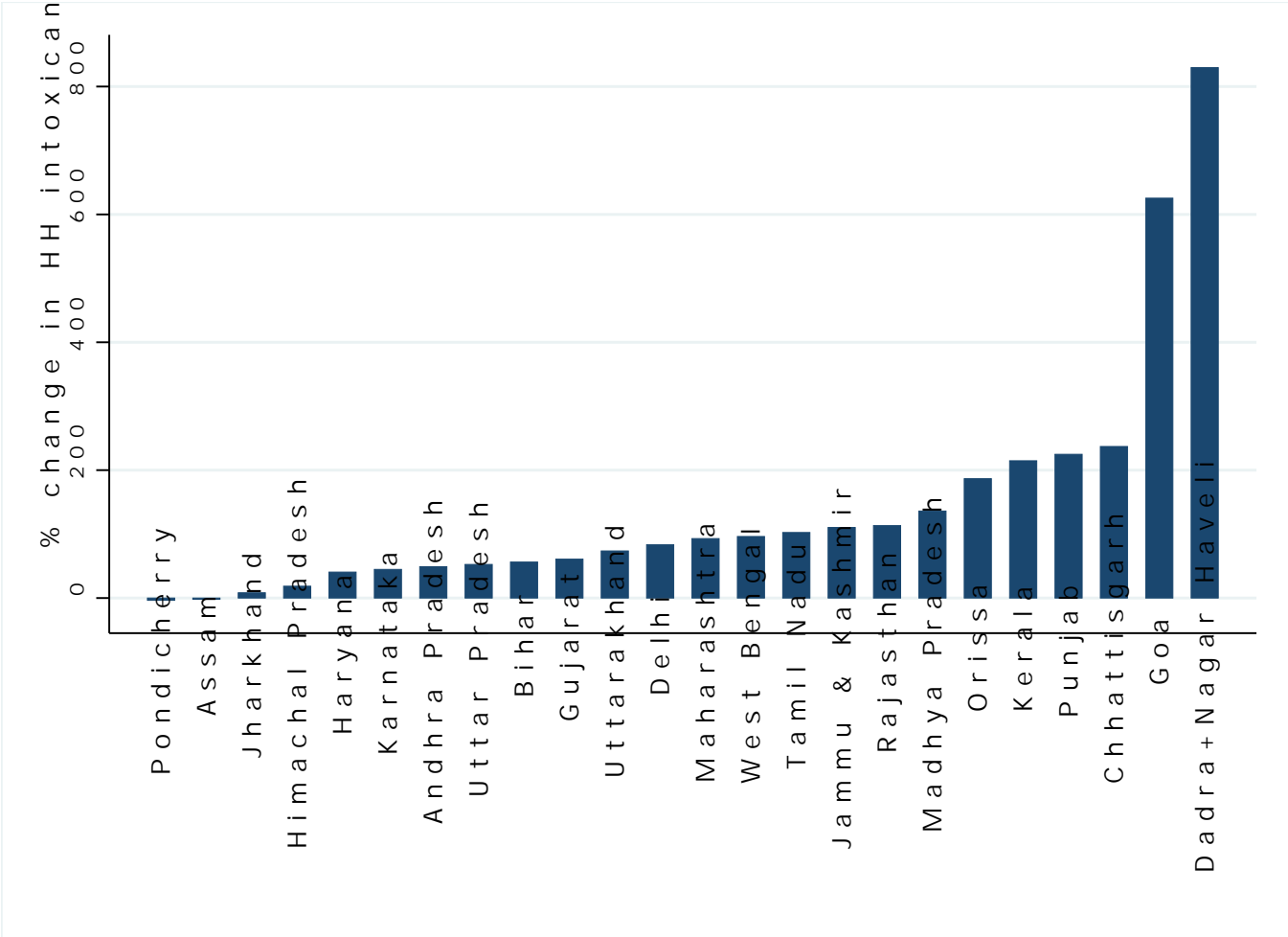
Figure 1: Household Debt as a fraction of Nominal GDP



Source: ceic.com

Notes: This figure shows the rising trend in household debt as a percentage of nominal GDP in India

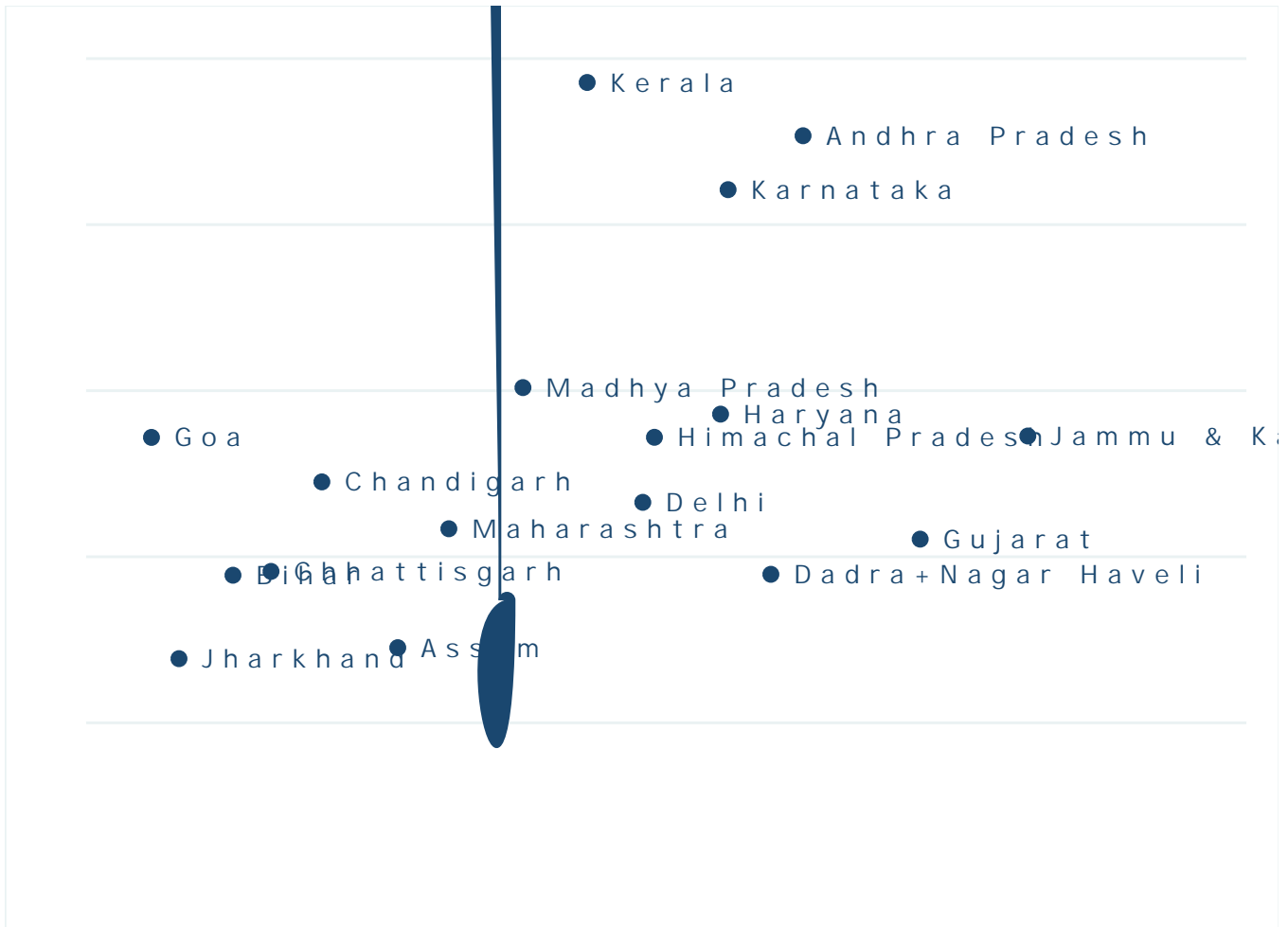
Figure 2: Percentage change in mean intoxicant expenditure across India between 2005 and 2012



Source: IHDS, own calculations.

Notes: This figure depicts percentage change in intoxicant expenditure in a household per month across states of India, between 2005 and 2012. Higher bar

Figure 3: Household Debt and Intoxicant Expenditure



Source: IHDS, own calculations.

Notes: This figure depicts the relationship between household debt and intoxicant expenditure in a household per month across the states of India, using both 2005 and 2012 rounds of the IHDS. Household debt and intoxicant expenditure measured in INR.

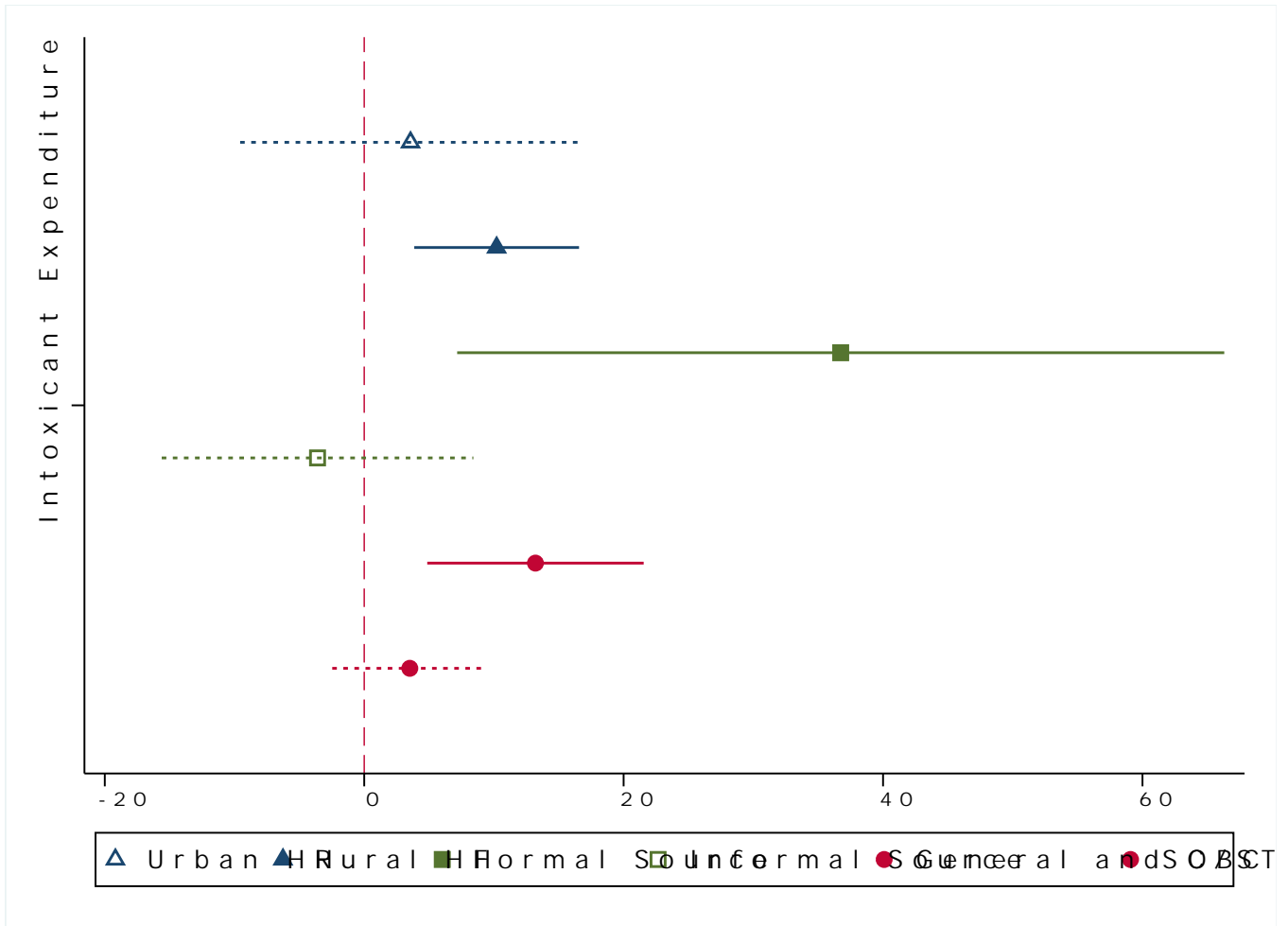
Figure 4: Household level expenditure on intoxicants across India: 2005 and 2012



Source: IHDS, own calculations.

Notes: This figure depicts average intoxicant expenditure in a household per month, across the states of India. 2005 values are shown in Panel-I; 2012 values are shown in Panel-II. Lighter shades imply lower expenditure. The study excludes the following states and Union territories (UT) : Nagaland, Manipur, Tripura, Meghalaya, Mizoram, Arunachal Pradesh, Sikkim and Daman and Diu. These are indicated by the category 'no data'

Figure 6: Intoxicant expenditure estimates for different groups



Source: Estimates from Table 4

Notes: This figure depicts estimates from Equation 1, along with their respective 95% confidence intervals, for different groups. They correspond to estimates reported in row-1 of Table 4. For easy comparison, caste categories are grouped as General-OBC and SC-ST in this figure.

Table 1: Summary

	(1)	(2)	(3)	(4)
	2004-05		2011-12	
	mean	(sd)	mean	(sd)
Panel A				
Total HH debt	22.9	(72.6)	49.6	(139.6)
Number of Loans	1.6	(2.8)	1.8	(2.9)
Intoxicant expenditure	78.7	(158.4)	145.8	(291.9)
Asset	0.4	(0.2)	0.5	(0.2)
Land	0.5	(0.5)	0.5	(0.5)
Adults /HH size	0.6	(0.2)	0.7	(0.2)
Adult Males/ HH size	0.3	(0.2)	0.3	(0.2)
Males above MLDA	1.4	(0.9)	1.4	(0.9)
HH Income	51	(78.9)	130	(205.9)
Household Head Characteristics:				
Age	47.3	(13.3)	51.8	(12.6)
Years of education	5.1	(4.7)	5.3	(4.9)
Income	16	(30.8)	33	(72.1)
No of observations	27,166		31,355	
Panel B				
HH Caste (Percentage):				
General	27.1		28.4	
OBC	41.5		40.8	
SC/ST	29.3		29.1	
HH Religion (Percentage):				
Hindu	82.7		82.8	
Muslim	10.8		11.4	
Others	6.5		5.8	
Loan Source (Percentage):				
Formal	36.4		44.7	
Informal	63.6		55.3	
Residence Area (Percentage):				
Rural	71.2		67.2	
Urban	28.8		32.8	

Table 2: Intoxicant Expenditure and Household Debt

Dependent Variable: Total Household Debt						
(1)	(2)	(3)	(4)	(5)	(6)	
No Controls	+HH FE	+HH Asset	+HH Land	+HH	+HH Head	

Table 3: Intoxicant Expenditure and Number of Loans

Dependent Variable: Number of Loans						
	(1)	(2)	(3)	(4)	(5)	(6)
	No Controls	+HH FE	+HH Asset	+HH Land	+HH Composition	+HH Head Characteristics
Intoxicant expenditure	0.680*** (0.049)	0.663*** (0.079)	0.636*** (0.079)	0.627*** (0.079)	0.628*** (0.079)	0.634*** (0.080)
Asset			1.174*** (0.203)	1.112*** (0.203)	1.109*** (0.203)	1.150*** (0.204)
Land				0.396*** (0.065)	0.396*** (0.065)	0.401*** (0.065)
Adults/HH size					-0.139 (0.110)	-0.058 (0.112)
Household Head Characteristics:						
Age						-0.011*** (0.003)
Education						-0.005 (0.009)
Income						-0.000** (0.000)
Constant	1.581*** (0.018)	1.541*** (0.019)	1.086*** (0.081)	0.930*** (0.085)	1.011*** (0.106)	1.502*** (0.166)
HH FE	NO	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
Observations	58,610	58,610	58,610	58,610	58,610	58,521
R-squared	0.004	0.006	0.008	0.009	0.009	0.010
Number of HH		33,263	33,263	33,263	33,263	33,260

Notes: Estimates using total number of loans taken by the household as the dependent variable in Equation 1. Expenditure on intoxicants is expressed in 000 INR. Household head's income is expressed in INR. Asset is measured as fraction of assets owned by a household out of 30 assets defined in IHDS. Household head's education is measured as years of education completed. Standard errors are reported in parenthesis below the estimated coefficients. ***, **, * Significant at 0.01, 0.05, 0.10 level, respectively.

Table 4: Heterogeneity: Intoxicant Expenditure and Household Debt

Dependent Variable: Total Household Debt							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Urban	Rural	Formal Loan	Informal Loan	General	OBC	SC/ST
Intoxicant expenditure	3.572 (6.701)	10.209*** (3.241)	36.736** (15.078)	-3.595 (6.127)	13.814** (6.988)	12.630** (5.317)	3.518 (3.052)
Asset	46.694** (18.169)	58.936*** (8.159)	31.315 (44.403)	47.937*** (15.839)	74.703*** (18.386)	53.926*** (11.866)	33.009*** (8.935)
Land	26.224*** (7.313)	7.531*** (2.437)	30.040* (17.663)	3.459 (4.519)	14.044** (6.085)	9.196** (3.883)	11.312*** (2.666)
Adults/HH size	23.460** (9.467)	11.196** (4.540)	24.400 (24.186)	19.982** (8.526)	16.185 (10.075)	16.006** (6.614)	13.345*** (4.782)
HH Head Characteristics:							
Age	-0.287 (0.224)	-0.155 (0.103)	-1.283** (0.591)	0.024 (0.197)	-0.116 (0.225)	-0.410*** (0.150)	0.027 (0.111)
Education	-1.019 (0.687)	0.027 (0.370)	-2.128 (2.052)	0.914 (0.732)	-0.046 (0.751)	-0.588 (0.519)	-0.425 (0.390)
Income	0.000*** (0.000)	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)	0.000** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Constant	1.782 (15.0008051	-3.706 (6.6145051	71.179* (44.226Y2***-0.588	-8.829	-23.895 HH	9.900	-10.222 YES51Y

Table 5: Robustness

Dependent Variable: Total Household Debt			
	(1)	(2)	(3)
	+ Dist-Time FE	+ HH Income	- Dry state
Intoxicant expenditure	5.636* (3.037)	6.764** (3.095)	8.376*** (3.079)
Income*		0.000*** (0.000)	
Asset	53.315*** (7.984)		57.140*** (7.891)
Land	5.579** (2.479)	9.177*** (2.474)	10.878*** (2.526)
Adults/HH size	13.642*** (4.204)	15.231*** (4.254)	14.419*** (4.329)
Household Head Characteristics:			
Age	-0.140 (0.096)	-0.296*** (0.097)	-0.235** (0.099)
Education	-0.171 (0.330)	-0.354 (0.330)	-0.353 (0.339)
Income	0.000*** (0.000)		0.000*** (0.000)
Constant	-35.249** (17.504)	18.473*** (5.738)	-2.471 (6.420)
HH FE	YES	YES	YES
Time FE	YES	YES	YES
District - time FE	YES	NO	NO
Observations	58,550	57,620	55,899
Number of HH	33,267	33,122	31,711
R-squared	0.086	0.054	0.045

Notes: Estimates using total household debt as the dependent variable in Equation 117et0 g(7.on)]TJ 0 0 1 rg 0 0 1 RQ

Table 6: Instrumental Variable Estimates

	(1)	(2)	(3)	(4)
	OLS	OLS	IV	IV
Dependent Variable	Total Debt	No of loans	Total Debt	No of Loans
Intoxicant expenditure	8.395*** (3.004)	0.634*** (0.080)	113.491** (50.241)	3.743*** (1.336)
Asset	56.130*** (7.708)	1.150*** (0.204)	41.085*** (10.668)	0.705** (0.284)
Land	10.382*** (2.462)	0.401*** (0.065)	8.624*** (2.656)	0.349*** (0.071)
Adults/HH size	16.076*** (4.222)	-0.058 (0.112)	14.941*** (4.356)	-0.091 (0.116)
Household Head Characteristics:				
Age	-0.238** (0.096)	-0.011*** (0.003)	-0.290*** (0.101)	-0.012*** (0.003)
Education	-0.373 (0.330)	-0.005 (0.009)	-0.503 (0.344)	-0.009 (0.009)
Income	0.000*** (0.000)	-0.000** (0.000)	0.000*** (0.000)	-0.000*** (0.000)
Constant	-1.357 (6.247)	1.577*** (0.165)	0.849 (6.331)	1.642*** (0.168)
HH FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES
First Stage F stat			95.05	95.31
Observations	50,566	50,522	50,566	50,522
R-squared	0.043	0.010	-0.003	-0.050
Number of HH	25,283	25,261	25,283	25,261

Notes: Columns 1 and 2 are estimates from Tables 2 and 3, respectively. Columns 3 and 4 report estimates from Equation 5. Total household debt and expenditure on intoxicants is expressed in 000 INR. Household head's income is expressed in INR. Asset is measured as fraction of assets owned by a household out of 30 assets defined in IHDS. Household head's education is measured as years of education completed. Standard errors are reported in parenthesis below the estimated coefficients. ***, **, * Significant at 0.01, 0.05, 0.10 level, respectively.

Appendix

Table A1: First Stage for IV Estimates

	(1) Intoxicant Expenditure
IV	0.074*** (0.008)
Asset	0.133*** (0.016)
Land	0.015*** (0.005)
Adults/HH size	0.000 (0.009)
Household Head Characteristics:	
Age	0.000 (0.000)
Education	0.000 (0.001)
Income	0.000*** (0.000)
HH FE	YES
Time FE	YES
Observations	50,566
Number of HH	25,283

Table A2: IV: Number of Loans

Dependent Variable: Number of Loans												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All States		- Jammu & Kashmir (JK)		- Dadra Nagar Haveli (DH)		-Goa (GO)		- JK DH GO		Karnataka LDA=18	
	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS
Intoxicant expenditure	3.743*** (1.336)	0.634*** (0.080)	3.650*** (1.358)	0.638*** (0.080)	3.750*** (1.339)	0.637*** (0.080)	3.748*** (1.339)	0.635*** (0.080)	3.663*** (1.366)	0.643*** (0.081)	3.688*** (1.329)	0.634*** (0.080)
Asset	0.705** (0.284)	1.150*** (0.204)	0.755*** (0.285)	1.178*** (0.206)	0.705** (0.284)	1.150*** (0.204)	0.703** (0.285)	1.149*** (0.205)	0.753*** (0.286)	1.178*** (0.207)	0.713** (0.283)	1.150*** (0.204)
Land	0.349*** (0.071)	0.401*** (0.065)	0.350*** (0.071)	0.396*** (0.066)	0.351*** (0.071)	0.401*** (0.065)	0.345*** (0.071)	0.399*** (0.066)	0.348*** (0.071)	0.396*** (0.066)	0.350*** (0.071)	0.401*** (0.065)
Adults/HH size	-0.091 (0.116)	-0.058 (0.112)	-0.091 (0.117)	-0.060 (0.113)	-0.092 (0.116)	-0.058 (0.112)	-0.091 (0.116)	-0.058 (0.112)	-0.092 (0.117)	-0.060 (0.113)	-0.090 (0.116)	-0.058 (0.112)
Household Head Characteristics:												
Age	-0.012*** (0.003)	-0.011*** (0.003)	-0.012*** (0.003)	-0.010*** (0.003)	-0.012*** (0.003)	-0.011*** (0.003)	-0.012*** (0.003)	-0.011*** (0.003)	-0.012*** (0.003)	-0.010*** (0.003)	-0.012*** (0.003)	-0.011*** (0.003)
Education	-0.009 (0.009)	-0.005 (0.009)	-0.006 (0.009)	-0.002 (0.009)	-0.009 (0.009)	-0.005 (0.009)	-0.009 (0.009)	-0.005 (0.009)	-0.006 (0.009)	-0.002 (0.009)	-0.008 (0.009)	-0.005 (0.009)
Income	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)
Constant		1.577*** (0.165)		1.546*** (0.167)		1.577*** (0.166)		1.582*** (0.166)		1.552*** (0.167)		1.577*** (0.165)
HH FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
First Stage F stat	95.31		92.53		94.98		94.95		91.86		96.03	
Observations	50,522	50,522	49,890	49,890	50,458	50,458	50,340	50,340	49,644	49,644	50,522	50,522
R-squared	-0.050	0.010	-0.046	0.010	-0.050	0.010	-0.050	0.010	-0.046	0.010	-0.048	0.010
Number of HH	25,261	25,261	24,945	24,945	25,229	25,229	25,170	25,170	24,822	24,822	25,261	25,261

Notes: Column 1 and 2 are the same 2SLS and OLS estimates as in Column 2 and 4 of Table 6. MLDA for Jammu Kashmir (JK), Dadra Nagar Haveli (DH), Goa (GO) rely on online sources, therefore column 3 to 8 report the corresponding 2SLS and OLS estimates after excluding them one by one. Column 9 and 10 are estimates when all regions are excluded simultaneously. Column 11 and 12 are the 2SLS and

Table A3: IV: Total Household Debt

Table A4: Minimum legal drinking age across India

S No.	State	2004{05	2011{12	Source
1	Andhra Pradesh	21	21	CL
2	Assam	21	21	CL
3	Bihar	21	21	CL
4	Chandigarh	25	25	CL
5	Chhattisgarh	21	21	CL
6	Dadra+Nagar Haveli	25	25	https://www.hindustantimes.com/india-news/as-delhi-lowers-legal-drinking-age-to-21-here-is-a-look-at-the-rules-in-other-states-101616422982126.html https://en.wikipedia.org/wiki/Alcohol_laws_of_India
7	Delhi	25	25	CL
8	Goa	18	18	https://www.newslandry.com/2015/09/30/indias-prudish-alcohol-laws-that-preach-victorian-morality-and-insult-intelligence/ https://en.wikipedia.org/wiki/Alcohol_laws_of_India
9	Gujarat	P	P	CL
10	Haryana	25	25	CL
11	Himachal Pradesh	18	18	CL
12	Jammu & Kashmir	21	21	Jammu & Kashmir Liquor License & Sale Rules, 1984 (Rules made under J&K Excise Act, 1958) https://www.newslandry.com/2015/09/30/indias-prudish-alcohol-laws-that-preach-victorian-morality-and-insult-intelligence/
13	Jharkhand	21	21	CL
14	Karnataka*	21/18	21/18	https://www.thehindu.com/news/cities/bangalore/ls-legal-age-to-drink-in-Karnataka-18-or-21/article13982569.ece
15	Kerala**	18	18	CL
16	Madhya Pradesh	21	21	CL
17	Maharashtra***	21	21	CL
18	Orissa	21	21	CL
19	Pondicherry	18	18	CL
20	Punjab	25	25	CL
21	Rajasthan	18	18	CL
22	Tamil Nadu****	21	21	CL
23	Uttar Pradesh	21	21	CL
24	Uttarakhand	21	21	CL
25	West Bengal	21	21	CL

Notes: CL stands for "Chakraborty, T., Lohawala, N. (2021). Women, Violence and Work: Threat of Sexual Violence and Women's Decision to Work (No. 14372). Institute of Labor Economics (IZA)."; P stands for Prohibition.

Our study excludes the following north eastern states and Union territories (UT) : Nagaland, Manipur, Tripura, Meghalaya, Daman Diu, Lakshadweep , Andaman Nicobar islands.

*Karnataka MLDA su ers from a contradiction within the excise dept. The legal drinking age is 21 as per Karnataka Excise Department (1967) and 18 as per the Karnataka Excise Act (1965). We choose 21 as MLDA for Karnataka in our study and include the results for MLDA as 18 in Table A2 and Table A3.

**Kerala changed its MLDA from 18 to 21 years in mid 2012. IHDS 2 eld survey lasted from Nov 2011 - Oct 2012. Thus, we use 18 as the MLDA for Kerala.

***Maharashtra changed its MLDA for hard liquor from 21 to 25 years in 2011. We use 21 as the MLDA for Maharashtra.

****Tamil Nadu changed its MLDA from 18 to 21 years in 2004. We use 21 as the MLDA for Tamil Nadu.

The MLDA of Jammu and Kashmir, Goa and Dadra Nagar Haveli relies on online sources.