Economic and Demographic Determinants of Demand for Alcohol: The Case of Malaysia

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Abstract

The objective of this study is to investigate factors that affect the decisions of Malaysian adults to consume alcohol. This study used the Third National Health and Morbidity Survey (NHMS III) which has 30,992 respondents. The results from the study suggested that age, income, gender, ethnicity, education, location of residence and employment status have significant effects on alcohol consumption. In particular, younger individuals, higher income earners, males, Chinese, the well-educated, urban dwellers, civil servants, private sector employees, the self-employed and students are associated with a higher likelihood of consuming alcohol. The findings from this study call for several anti-alcohol intervention strategies.

Keywords: alcohol, consumption, demand, demographics, economics

1.   Introduction

Alcohol drinking is a long-standing lifestyle, and is being adopted widely in today's society with an estimated 6.13 litres of per capita alcohol consumption worldwide (World Health Organization, 2011). Although alcohol is generally available in the market, it cannot be characterised as a normal beverage as it can result in serious medical, psychological and social problems. In fact, alcohol consumption has become a profound public health concern, and is ranked as the third leading risk factor of disease burden in the world causing 2.5 million deaths annually (World Health Organization, 2011).

In Malaysia, the official report by the Ministry of Health Malaysia stated that there was an increasing trend in the prevalence of alcohol consumption (Institute for Public Health, 2008). To be exact, the prevalence of incidences of 'ever consumed alcohol' had increased from 29.2% in 1996 to 42.8% in 2006. A similar trend was noted for 'current alcohol drinkers' with a prevalence of 23% in 1996 and 24.1% in 2006. In terms of ethnicity, the increasing trend was noted predominantly among Chinese alcohol drinkers with a prevalence of 'current alcohol drinkers' reported as 22.2% in 1996 and a hike to 26.6% in 2006.

In view of the massive impacts of alcohol consumption on morbidity and mortality worldwide, there is a growing body of literature that examined the factors that affect alcohol consumption in developed countries (Yen, 1994; Abdel-Ghany and Silver, 1998; Manrique and Jensen, 2004; Yen, 2005; Yuan and Yen, 2012). However, the attention devoted to examining this topic in Malaysia is still lacking despite alcohol consumption has become a serious public health issue. While there are scholars like Tan, et al. (2009) who investigated

the determining factors of alcohol consumption in Malaysia, their study focused mainly on the total monthly household expenditure on alcoholic beverages. The likelihood of alcohol consumption by each individual was not examined in detail. To address this research gap, this study concentrates primarily on the decision of individuals to consume alcohol in Malaysia.

2.   Theoretical Basis

From the economics perspective, health is a capital good that is used to produce 'healthy time' (Grossman, 1972). Health determines the amount of time that individuals can spend on both market and non-market activities. Similar to other types of capital, health can depreciate over time which means that individuals will become weaker as they age. Worse still, such depreciation can ultimately lead to death when health capital falls below the minimum level (Grossman, 1972). Therefore, to reduce the depreciation of health, it is necessary to raise input of resources such as time, medical care, shelter and food. Grossman (1972) defines this as 'health investment.' He argues that individuals have the capability to improve their own health.

Generally, people invest in health for two main reasons (Grossman, 1972). First, people have better well-being when they are healthier, thus, better health yields greater utility. Second, health increases the amount of time that people can spend on their market and non-market activities such as working, home production and leisure activities. Cawley and Ruhm (2012) advance Grossman's (1972) health capital model and classify unhealthy behaviours such as physical inactivity, smoking and alcohol consumption as 'negative health investment' or 'health disinvestment.' They claim that participation in unhealthy behaviours can significantly depreciate health capital.

3.   Methods

3.1   Data

The present study used data from the Third National Health and Morbidity Survey (NHMS III). It was a cross-sectional population-based survey conducted by the Ministry of Health Malaysia from April 2006 to January 2007. The survey covered all urban and rural areas in the 13 states of Malaysia as well as the federal territory of Kuala Lumpur. Based on the sampling frame designed by the Department of Statistics Malaysia, a two stage stratified sampling approach proportionate to the size of population in Malaysia was used to collect the data. The first stage sampling unit was based on geographically contiguous areas of the country [Enumeration Blocks (EBs)]. The second stage sampling unit was based on the Living Quarters (LQs) in each EB, and all the individuals that resided in the selected LQs participated. In particular, each EB consisted of 80-120 LQs with a population of about 600. The EBs were selected based on the population of gazetted and built-up areas. The calculated target sample size was 34,539 respondents, and the overall response rate was about 99.30% (34,305 respondents).

3.2   Variables

The dependent variable of the present study is a categorical variable with a binary outcome indicating whether the respondents consumed alcohol in the past 30 days prior to the survey. Whilethe independent variables of the present study consist of age, income, gender, ethnicity, education, marital status, location of residence and employment status.

Table 1
Descriptive analysis of variables

Variables	Alcohol drinker (Y = 1)	Non-alcohol drinker (Y = 0)	Total sample
	Mean/%*		
Age	36.97 [12.73]	42.33 [15.77]	42.11 [15.69]
Income	3421.86 [3705.40]	1900.10 [2602.63]	1963.05 [2674.48]
Gender			
Male	6.89	93.11	44.39
Female	1.94	98.06	55.61
Ethnicity			
Malay	0.43	99.57	56.51
Chinese	11.73	88.27	21.56
Indian/others	6.23	93.77	21.93
Education			
Tertiary	9.53	90.47	10.32
Secondary	4.76	95.24	51.69
Primary	1.82	98.18	37.99
Marital status			
Married	3.80	96.20	71.32
Widowed/divorced	1.11	98.89	7.83
Single	6.44	93.56	20.85
Location of residence			
Urban	5.53	94.47	59.42
Rural	2.09	97.91	40.58
Employment status			
Civil servant	3.02	96.98	9.93
Private sector	6.52	93.48	28.82
Self-employed	5.30	94.70	19.59
Student	8.11	91.89	3.18
Unemployed	1.72	98.28	38.48

Note: *For age and income variables, the value refers to mean [standard deviation], whereas for the other variables, the value refers to percentage.

Only age (in years) and income [in Malaysian Ringgit (RM)] are included as continuous variables to allow for linear relationships whereas the rest are formatted as categorical variables. Gender is divided into male and female while ethnicity is collapsed to Malay, Chinese and Indian/others. Education is segmented into three levels: tertiary, secondary and primary. Marital status is grouped into three categories: married, widowed/divorced and single while location of residence is categorised into two groups: urban (≥10000 populations) and rural (<10000 populations). Employment status variable comprises five categories: civil servant, private sector employee, self-employed, student and unemployed.

3.3 Econometric Specification

Given that the dependent variable of the present study is a binary variable, a logit model is used for the statistical analysis. This is because it can predict the probability that lies between the unit intervals.In general, the logit model can be written as follows:

$$\log \frac{P}{1-P} = \alpha + \beta_i X_i + \varepsilon$$

(1)

where, P is the probability that a respondent consumes alcohol; 1 – P is the probability that a respondent does not consume alcohol; P/(1 – P) is the odds that a respondent consumes alcohol; X are the independent variables; β are coefficients of the independent variables; and ε is the error term. The level of significance is based on p-value of less than 5% (two-sided).

4.   Results

Table 2 shows the results of the logit analysis of alcohol consumption. Prior to interpreting the odds of consuming alcohol, some discussions on the logit model are in order. In terms of goodness-of-fit, the value of Likelihood Ratio (LR) χ^2 with 14 degrees has a p-value of less than 0.05. Thus, the null hypothesis that the model is not fit can be rejected. Nevertheless, the value of Pearson χ^2 with 25587 degrees of freedom has a p-value of more than 0.05. Therefore, the null hypothesis that the model is good fit cannot be rejected. Taken together, these imply that the logit model fits the data very well. Furthermore, 95.90% of the proportions are predicted correctly by the logit model.

Table 2
Results of the logit analysis of alcohol consumption

Variables	Estimated coefficient	Standard error	Odds Ratio	95% CI	P-value
Age	-0.018	0.003	0.982	0.976, 0.988	<0.001
Income[#]	0.003	0.001	1.003	1.002, 1.005	<0.001
Gender					
Male	1.289	0.073	3.630	3.146, 4.188	<0.001
Female*	–	–	1.000	–	–
Ethnicity					
Malay	-2.912	0.128	0.054	0.042, 0.070	<0.001
Chinese	0.612	0.071	1.844	1.605, 2.120	<0.001
Indian/others*	–	–	1.000	–	–
Education					
Tertiary	1.398	0.110	4.047	3.261, 5.021	<0.001
Secondary	0.906	0.088	2.475	2.081, 2.943	<0.001
Primary*	–	–	1.000	–	–
Marital status					
Married	0.046	0.085	1.047	0.886, 1.237	0.589
Widowed/divorced	-0.140	0.224	0.869	0.560, 1.349	0.532
Single*	–	–	1.000	–	–
Location of residence					
Urban	0.240	0.080	1.271	1.087, 1.487	0.003
Rural*	–	–	1.000	–	–
Employment status					
Civil servant	0.288	0.140	1.333	1.014, 1.753	0.040
Private sector	0.369	0.095	1.447	1.201, 1.743	<0.001
Self-employed	0.429	0.102	1.535	1.257, 1.875	<0.001
Student	0.346	0.165	1.414	1.024, 1.953	0.035
Unemployed*	–	–	1.000	–	–
Constant	-3.964	0.169	–	–	<0.001
LR χ^2 (14)	2810.000				<0.001

Pearson χ^2 (25587)	20439.570	1.000
% of correct predictions	95.90	
Observations	30992	

Note: CI refers to confidence interval and LR refers to likelihood ratio. [#]income divided by 100. *refers to reference/base category (coded as 0).

Holding other variables constant, an additional year of age reduces the odds of consuming alcohol by 0.018 times whereas an increase of RM100 in monthly individual income increases the odds of consuming alcohol by 0.003 times. With regard to gender, males have 3.630 times the odds as females of consuming alcohol. Malays are found to have 0.054 times the odds as Indians and others of consuming alcohol, whilst Chinese have 1.844 times the odds as Indians and others of consuming alcohol.

The results demonstrate that tertiary educated individuals have 4.047 times the odds as primary educated individuals of consuming alcohol, while secondary educated individuals have 2.475 times the odds as primary educated individuals of consuming alcohol. Urban dwellers have 1.271 times the odds as rural dwellers of consuming alcohol if other factors are held constant. In terms of employment status, the results show that civil servants, private sector employees, the self-employed and students have 1.333, 1.447, 1.535 and 1.414 times the odds, respectively, as the unemployed of consuming alcohol.

5. Discussion

The negative relationship between age and alcohol consumption lends support to the finding of Yen and Jensen (1996) that older individuals are less likely to adopt alcohol drinking habits than younger individuals. This is because older individuals tend to encounter a higher rate of depreciation of health capital, and consequently are more devoted to invest in their health by living a healthy lifestyle (Grossman, 1972). As a consequence of depreciating health capital, older individuals are also more aware of their own health and the risks of unhealthy lifestyles compared to younger individuals who tend to take health for granted. Based on this outcome, it can be concluded that age reduces the pay-off period of health investment, that is, the incentive to improve health (Cropper, 1977). Older individuals may still have a higher propensity to invest in their health than younger individuals with the assumption that avoidance of alcohol consumption is a health investment. The policy implications of this finding suggest the need to launch awareness creation programmes directed at youngsters to help reduce the prevalence of alcohol consumption. Efforts to utilise social media to disseminate facts about the harmful effects of alcohol consumption should be considered given the influential impacts of this mode of communication on youth (Cheah and Naidu, 2012).

Consistent with the findings by Yen (1994), Parker, et al. (1995), Yen and Jensen (1996) and Cawley and Ruhm (2012), income is significantly associated with the likelihood of consuming alcohol given that higher income individuals are more likely to consume alcohol compared to lower income individuals. This is simply because alcohol is heavily taxed in Malaysia, thus, higher income individuals are more capable of purchasing it than lower income individuals. However, Grossman's (1972) argument that income raises the incentive to invest in health is not supported by the finding of this study. According to Grossman (1972), income differential is the difference in the benefit that individuals can reap from health investments. Hence, higher income earners are supposed to have a higher tendency to avoid consuming alcohol than lower income earners. As for policy implementations,

government should take note that alcohol is an addictive good and its price elasticity of demand is inelastic (Cawley and Ruhm, 2012). Therefore, government should use other direct measures to reduce alcohol consumption rather than rely too much on taxation although the current findings show that income increases the propensity to consume alcohol.

Additionally, this study also suggests that there is significant gender differences in alcohol consumption as males are more likely to consume alcohol than females. This discovery is consistent with findings from previous studies (Manrique and Jensen, 2004; Yuan and Yen, 2012; Redonnet, et al., 2012). This may be due to the fact that women are generally more risk averse than men (Croson and Gneezy, 2009). Since drinking alcohol is a risky and irrational health behaviour, individuals who are risk-averse tend to avoid alcohol. Besides, alcohol drinking by women is less socially accepted than by men, thus, women are less likely to adopt alcohol drinking habits. Considering this finding, policy makers should pay considerable attention to reducing alcohol consumption among males by introducing nationwide anti-alcohol programmes. In particular, these programmes should include advertisement and information on how alcohol can impair men's health by causing erectile dysfunction and low sperm count.

Interestingly, the present study finds that ethnicity possesses a significant effect on alcohol consumption. Comparing among the ethnic groups, Malays have the lowest likelihood of consuming alcohol whereas Chinese have the highest likelihood. Perhaps this is attributable to cultural and religious differences among the different ethnic groups. In Malaysia, Malays (Muslims) are strictly prohibited from consuming alcohol because of their Islamic religious background whereas the Chinese culture allows them to incorporate alcohol into their lifestyle. In fact, alcohol is an important item in most Chinese traditional festivals and celebrations such as New Year festival and wedding ceremonies (Cochrane, et al., 2003). Alcohol is also often used by Chinese businessman as a method to foster and maintain good social relationship with people (Cochrane, et al., 2003). An important implication of this finding is that government should pay particular attention to reducing alcohol consumption among Chinese.

According to economic theories, education can improve health in two ways. First, education increases allocative and productive efficiency of producing health (Grossman, 1972; Kenkel, 1991). Second, higher level of education is associated with a lower rate of time preference (van der Pol, 2011). However, the result of the present study shows that well-educated individuals are significantly more likely to consume alcohol than less-educated individuals. This corroborates with the findings by Jonas (2000) and Marques-Vidal and Dias (2005) that education increases the propensity to consume alcohol. This may be due to the fact that light alcohol drinking can improve health (Agarwal, 2002). However, given the limited availability of data, the effect of education on alcohol consumption needs to be explored more rigorously in future studies as it will be useful to gather data on the amount and type (e.g. beer, wine and liquor) of alcohol consumed than simply indicating incidences of alcohol consumption.

The present study discovers spatial differences in alcohol consumption as urban dwellers are more likely to consume alcohol than rural dwellers. This is consistent with the findings by Yen (1994) and Nayga and Capps (1994). This could be due to extensive promotion of alcohol consumption in urban areas. In addition, urban lifestyle such as parties, the need to maintain social status and the association of alcohol drinking to high-class living may also be the explanation for this outcome. With regard to policy implications, the findings from this

study imply that a strategy to reduce the prevalence of alcohol consumption among urban dwellers may appear promising.

In terms of employment status, civil servants, private sector employees, the self-employed and students are found to be more likely to consume alcohol than the unemployed, which somewhat matches with the findings by Parker, et al. (1995) that indicated that unemployed individuals have a lower likelihood of consuming alcohol than the employed. There are two explanations for this outcome. First, students often stay away from their parents during the semesters, and consequently are likely to seek instantaneous pleasures by indulging in irrational behaviours such as alcohol drinking (Karam, et al., 2007). Second, since alcohol drinking is a common activity at social functions, hence, employed individuals who are influenced by their working peers are vulnerable to adopt alcohol drinking habit (Huerta and Borgonovi, 2010). The implication of this finding is that intervention strategies directed at employed individuals and students can be very effective.

Two inherent limitations are noted because of data limitation. First, several variables that may affect alcohol consumption are not considered. For instance, variables such as being diagnosed with diseases, smoking and alcohol price are disregarded. Second, this study is unable to examine the amount of alcohol consumed by the respondents. Hence, the patterns of alcohol consumption among the respondents are not well-identified. It is worthwhile for future studies to seek data that can overcome these limitations.

6. Conclusion

Alcohol consumption has raised public health concerns. In the quest to develop a proper population-based intervention strategy towards reducing alcohol consumption, it is important to have a better understanding of which type of people consume or do not consume alcohol. This study found that there is a positive relationship between the likelihood of consuming alcohol and younger individuals, higher income earners, males, Chinese, the well-educated, urban dwellers, civil servants, private sector employees, the self-employed and students. Policy makers are, therefore, urged to pay attention to these groups of people.

7. Acknowledgements

8. References

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