

Economics

Extended Essay

How effective are government policies in
reducing overconsumption of hard liquor?

Done By: Ananth Ravi Kumar

Class: 5.8 Kings/6.8 Galatia

ACS (Independent)

Abstract (294 words)

This extended essay focuses on **the effectiveness of government policies in reducing overconsumption of hard liquor in Singapore**. The paper is divided into two sections: how the government attempts to reduce consumption of hard liquor, and how the government attempts to reduce the welfare loss due to overconsumption of hard liquor.

The information used in this investigation comprises government financial reports, various websites, economic textbooks, and, most importantly, 100 surveys that were distributed amongst members of the public (from ages 18 to 40). Also, this investigation focused on hard liquor rather (i.e. anything with >15% Alcohol By Volume [ABV]) than on alcohol as a whole, since hard liquors contribute more significantly to incidences of drunkenness than 'soft' liquors (due to their significantly higher alcohol-by-volume percentage). Investigating hard liquors thus seemed to be a wiser course of action. Also, the taxes imposed on hard liquors are significantly higher than that imposed on soft liquors¹, and thus investigating government intervention in the market for hard liquor seemed to be a more fruitful approach to take in terms of depth of analysis available.

This investigation has led to the conclusion that government attempts to address the issue of information failure has succeeded only to a limited extent, with 52% of all the respondents surveyed showing little or no knowledge regarding the negative impacts of excessive alcohol consumption. Also, the government's attempts to reduce consumption of hard liquor via taxes have succeeded to a limited extent

¹ Singapore Government, *List of Dutiable Goods*, 22nd March 2010, <http://www.customs.gov.sg/leftNav/trad/val/List+of+Dutiable+Goods.htm> (accessed 26th March 2010)

due to hard liquor's highly addictive nature, its price inelasticity of demand, and its role as a very minor deterrent to hard liquor consumption. Lastly, government intervention via enforcement and regulation was found to have been successful in most regards (such as preventing drink driving), except in restricting alcohol consumption by age.

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Introduction:

Singapore is well known for its vibrant nightlife and its modern society. When these two aspects merge, a demand for alcohol is unavoidable.

Products containing alcohol are considered demerit goods (i.e. goods that impose costs on third parties). Alcohol, apart from resulting in medical conditions if excessively consumed, imposes costs on society in the form of damages caused by intoxicated persons, both emotional and physical. For example, drunk drivers cause harm to members of society, while alcoholics cause pain to their family members and friends. The Singapore police force arrested 2929 people for drunk-driving in 2004, and the numbers increased to 3032 in 2005, 3730 in 2006 and 4009 in 2007², an increase of 32%. As such, the government's measures to restrict the consumption of alcohol are well-intentioned.

Alcohol has effects on the individual. Excessive alcohol consumption increases the risk of liver cirrhosis, sleeping disorders, sexual problems, infection of the oesophagus, stomach, and pancreas, premature dementia, cancer of the mouth, throat, larynx, intestines and breasts, hypertension and heart problems³. Alcohol is damaging during pregnancy, increasing the chance of miscarriage while increasing the chance of mental retardation, learning, emotional and behavioural problems, and defects involving most other organs⁴ in children.

² Singapore Police Force, *Driving In Singapore*, 2005, http://driving-in-singapore.spf.gov.sg/services/Driving_in_Singapore/Information/pressandmsg/drinkdriving.htm (accessed 12th Jan 2010)

³ Web4Health, *Positive and Negative effects of Alcohol Use*, 22 Jul 2008 <http://web4health.info/it/answers/add-alcohol-goodbad.htm>, (accessed 20th Feb 2010)

⁴ March of Dimes, *Drinking Alcohol during Pregnancy*, November 2008, http://www.marchofdimes.com/professionals/14332_1170.asp#head1, (accessed 26th Feb 2010)

In order to correct this market failure, the Singapore Government has put in place three main measures that aim to discourage the consumption of alcohol, namely taxes, legislation, and education. The government has also put in place a number of rules and regulations to reduce the welfare loss and external cost imposed by drunken individuals. My research question is as follows:

How effective are government policies in reducing overconsumption of hard liquor?

I chose to investigate hard liquor (i.e. alcoholic drinks with alcohol by volume percentage >15%) specifically rather than investigating alcohol as a whole for a number of reasons. The government attempts to control the sale of alcohol in order to reduce the costs imposed on society by intoxicated persons; since hard liquors contribute more significantly to incidences of drunkenness than 'soft' liquors, investigating hard liquors seemed to be an appropriate course of action. The taxes imposed on hard liquors are significantly higher than soft liquors (\$48 per litre of alcohol contained in beer or stout, compared to \$70 per litre of alcohol in any alcoholic drinks >15% alcohol by volume)⁵, and thus investigating hard liquor seemed to be a more fruitful approach.

This topic was investigated primarily using the theory of market failure. Market failure occurs when the market allocates resources in such a manner that community welfare is not maximized⁶. One aspect of market failure deals with the costs to society when a demerit good (i.e. a good that either imposes costs on third

⁵ Singapore Government, List of Dutiable Goods, 22nd March 2010, <http://www.customs.gov.sg/leftNav/trad/val/List+of+Dutiable+Goods.htm> (accessed 26th March 2010)

⁶ Jocelyn Blink & Ian Dorton, IB Diploma Programme Economics Course Companion, Oxford University Press, 2007, pg 134-135

parties, or a good that does more harm to the consumer than he/she realizes) is consumed, and as such this theory is applicable in this investigation.

Methodology:

In order to gather the information, I searched for secondary data both online and at various libraries with the aim to determine whether the policies enacted by the government are indeed successful in correcting market failure caused due to the overconsumption of hard liquor.

Apart from secondary data, an internet survey was also distributed to members of the general public of ages 18 to 40 in December 2009. The survey aimed to identify 3 main issues: why some people consumed hard liquor while others chose not to, the price elasticity of demand for hard liquor (i.e. the degree to which the demand for hard liquor is responsive to price), and the extent of the public's knowledge about the effects of alcohol and government initiatives regarding alcohol.

An interview was also conducted with an expert in the field of market failure, Mr. Bernard Lee, a professor at Singapore Management University, with the aim of resolving discrepancies that were noticed through the course of this project.

Evaluation of measures taken by the government to reduce the costs of alcohol consumption:

The Singapore government intervenes in the market for hard liquor in two ways;

- ✚ firstly, it implements various schemes to reduce the consumption of hard liquor
- ✚ secondly, it enforces certain regulations to minimize the welfare loss caused due to excessive consumption of alcohol (i.e. binge drinking).

This extended essay will deal with each area of intervention separately.

The methods in which the government aims to **reduce overconsumption of hard liquor (i.e. reduce binge drinking)** include conducting public awareness campaigns and imposing taxes. Binge drinking is defined as consuming between 6 to 8 units of alcohol at a sitting for men, or 4 to 6 units of alcohol⁷ at a sitting for women⁸. The Government **attempts to minimize welfare loss due to overconsumption of alcohol** through the enforcement of the various laws it has regarding intoxicated behaviour and alcohol consumption.

⁷ To put things into scale, 1.5 units of alcohol is roughly equal to half a pint of beer, or a small glass (125 ml) of wine.

⁸ Thesite.org: Your guide to the real world, [Binge Drinking](http://www.thesite.org/drinkanddrugs/drinking/problems/bingedrinking), <http://www.thesite.org/drinkanddrugs/drinking/problems/bingedrinking>, accessed 17th May 2010.

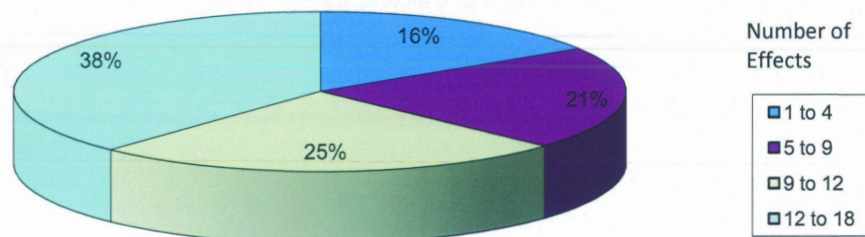
1: Government intervention in the hard liquor market: Correcting information failure through public awareness campaigns

Defining Information Failure and determining its existence

Let us now analyze the issue of information failure, which is central to government intervention via public awareness campaigns.

Lack of information refers to the consumers not having full knowledge of the effects as a result of consuming a certain good, or lack of personal experience regarding the negative impacts of consuming a good. In this section, data will be used to explain how this phenomenon contributes to overconsumption of hard liquor, as well as to evaluate the effectiveness of government policies aimed at reducing consumption of hard liquor by tackling this issue.

Question 6: Binge drinking (both in the long run and short run) can lead to slurred speech, headaches, slower reaction time, impaired thinking and judgment, gastric problems, possible unconsciousness, insomnia, hangover, memory loss, severe brain damage, Cirrhosis (rupturing) of the liver, liver cancer, impotence, peptic gastric ulcers, coma and death, as well as foetal alcohol syndrome and menstrual irregularities in women. Also, drunkenness causes discomfort and inconvenience to others, which can amount to serious life-threatening situations. How many of these effects were you aware of?

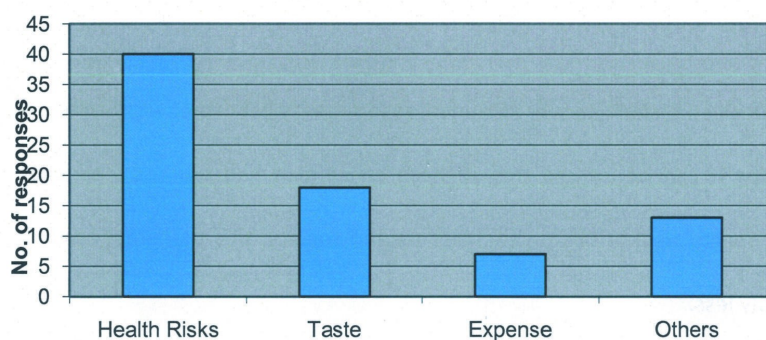


This question was posed in internet survey carried out amongst members of the public (ranging from students above the age of 18 to senior management officials). As observed, up to 37% of respondents who admitted to drinking hard

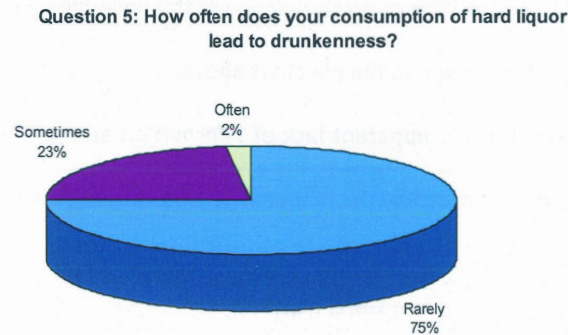
liquor mentioned they had little or no knowledge of the negative effects of excessive alcohol consumption, as shown in the pie chart above.

The link between this apparent lack of information and overconsumption of hard liquor is further reinforced by the response to survey question 2.

Question 3: As a non-drinker, why do you abstain from hard liquor?

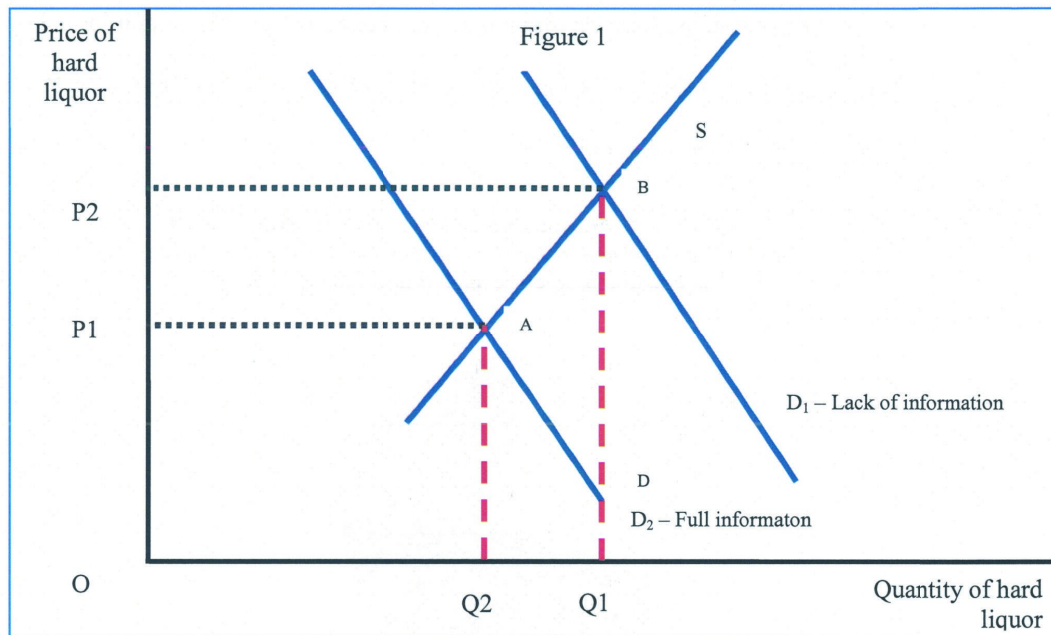


From the results to question 3, we can see that a rather large percentage of non-drinkers listed 'Health risks' as their primary reason for abstaining from hard liquor, among other reasons such as taste, expense, religious and moral convictions, etc. Thus, we can argue that if information were to be more readily available and distributed to the public, the percentage of people abusing hard liquor and imposing costs on society would decline. This claim appears to be supported by the responses to a third survey question.



As shown in the pie chart above, 25% of all respondents get drunk with some degree of regularity; it can be argued that if these consumers had full knowledge of the negative impacts alcohol has on themselves and society, this percentage would be considerably less.

This information can be represented in a graph. As shown on the next page in figure 1, D_1 represents the current demand for hard liquor, when consumers are imperfectly aware about the negative impacts of consuming hard liquor. As such, the market equilibrium price and output are P_1 and Q_1 respectively. However, the socially ideal level of output would occur at Q_2 , where consumers have full knowledge of the harmful effects of consuming hard liquor. As such, there is an overconsumption of hard liquor of Q_1Q_2 units.



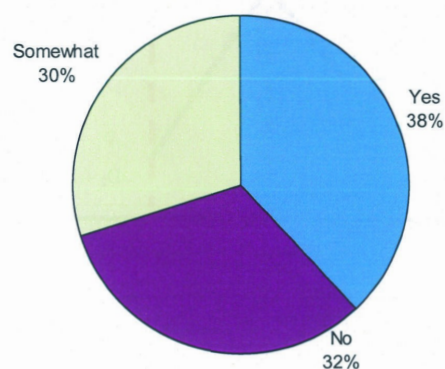
Analysis of solutions implemented to reduce information failure:

In order to counter the problem of information failure, various moderate-drinking and anti-binge drinking campaigns have been implemented by the government and civilians, the most well-known campaign being Get Your Sexy Back⁹. These campaigns would inform consumers as to the negative effects of binge drinking and alcohol consumption, and would thus result in a fall in demand and a leftward shift of the demand curve closer to D_2 ; the market equilibrium output would, therefore fall closer to the socially ideal output.

⁹ Get Your Sexy Back, Get Your Sexy Back, 12th Jan 2010, <http://www.getyoursexyback.sg/> (accessed 14th Jan 2010)

With these measures in place, one would expect the problem of information failure to right itself and for the prevalence of binge drinking to fall; however, binge drinking has actually increased¹⁰.

Question 7: Are you aware of government measures and policies aimed towards reducing consumption of alcohol? (e.g. campaigns promoting moderate drinking, taxes, etc.)



We can thereby say that the campaigns have not solved the problem of information failure; as shown by the replies to question 7 above, 62% of respondents were not completely aware of or had no awareness of these campaigns. The question of Singapore's public awareness campaign's ineffectiveness was posed to Mr. Bernard Lee, a lecturer at Singapore Management University¹¹. Upon his recommendation, Singapore's budget for anti-bingeing campaigns was compared to that of the UK. It was found that the 2009 anti-bingeing campaign involved minimal costs, and used free postcards provided by ZoCard, a free-card company established

¹⁰ Alicia Wong and Sufian Sunderman, Binge drinking an 'emerging issue in Singapore', say HPB, 17th December 2008, <http://www.channelnewsasia.com/stories/singaporelocalnews/view/396865/1/.html> (accessed 8th Jan 2010)

¹¹ Refer to Appendix E

in Singapore¹². Furthermore, the budget allocated for the Ministry of Health often makes no mention of alcohol-related awareness campaigns, unlike their emphasis on smoking. In contrast, the UK routinely spends large amounts of money on its public awareness campaigns, with the latest one being a concerted effort by 45 companies, costing £100m¹³. Thus, we can see that the effort expended by the government in campaigns aimed at promoting moderate drinking is rather small.

The problem of information failure is exaggerated by the small scale of the Health Promotion Board's efforts at educating the public. Their most recent (and first) anti-bingeing campaign, the ZoCard Campaign, managed to distribute only 29,700 flyers, and garner only about 600 e-mail and SMS responses¹⁴. Compared to Singapore's current resident population of 4.8 million¹⁵, this scale of operation is very small, thus accounting for the general unawareness of public awareness campaigns.

Evaluation of methods implemented to reduce information failure:

We can effectively conclude that government and/or citizen run efforts to solve the issue of information failure have had limited success in reducing the prevalence of binge drinking and the consumption of hard liquor. There are two main reasons for this: firstly, these campaigns have not been effective due to the very limited awareness of their existence, a by-product of their small scale. Secondly, the aura of 'classiness' surrounding alcohol, and, by extension, binge drinking can be

¹² ZoMedia Pte Ltd, *Case Study: Health Promotion Board's Anti Binge Drinking Campaign 2009*, 2009, <http://www.zocard.com/pdfs/news/casestudy/2009051243913136Case%20Study-revisedanti%20binge%20drinking.pdf> (accessed 15th May 2010)

¹³ Editorial, The Guardian, Mark Sweney, 1st Sept 2009, <http://www.guardian.co.uk/media/2009/sep/01/binge-drinking-ad-beer-goggles> (accessed 15th May 2010)

¹⁴ ZoMedia Pte Ltd, *Case Study: Health Promotion Board's Anti Binge Drinking Campaign 2009*

¹⁵ Statistics Singapore, *Population: Mid Year Estimates, 2009*, <http://www.singstat.gov.sg/stats/latestdata.html#12> (accessed 15th May 2010)

said to directly counteract the information provided regarding its negative impacts.

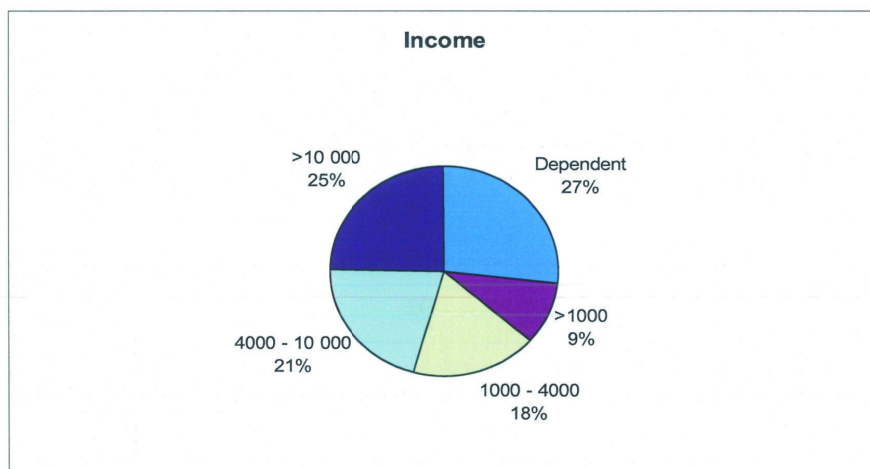
Thirdly, the information failure could be the lack of personal experience of the negative impacts of binge drinking. For example, people may not take public awareness campaigns seriously simply because they have had little or no contact with people who have suffered from alcohol-related illnesses or problems.

2: Reducing overconsumption via taxation

Having determined that educating the public about the harmful effects of hard liquor overconsumption has only had limited success, let us now analyze the extent to which government efforts to reduce alcohol consumption through taxation have been successful.

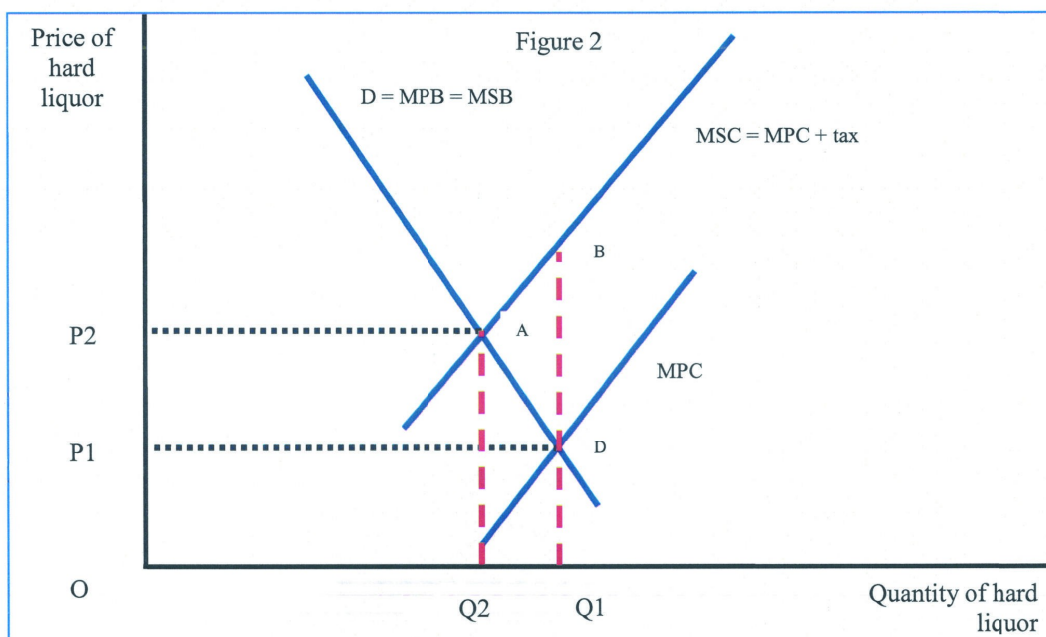
Government taxes consumption of alcohol through excise and customs duties. Excise duties is charged when a good is produced within the geographical boundary of a country and custom duties are levied on imported goods.

The magnitude of the impact of taxation depends directly on the income of the households in question. Below is a breakdown of the various income groups that participated in my survey:



The effect of taxation on the quantity demanded can be explained using economic theory. Hard liquor is a demerit good; it causes more harm to the consumer than the consumer realizes, while also imposing external costs on third parties not involved in the economic transaction. As economic transactions are made, consumers only consider the *marginal private cost* (the cost borne by the

individual when the last unit of a good is consumed¹⁶) and the *marginal private benefit* (the value placed by the individual of the last unit of a good¹⁷), and neglect the *marginal social cost* (the costs borne by society whenever the last unit of a good is consumed in terms of alternative goods forgone¹⁸) and *marginal social benefit* (the value society places on the last unit of a good that is consumed¹⁹). Keeping in mind that alcohol is a demerit good, the following diagram can be constructed.



In figure 2, the MSC is perceived to be higher than MPC, since consumption of hard liquor results in negative externalities such as injuries and casualties from

¹⁶ Jocelyn Blink & Ian Dorton, *IB Diploma Programme Economics Course Companion*, Oxford University Press, 2007, pg 134-135

¹⁷ Jocelyn Blink & Ian Dorton, *IB Diploma Programme Economics Course Companion*, Oxford University Press, 2007, pg 134-135

¹⁸ Jocelyn Blink & Ian Dorton, *IB Diploma Programme Economics Course Companion*, Oxford University Press, 2007, pg 134-135

¹⁹ Jocelyn Blink & Ian Dorton, *IB Diploma Programme Economics Course Companion*, Oxford University Press, 2007, pg 134-135

drink-driving, absence from work, and lower workplace efficiency. Negative externalities refer to negative spill-over effects inflicted upon third parties when a good is consumed. Thus, the market equilibrium output occurs at Q1, where $MPC = MPB$, while the socially ideal output occurs at Q2, where $MSC = MSB$, resulting in an overconsumption of the good by Q1Q2 units.

The purpose of an indirect tax is to force the consumer to internalize the external cost of the good, represented by the distance BD. An increase in the cost of production would cause the supply curve to shift closer to the MSC curve, and thereby would lower the output to a level that is closer to the socially ideal output. The government prefers using taxation as a method to reduce consumption for two reasons: firstly, revenue from alcohol provides the government with a significant amount of revenue collected via excise and custom duties²⁰. Secondly, complete banning of alcohol as a good has resulted in greater welfare loss due to the formation of organized crime, like the Prohibition era in United States history.

However, taxation seems to be having a weak impact on the demand for alcohol. The current excise duties charged for alcoholic drinks or liquors with an ABV (alcohol-by-volume) exceeding 15% is \$70.00 per litre of alcohol²¹. Thus, on average, the excise duty charged for a bottle of alcoholic drink would be \$28 for vodka, whiskey and gin (~40% ABV)²², \$9.10 for wine (12.5% - 14% ABV)²³, \$10 or greater

²⁰ Singapore Government, *Total Estimated Receipts for FY2009 by Object Class*, 2008, http://www.mof.gov.sg/budget_2009/revenue_expenditure/attachment/Revenue_Estimates.pdf (accessed 30th Dec 2009)

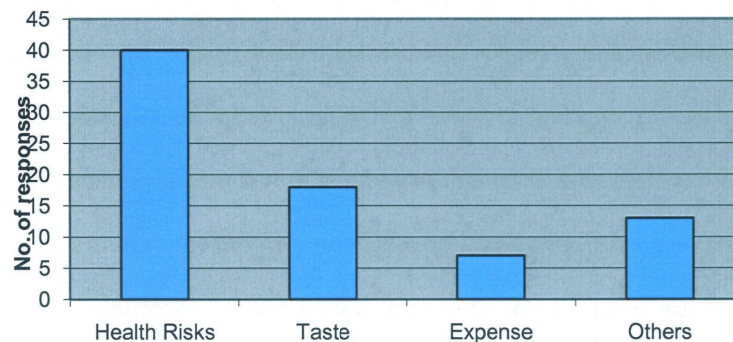
²¹ Singapore Government, *List of Dutiable Goods*, 22nd March 2010, <http://www.customs.gov.sg/leftNav/trad/val/List-of-Dutiable-Goods.htm> (accessed 26th March 2010)

²² Alcoholcontents.com, *Liquor Alcohol Content*, 2008, <http://www.alcoholcontents.com/>, (accessed 17th Feb 2010)

²³ *ibid*

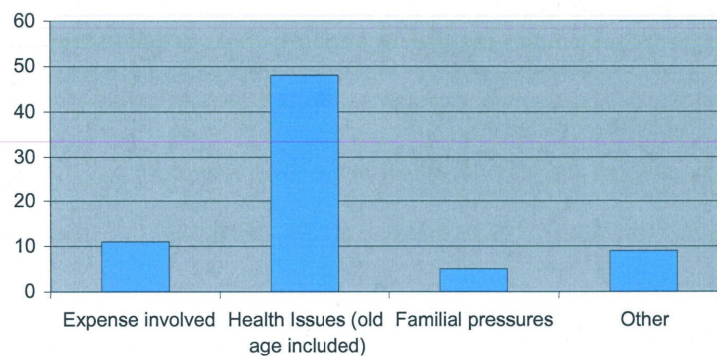
for fortified wines (15% - 20% ABV) ²⁴, and in excess of \$28 for liquors like gin, absinthe, or pure alcohol. However, the demand for alcohol does not seem to be affected by even taxes of this magnitude. This is shown by the answer to questions 3 and 9. Although question 3 was posed to non-drinkers, it clearly shows that expense is not very much of a deterrent to consuming hard liquor.

Question 3: As a non-drinker, why do you abstain from hard liquor?



Question 9: If you were to cease drinking sometime in the future, what, in your opinion, would be the most likely reason for you to do so?

No. of responses

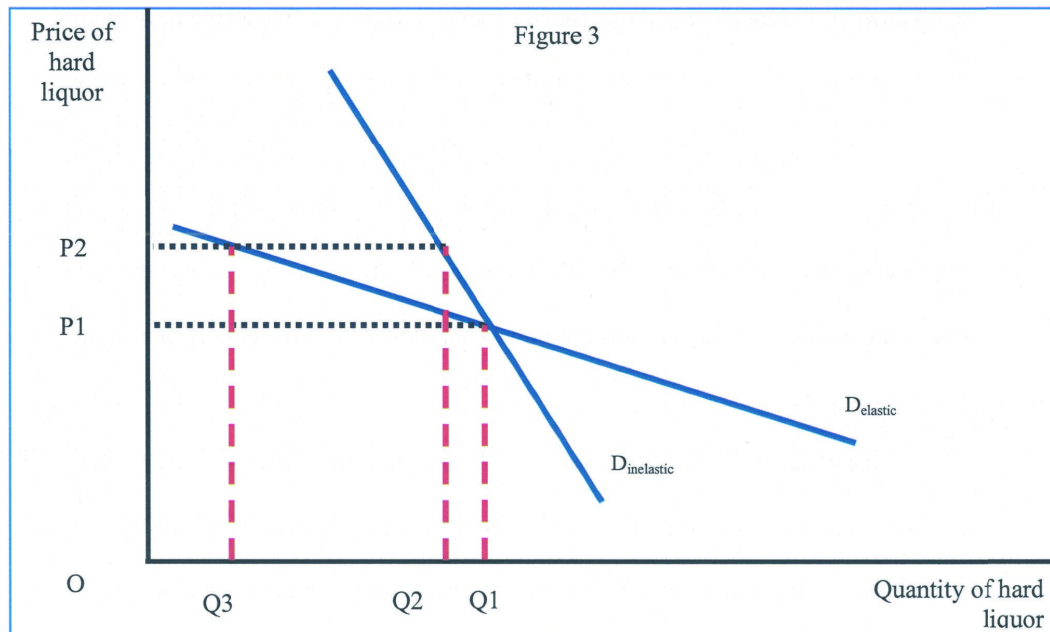


Thus, we can conclude that expense itself is not a major deciding factor limiting consumption of hard liquor. This phenomenon can again be explained using

²⁴ Alcoholcontents.com, Liquor Alcohol Content, 2008, <http://www.alcoholcontents.com/>, (accessed 17th Feb 2010)

economic theory. Alcohol is a good for which demand is said to be *price inelastic*.

Price elasticity of demand is a measure of the responsiveness of the quantity demanded of a good to a change in its price, *ceteris paribus*.



As shown in figure 3, the demand curve for hard liquor ($D_{\text{inelastic}}$) is contrasted with the demand curve of a good that is price elastic. An increase in the price from P_1 to P_2 causes the quantity demanded of hard liquor to fall only from Q_1 to Q_2 , while causing the quantity demanded of the price elastic good to fall from Q_1 to Q_3 .

Thus, we can see that increasing the expense by imposing excise duties would not be very effective in reducing consumption of a good for which demand is price inelastic.

Alcohol is price inelastic for 2 reasons: Firstly, its addictive nature would result in a very inelastic demand curve, as alcoholics would continue to buy hard liquor despite the increases in price to satisfy their desires. Second, alcohol is a

widely accepted good, and often forms the staple drink of many social gatherings²⁵. Furthermore, for a majority of the Singapore demographic, alcohol constitutes a rather small percentage of their total income, as is evidenced by the income breakdown at the beginning of this section (refer to page 11). This would mean that any increases in price would not contribute significantly to a fall in the quantity demanded. Next, hard liquor has no close substitutes. This would make the demand curve more inelastic, resulting in any changes in price having a less than proportionate impact on the quantity demanded²⁶. Thus, we can conclude that government efforts to reduce consumption of hard liquor through taxation have not been successful.

This claim is validated by government budgets regarding the excise and custom duties collected from the sale of liquor. The government has not significantly altered the duties levied on alcohol in recent years, with the latest change simply rationalizing the duties. However, the duties collected from alcohol have increased over the past years, increasing from \$348,816,043 in 2004²⁷ to \$413,639,484 in 2007²⁸, implying that consumer expenditure on alcohol has increased, pointing to an increase in demand and an increase in the consumption of alcohol. Furthermore, newspaper reports claim that the number of people seeking treatment for

²⁵ Editorial, Mind Your Body, Lisabel Ting, *Young and Smashed*, 4th June 2008, http://newslink.asiaone.com/user/OrderArticleRequest.action?order=&_sourcePage=WEB-INF/jsp/user/search_type_result.jsp&month=06&year=2008&date=04&docLanguage=en&documentId=nica_ST_2008_8977754 (accessed 23rd December 2009)

²⁶ Refer to Appendix E

²⁷ Singapore Government, *Total Estimated Receipts for FY 2006 by Object Class, 2006*, http://www.mof.gov.sg/budget_2006/budget_speech/downloads/FY2006_Budget_Highlights.pdf (accessed 30th Dec 2009)

²⁸ Singapore Government, *Total Estimated Receipts for FY2009 by Object Class, 2008*, http://www.mof.gov.sg/budget_2009/revenue_expenditure/attachment/Revenue_Estimates.pdf (accessed 30th Dec 2009)

alcoholism has increased from 200 in 2002 to above 1000 in 2009²⁹, a five-fold increase. These statistics clearly show that government intervention via taxation has not been effective in reducing overconsumption of hard liquor.

However, while taxation may not be successful in reducing overconsumption of hard liquor, it would reduce incidences of binge drinking amongst youth and young adults as the expenditure on alcohol would constitute a larger percentage of their disposable income. Thus, the high level of taxation already present would make them even more hesitant in indulging in binge drinking. Indeed, this does seem to be the case; WHO statistics have shown that youth starting to drink are often concerned about price³⁰. Thus, we can conclude that taxation may have been effective in keeping down youth drinking. However the long term effectiveness of this may be questionable; if income levels were to rise, taxes may have a lesser disincentive effect.

²⁹ Editorial, The Straits Times, Radha Basu, *Hooked, High, and Out of Control*, 29th August 2009
http://newslink.asiaone.com/user/OrderArticleRequest.action?order=&sourcePage=/WEB-INF/jsp/user/search_type_result.jsp&month=08&year=2009&date=29&docLanguage=en&documentId=nica_ST_2009_12996326

³⁰ Review, The Straits Times, *The Price of Teen Drinking*, 10th April 2010,
http://newslink.asiaone.com/user/OrderArticleRequest.action?order=&sourcePage=/WEB-INF/jsp/user/search_type_result.jsp&month=04&year=2010&date=10&docLanguage=en&documentId=nica_ST_2010_15662086

3: Enforcement, Regulation & Legislation

Let us now look at how the government minimizes the market failure due to overconsumption of hard liquor via enforcement, regulation and legislation, and then evaluate the success of these measures.

The government attempts to minimize the welfare loss due to overconsumption of alcohol in a few ways. Firstly, it has laid down laws that make causing disturbance to people while intoxicated punishable by imprisonment and/or fine³¹, and imposes steep penalties on people caught drink-driving³². Also, it regularly conducts public awareness campaigns discouraging drink-driving. Third, the Singapore Police Force sets up roadblocks and checkpoints around entertainment establishments after 12 midnight, and randomly administers breathalyser tests to catch drink-drivers³³. The government also has the right to apprehend drivers who are not completely drunk, but are unable to control their vehicles due to excessive alcohol consumption. The government also annually conducts anti-drunk driving campaigns.

Theoretically speaking, these enforcements aim to internalize the cost of over-consuming hard liquor, moving the MPC closer to the MSC and thereby lowering hard liquor consumption to a level that is closer to the socially ideal output.

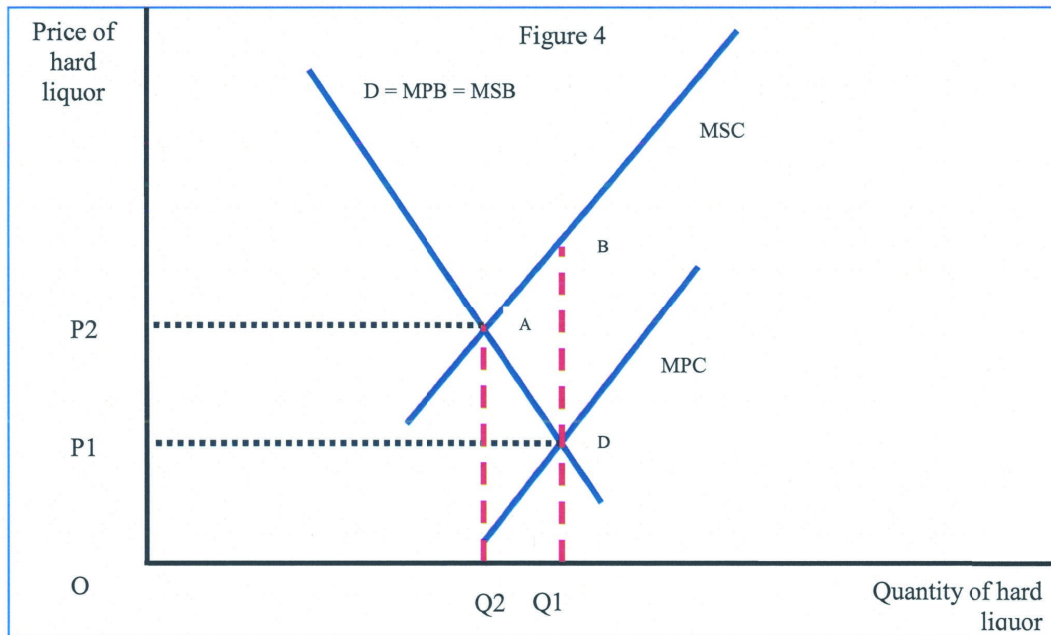
This information is represented via figure 4.

³¹ Singapore Police Force, *Driving In Singapore*, 2005, http://driving-in-singapore.spf.gov.sg/services/Driving_in_Singapore/Information/pressandmsg/drinkdriving.htm (accessed 12th Jan 2010)

³² Singapore Police Force, *Driving In Singapore*, 2005, http://driving-in-singapore.spf.gov.sg/services/Driving_in_Singapore/Information/pressandmsg/drinkdriving.htm (accessed 12th Jan 2010)

³³ Singapore Police Force, *News Releases: Five Caught in Anti Drink-Drive Operation*, 1st Jan 2010, http://www.spf.gov.sg/mic/2010/100101_drinkdrive_op.htm (accessed 14th Jan 2010)

How effective are government policies in reducing overconsumption of hard liquor?



An analysis of the effectiveness of government's attempts to minimize the welfare loss caused by excessive alcohol consumption has revealed that they have been successful. For example, although the number of people arrested for drunk driving increased from 2004 to 2009, the number of fatalities due to drink-driving actually fell from 311 in 2004³⁴ to 278 in 2009³⁵, a decrease of almost 11%. The casualties caused due to drink-driving are a form of welfare loss, and thus we can see how the campaigns have helped in the government's effort to reduce the welfare loss caused due to overconsumption of hard liquor.

Furthermore, in 2008, the Singapore police force made agreements with major entertainment centres for the provision of complimentary chauffer services and taxi vouchers to drunken patrons; this further decreased the number of deaths

³⁴ Singapore Police Force, [Road Traffic Situation Statistics 2004](http://www.spf.gov.sg/stats/traf2004_seriousoffence.htm), 2004
http://www.spf.gov.sg/stats/traf2004_seriousoffence.htm (accessed 12th Jan 2010)

³⁵ Singapore Police Force, [Road Traffic Situation Statistics 2007](http://www.spf.gov.sg/stats/traf2007_interest.htm), 2007,
http://www.spf.gov.sg/stats/traf2007_interest.htm (accessed 12th Jan 2010)

due to drink-driving from 278 to 235³⁶; overall, casualties due to drink-driving reduced by almost 25%, while the number of people arrested for drunk-driving increased to 4009. Keeping in mind that the police force sets up check points near clubs and bars to administer breathalyzer tests, we can see how effective government intervention through enforcement and regulation have been in minimizing the external cost imposed by drunken individuals

However, one area of enforcement the government is still trying to improve is its attempt to restrict alcohol consumption by age³⁷. By law, only people above the age of 18 are allowed to purchase and consume alcohol; however, the ease of obtaining fake licences and negligent retailers has allowed underage youth to purchase and consume alcoholic drinks.³⁸ Thus, in this matter, we can conclude that the government has not been successful in a possibly more significant issue. Alcoholism in youth would result in the productive potential of youths going to waste, resulting in a tremendous decline in labour supply. Thus, we can conclude that enforcement has only been partially successful in reducing the external cost imposed on society through a reduction in consumption.

³⁶ Singapore Police Force, *Road Traffic Situation Statistics 2008*, 2008, http://www.spf.gov.sg/stats/traf2008_concern.htm (accessed 12th Jan 2010)

³⁷ Review, *The Straits Times*, *The Price of Teen Drinking*, 10th April 2010, http://newslink.asiaone.com/user/OrderArticleRequest.action?order=&_sourcePage=/WEB-INF/jsp/user/search_type_result.jsp&month=04&year=2010&date=10&docLanguage=en&documentId=nica_ST_2010_15662086

³⁸ Editorial, *The Straits Times*, Eisen Teo, *Teens gather for 'picnics' – with booze/Unfazed despite risks*, 05/04/2009, http://newslink.asiaone.com/user/OrderArticleRequest.action?order=&_sourcePage=/WEB-INF/jsp/user/search_type_result.jsp&month=04&year=2010&date=05&docLanguage=en&documentId=nica_ST_2010_15613739

Conclusion:

In conclusion, we can see that the government attempts to address the issue of information failure have met with limited success, and have therefore failed to prevent overconsumption of hard liquor arising due to information failure. This can be observed from how 52% of all the respondents interviewed had little or no knowledge of the public awareness campaigns set up by the government to warn against binge drinking, and by the high percentage of respondents who had little or no knowledge about the negative impacts of hard liquor consumption.

Also, we can conclude that the government's measure to reduce consumption of hard liquor via taxation has succeeded only to a certain extent. Taxation has had a very minor impact on the demand for alcohol, with expense being a very minor deterrent to people who consume hard liquor. This phenomenon can be attributed to hard liquor's highly addictive nature and inelastic demand; even sharp increases in price through high taxation would therefore be successful to a limited extent in reducing consumption. However, the current high level of taxation **may** be successful in reducing alcohol consumption amongst youth, since expenditure on alcohol constitutes a large proportion of their expenditure. Yet, this possible plus point would also be undermined in the future if the excise and custom duties fail to rise in tandem with Singapore's rising income levels.

Lastly, we can conclude that the government's measures to reduce the welfare loss due to overconsumption of hard liquor through enforcement have been partially successful. While these measures have resulted in a fall in the number of drink-driving fatalities and accidents and a simultaneous increase in the number of people successfully apprehended for driving under the influence, government efforts

have not been adequately enforced with regards to the minimum age law. As shown by various newspaper sources quoted throughout this extended essay, underage consumption of hard liquor is becoming a more commonplace thing in Singapore, a fact that can be clearly attributed to less-than-optimal enforcement by the Singapore Police Force.

Limitations of this investigation:

Firstly, the sample population used for the survey may have been too small relative to the number of drinkers in Singapore; the answers of a 100 people cannot conceivably reflect the preferences and motivations of the Singapore population as a whole. Secondly, hard liquor's price elasticity of demand may be overstated in this investigation, since a significant proportion of survey respondents came from the >\$10 000 income bracket. Third, secondary data relevant to the public education campaigns were not available, and thus all analysis of their effects had to be carried out with the assumption that the sample population surveyed represented the entire population of Singapore to a large degree of accuracy. As a result, the extent of information failure as represented in this discussion may be overstated. A possible solution for this would be to hire the services of a research firm, so as to gain a larger collection of survey results from people of all income brackets in equal representation, ensuring that no one factor is overstated and to increase the validity of the conclusion. Also, assessing this research using the theory of market failure would mean that the external cost of binge drinking would have to be quantified; this could result in it being either overestimated or underestimated, and not

contemporaneous³⁹. Thus, intervention could be successful or unsuccessful depending on these parameters.

³⁹ Refer to Appendix E

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Appendix

Annex A - Current and New Excise Duties for Liquor

<u>HS Code</u>	<u>Description</u>	<u>Current Excise Duties</u>	<u>New Excise Duties</u>
21069062	Alcoholic preparations to be used as raw material, for the manufacture of alcoholic beverages, in other forms	\$82 per kg	\$90 per kg
21069065	Composite concentrates of alcoholic preparations, for the manufacture of alcoholic beverages, in other forms	\$82 per kg	\$90 per kg
22030090	Beer and Ale	\$3.10 per litre	\$2.70 per litre
22041000	Sparkling Wine	\$10.40 per litre	\$9.50 per litre
22060020	Sake (Rice Wine)	\$59 per litre of alcohol	\$70 per litre of alcohol
22060050	Shandy of an alcoholic strength by volume exceeding 1% but not exceeding 3%	\$1.30 per litre	\$1.40 per litre
22089010	Medicated samsoo of an alcoholic strength by volume not exceeding 40% vol	\$53 per litre of alcohol	\$70 per litre of alcohol
22089020	Medicated samsoo of an alcoholic strength by volume exceeding 40% vol	\$53 per litre of alcohol	\$70 per litre of alcohol
22089030	Other samsoo of an alcoholic strength by volume not exceeding 40% vol	\$53 per litre of alcohol	\$70 per litre of alcohol
22089040	Other samsoo of an alcoholic strength by volume exceeding 40% vol	\$53 per litre of alcohol	\$70 per litre of alcohol
22089050	Arrack and pineapple spirit of an alcoholic strength by volume not exceeding 40% vol	\$55 per litre of alcohol	\$70 per litre of alcohol
22089060	Arrack and pineapple spirit of an alcoholic strength by volume exceeding 40% vol	\$55 per litre of alcohol	\$70 per litre of alcohol
33021020	Odoriferous alcoholic preparations of a kind used for the manufacture of alcoholic beverages, in other forms	\$82 per kg	\$90 per kg

Annex B: Legislation Regarding Intoxicated behaviour in Public Misconduct in public by a drunken person

510. Whoever, in a state of intoxication, appears in any public place, or in any place which it is a trespass in him to enter, and there conducts himself in such a manner as to cause annoyance to any person, shall be punished with imprisonment for a term which may extend to 6 months, or with fine which may extend to \$1,000, or with both.

Annex C: Legislation regarding Penalties assigned to Drink-Driving

Penalties

First Time – Drink driver will be fined between \$1000/- and \$5000/- or six months imprisonment.

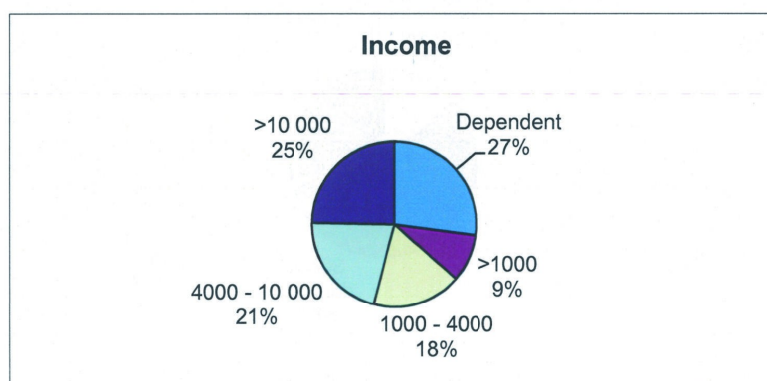
Second Time – Drink driver will be fined between \$3000/- and \$10,000/- fine and imprisonment for a term of up to one year.

Repeated Time – Drink Driver will face enhanced punishment up to 3 times the penalty, a maximum of \$30,000/- fine and three years' imprisonment.

Offenders causing death or serious injuries can also be caned up to 6 strokes.

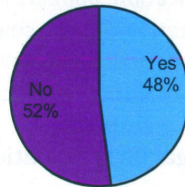
All those convicted will be disqualified from driving for at least 1 year, even if they have not caused any traffic accidents.

Annex D: Survey Questions with responses

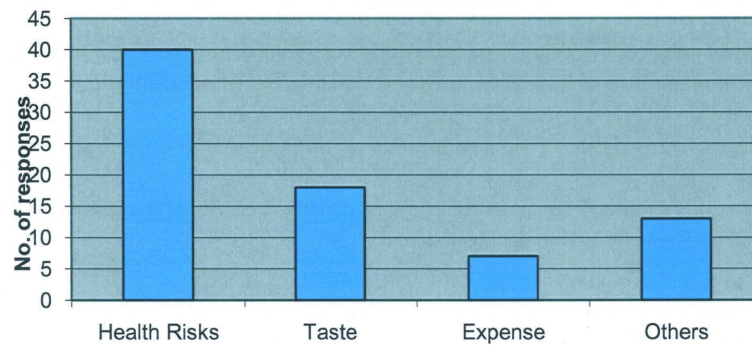


How effective are government policies in reducing overconsumption of hard liquor?

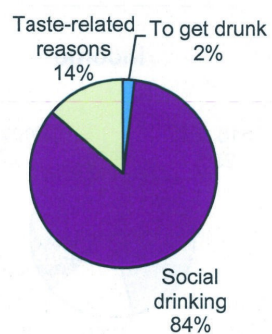
Question 2: Do you drink hard liquor (i.e. anything that is >15% alcohol by volume)?



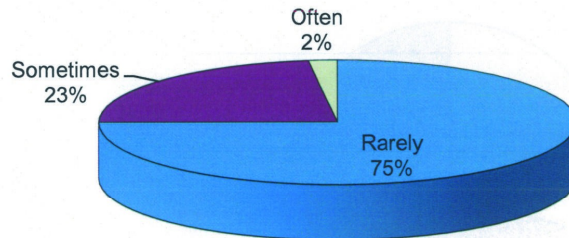
Question 3: As a non-drinker, why do you abstain from hard liquor?



Question 4: Why do you drink hard liquor?

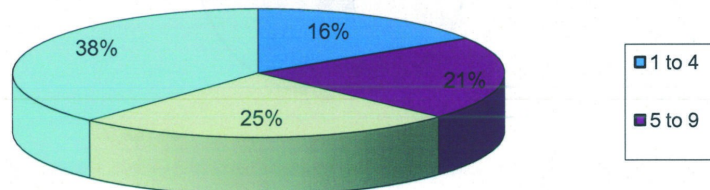


Question 5: How often does your consumption of hard liquor lead to drunkenness?



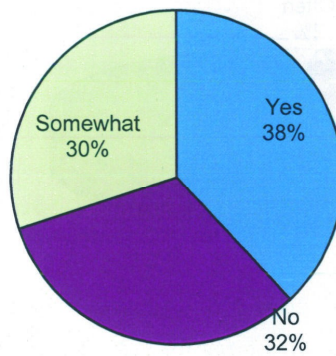
Question 6: Binge drinking causes slurred speech, headaches, slower reaction time, impaired thinking and judgment, gastric problems, possible unconsciousness, insomnia, hangover, memory loss, severe brain damage, Cirrhosis (rupturing) of the liver, liver cancer, impotence, peptic gastric ulcers, coma and death, as well as foetal alcohol syndrome and menstrual irregularities in women. How many of these effects were you aware of?

Question 6: How many of binge drinking's negative impacts were you aware of?

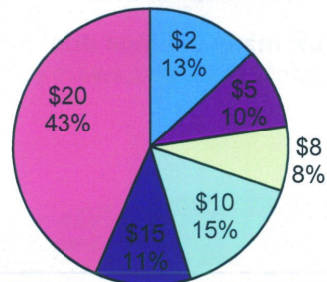


How effective are government policies in reducing overconsumption of hard liquor?

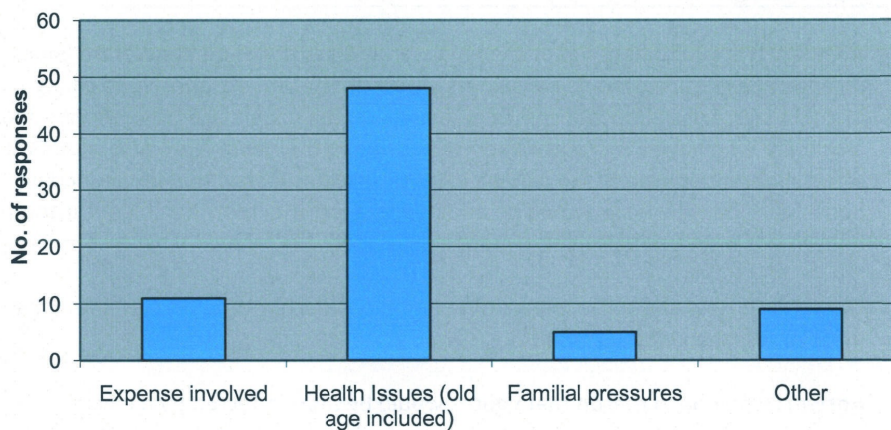
Question 7: Are you aware of government measures and policies aimed towards reducing consumption of alcohol? (e.g. campaigns promoting moderate drinking, taxes, etc.)



Question 8: What is the maximum increase in the price of hard liquor for which you would not change your current purchasing and consuming habits?



Question 9: If you were to cease drinking sometime in the future, what, in your opinion, would be the most likely reason for you to do so?



Question 10: In your opinion, which would be the most successful measure in reducing alcohol consumption?

