

**\*Project Title:** *Facilitating Alcohol Control Law Development in Vietnam through Evidence*

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## Contents

I. Executive Summary .....	3
II. The research problem .....	4
III. Progress towards milestones .....	6
IV. Synthesis of research results and development outcomes.....	11
IV.1 The research results by the research project’s objectives .....	11
IV.2 The involvement of the research users.....	21
V. Methodology .....	22
VI. Project Outputs.....	25
VII. Problem and challenges.....	25
VIII. Administrative Reflections and Recommendations .....	26

## I. Executive Summary

This report is summarising the works and the main results from the research project “*Facilitating Alcohol Control Law Development in Vietnam through Evidence*” conducted by HealthBridge and its partners in Vietnam from March 1 2015 to June 1 2016.

The overall goal of this research project was to strengthen the alcohol control legislative environment in Vietnam through generating the evidence that will support the development, and ultimately the implementation, of a strong national Alcohol Control Law and Excise Tax Law. The specific objectives of this project are: 1) To generate an evidence base of existing national policies and international best practices related to alcohol tax and price policies, in support of the government’s desire to amend the Excise Tax Law in a way that is supportive of alcohol control; 2) To generate evidence about alcohol affordability and its determinants over time, including the likely impact of tax increases on alcohol consumption; 3) To generate evidence about industry strategies and practices related to alcohol advertising in Vietnam and to identify barriers and challenges for the enforcement of and compliance with current and future bans on alcohol advertising and marketing; and 4) To generate evidence about the opportunity costs of alcohol use and the link between alcohol abuse and poverty.

Four research components were designed and carried out to meet 4 specific objectives, including: 1) Review of existing tax and price policies and international best practices on alcohol taxation; 2) Research on alcohol affordability and the impact of tax increases on alcohol product consumption; 3) Assessment of alcohol advertising and industry strategies in Vietnam, and identification of barriers and challenges for the enforcement of and compliance with current bans on alcohol advertisement and marketing; and 4) Opportunity costs of alcohol use. Except for component 3 (which was conducted by Hanoi School of Public Health under a direct contract with IDRC) the remaining three research components were conducted by HealthBridge (HB) and its partners.

As of the completion date for this research project, six studies have been carried out and the research reports have been developed, including 1) The literature review on “Alcohol taxation and price policies in Vietnam and the world”; 2) The study on “Vietnam's alcohol tax policy in the context of trade integration”; 3) The research on “Estimation of price and income elasticities of demand for alcohol and beer in Vietnam”; 4) The study on “Price and affordability of alcohol in Vietnam in the period 1998-2016”; 5) The research on “Modeling the impact of alcohol tax”; and 6) The research on “Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam”. Additionally, two manuscripts on “Estimation of price and income elasticities of demand for alcohol and beer in Vietnam” and “Impoverishment effect of regular alcohol consumption in developing countries: the case of Vietnam” have been developed

and submitted to *Addiction Journal* and are waiting for their review. The factsheets and Power Point presentations on “Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam” were developed and disseminated through advocacy workshops.

The presentation of the research findings contributes to increase policy makers’ knowledge on the need for a strong Alcohol Control Law and Law on Excise Tax and from that motivate their support for the passing of these Laws with strong contents.

## II. The research problem

There is little comprehensive information related to national alcohol expenditure and consumption available in Vietnam. There are, on the other hand, a number of piece-meal studies which suggest that alcohol expenditure and consumption has become increasingly problematic. According to the *2002 Vietnamese National Health Survey*, 43% of males and 2% of females had consumed alcohol during the week prior to the survey. The most recent national survey on risk factors of non-communicable diseases (NCDs) reported that 80.3% of males aged 25-64 and 11.2% of females in the same age group are current alcohol consumers.<sup>i</sup> A 2003 survey conducted among youth and adolescents revealed that 69% of boys and 28% of girls had consumed alcohol; 26% of the participants had been drunk at least once during the previous month.<sup>ii</sup>

A 2005 national review demonstrated that per capita annual alcohol consumption in Vietnam doubled between 1990 and 2000, from 0.75 litres to 1.33 litres.<sup>iii</sup> Since then, consumption has increased even faster. According to WHO data, average per capita alcohol consumption by adult Vietnamese for the period 2003-2005 was 3.8 litres (of which 2.7 litres is unrecorded alcohol) and for period of 2008-2010 was 6.6 litres which is higher than average per capita alcohol consumption globally (6.2 litres in 2010). Vietnam has the third highest alcohol consumption in the Southeast Asia region.<sup>iv</sup> WHO projected that annual average per capita alcohol consumption will increase to 8.7 litres in 2015, to 10 litres in 2020, and 11 liters in 2025.<sup>v</sup>

International evidence demonstrates that the harmful use of alcohol poses serious health and economic burdens. The health effects of alcohol abuse include a long list of cancers, cardio-vascular diseases, psychiatric disorders and injuries. Adverse social consequences commonly associated with alcohol consumption include impaired road safety, domestic violence, and crime.

In May 2008, the World Health Assembly adopted the *Global Strategy to Reduce the Harmful Use of Alcohol*.<sup>vi</sup> Like tobacco control, evidence for international best practice demonstrates that the most effective methods to control the harmful use of alcohol include: i) limiting access through licensing and bans on sales to minors; ii) anti-drunk driving policies; iii) high taxes and prices; iii) marketing and advertising bans; v) education; and vi) addiction treatment.<sup>vi</sup>

A 2007 policy review of alcohol control-related legislation showed that the Vietnamese government has adopted a number of individual policies designed to reduce the harmful use of alcohol; these include excise tax application, retail licensing, sales restrictions or bans, advertising limitations, and product quality control.<sup>vii</sup> The main limitations identified by the review included: i) weak implementation and enforcement mechanisms; ii) complexity and controversy related to the licensing process; iii) no coverage of home-brewed products; iv) poor compliance with the advertisement ban, particularly at points-of-sale; v) weak smuggling control; (vi) lack of effective drunk driving restrictions or bans on on-duty government employees drinking; and (vii) no comprehensive alcohol control law.

The Vietnamese Government is developing a National Alcohol Control Law and plans to present it to the National Assembly for approval by sixth plenary session of its XIV term in 2018. This proposed Law will bring together the existing piece-meal policies (except for tax) under a single legal instrument. HealthBridge is currently supporting the Ministry of Health, which is in charge of coordinating the law drafting process, to conduct a comprehensive review of the specific legislative environment in which the alcohol control law will be developed and supporting them in developing the strong draft of Alcohol control Law.<sup>1</sup>

The alcohol (excise) tax policy, on the other hand, is regulated through the Excise Tax Law; it was revised and passed by National Assembly in November 2014. The 2014 Excise Tax Law came into effect in January 2016. According to the revised Law, there is increase in excise tax rates for all kinds of alcohol. The tax rate of alcoholic degree over 20% will be increased from 50% to 55% of factory price, alcohol degree under 20% will be increased from 30% to 35% of factory price, beer will be increased from 50% to 55% of factory price and this increase started from 1<sup>st</sup> Jan 2016. This “modest” tax rate increase is anticipated is not effective enough to meet the public health objective. This “failure” to meet the public health objective is explained mainly by a strong opposition from the industry and its supporters but also by ineffective advocacy due to the lack of local evidence, including evidence on alcohol affordability over time; the effective level of tax increase needed from a public health perspective and to address the negative socio-economic impacts of alcohol use and how alcohol consumption contributes to poverty in Vietnam.

The Ministry of Finance has submitted the proposal to revise the 2014 Excise Tax Law and is waiting whether the Government and National Assembly will approve the plan. The evidence to answer the above questions are important to support the upcoming Excise Tax Law reform.

HealthBridge has a long tradition of successful tobacco control experience in Vietnam. Together with its partners, it has successfully advocated for the development and passage of a national

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<sup>1</sup> The review covers all policies except tax, as the tax policy will not covered by alcohol law but by the excise tax law.

tobacco control law.<sup>viii</sup> A multi-sectoral approach has been the guiding strategy of HealthBridge's activities in Vietnam; thus, in tobacco control, HealthBridge (HB) worked with a large circle of partners that included the Ministries of Finance (MoF), Ministry of Health (MoH), the National Assembly (NA), professional organizations, and the media.

HB has a rich experience in conducting advocacy-oriented research that would provide the evidence necessary for policy advocacy. Recent research that has proven to be instrumental in policy development include studies on tobacco affordability and the impact of tobacco tax policies, a cigarette price survey, the opportunity costs of smoking, and the health costs attributable to smoking. HB has also established strong relationships with the representatives of many agencies responsible for policy development at the MoH, the Government Office, and the NA, as well as with mass organizations that play a key role in both research and advocacy. In 2009, HealthBridge partnered with international research institutions to conduct a study on the quality of alcohol products consumed in Vietnam.<sup>ix</sup> It has also investigated public awareness of the relationship between alcohol abuse and cancer.<sup>x</sup> Recognized as a reliable NGO partner working in the area of NCD control, HB has been requested by the NA and MoH to contribute to the development of an Alcohol Control Law. This research project demonstrates HB's commitment to provide the necessary technical support. This research project was developed and conducted collaboratively with HB's partners in Vietnam to respond to the government's request.

### III. Progress towards milestones

**Project duration:** Originally the project duration was 33 months, from 1 March 2014 to 1 December 2016. However, during the project implementation, we saw the opportunity to carry out extra work that complemented our current research. With approval from IDRC, we had a 6 month non-cost extension then the project duration was extended from 1 March 2014 to 1 June 2017. The extra works include:

- **Updating the study on price and income elasticity of beer and wine in Vietnam:** Under the component 2 of the research project, the study on price and income elasticity of beer and wine in Vietnam was conducted in 2015 using the available dataset of VLSS 2010. In 2016, the dataset of VLSS 2012 was released then we updated the study with this new dataset.
- **Publication:** The study on "*Price and income elasticity of beer and wine in Vietnam*" and the study on "*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*" was the first ever conducted in Vietnam and if they are published in the international journal then there will be additional advantages for using the findings for advocacy in Vietnam.

- **Further dissemination of the studies’ findings** to variety target groups with focus on policy makers from related Ministries, Government Office and National Assembly, CSO and media. Ministry of Health plans to accelerate the process of Alcohol Control Law development then dissemination of study/advocacy activities is the priority for year 2017.

**Progress towards milestones:**

All components under this research project have been completed by the project-end date. Regarding dissemination of the research findings, the findings of the study on “*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*” has been disseminated and used in advocacy for stronger content in the Alcohol Control Law. The findings from all research components of this research project will also be used as evidence to advocate for revision of the Excise Tax Law from now to 2019.

MOH is submitting the draft of the Alcohol Control Law to the Government Office and National Assembly and has proposed to include alcohol control law into the 2018’s legislative documents development agenda of National Assembly (this itinerary actually has some delay compared to original plan). Besides, MOF is also submitting the plan to revise Excise Tax Law to Government Office and National Assembly to propose putting in the 2018’s agenda of legislative documents development of National Assembly. Therefore, the rest of year 2017 to 2018 is the time to disseminate the research findings to policy makers and media. The findings of this research project are available in the right time for dissemination. There are two workshops we planned to organize with the Ministry of Health (one workshop) and the National Assembly (one workshop) that have not been conducted so far due to the changes in the government plan. We plan to conduct these in the third and fourth quarter of 2017. We will integrate the dissemination of the research findings into the consultative meetings and workshops which organize by DOL, our partners, and to our current media contacts.

Below is the list of work completed during the 39 months of project implementation by the project completion date. They are:

*Component 1: Review of existing tax and price policies and international best practices on alcohol taxation*

*Brief description of the study* · This review involves: i) describing the current alcohol tax structure as it applies to different types of alcohol products (typically, beer, wine and spirits, both domestic and imported) in Vietnam, together with international agreements, of which Vietnam is a signatory, that may impact on the direction of alcohol taxation now and in the future; and ii) reviewing

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international best practices and lessons learned about alcohol taxation, especially from countries in the region.

- HealthBridge and Department of Tax Policy, Ministry of Finance co-implement this review.

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*Works has been done by research completion date* • There are two reports developed under this research component: 1) The literature review report on “*Alcohol taxation and price policies in Vietnam and the world*”. The reports are in English and Vietnamese (Appendix 1.1a & 1.1b); and 2) The report on “*Vietnam's alcohol tax policy in the context of trade integration*”. The report is in English (Appendix 1.2a).

*Component 2: Research on alcohol affordability and the impact of tax increases on alcohol product consumption. Two studies are being carried out: 1) Research on alcohol affordability; and 2) Research on the impact of tax increase on alcohol product consumption.*

*The research on alcohol affordability*

*Brief description of the study* • The study used the Relative Income Price (RIP) measure developed by Blecher and Van Walbeek as well as the “minimum wage” method. The RIP is defined as the percentage of per capita GDP (or of minimum wage) needed to purchase one liter of an alcoholic product. The higher the RIP, the less affordable the alcohol products are.

- HealthBridge carried out this study with the technical inputs from General Statistics Office.

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*Works has been done by research completion date* • The study was conducted and the report on “*Price and affordability of alcohol in Vietnam in the period 1998-2016*” was developed in English and Vietnamese (Appendix 2.1a & 2.1b).

*The research on the impact of tax increases on alcohol product consumption:*

*Brief description of the study* • This component adopts the simulation model recently introduced by Van Walbeek<sup>xi</sup> for tobacco, which estimates the quantitative impact of an excise tax change on cigarette prices, cigarette consumption, smoking prevalence, smoking intensity, excise tax revenue, industry revenue, and smoking-related mortality. This model is applied to alcohol to assess the

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impact of tax increase on alcohol retail price, consumption, and government revenue. The input data include: the average excise tax as a percentage of average alcohol retail price, the value-added tax, the alcohol price and income elasticity of demand, the percentage increase in the excise tax, drinking prevalence and drinking intensity.

- To provide input data for this study, a study on “*Price and income elasticity of beer and wine in Vietnam*” was conducted using data from the *Vietnam Household Living Standard Survey Series* (VHLSSs). A group of consultants including Dr. Nguyen Thu Hien from University of Trade and Mr Pham Ngoc Toan, from Institute of Labor Science & Social Affairs (ILSSA), Ministry of Labor, Invalids and Social Affairs (MOLISA) were invited to conduct this analysis under the technical direction of Hana Ross from School of Economics, University of Cape Town, South Africa and Grieve Chelwa from Southern African Institute for Policy Analysis and Research (SAIPAR), University of the Witwatersrand, Harvard University.
- HealthBridge and the Department of Tax Policy, Ministry of Finance co-implement the study to estimate the impact of tax using the Van Walbeek model. The study was conducted with technical input from Dao The Son from University of Trade.

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*Works has been done by research completion date*

- The study on “*Price and income elasticity of beer and wine in Vietnam*” was conducted and the report is available in English and Vietnamese (Appendix 2.2a & 2.2b). The manuscripts of this study was developed by Hana Ross and Vietnam research team, submitted to Addiction journal and is waiting for the Journal’s response. (Appendix 2.2c)
- The study on “*Modeling the impact of alcohol tax*” was conducted and the report was developed and available in English (Appendix 2.3)

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*Component 3: Assessment of alcohol advertising and industry strategies in Vietnam, and identification of barriers and challenges for the enforcement of and compliance with current bans on alcohol advertisement and marketing* This component is conducted by the Hanoi School of Public Health under a separate contract between HSPH and IDRC

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*Component 4: Opportunity costs of alcohol use*

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- Brief description of the study*
- This component involves an investigation of household expenditures on alcohol versus expenditures on basic needs (education, food, and health care) and of the relationship between alcohol consumption and other socioeconomic factors. Expenditure data per household are taken from the *Vietnam Household Living Standard Survey 2010*. Comparisons are made between different income groups and by geographical and urban/rural regions. Average prices of basic goods come from the General Statistics Office and are used to estimate the opportunity costs of alcohol consumption.
  - Ms. Nguyen Thac Minh is the principal investigator for this component.
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- Works has been done by research completion date*
- The study on "*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*" was conducted and the research report was developed and got comments from HealthBridge. The report is available in English. (Appendix 4.1a)
  - The manuscripts "*Impoverishment effect of regular alcohol consumption in developing countries: the case of Vietnam*" was developed and submitted to Addiction journal. (Appendix 4.1b)
  - The Power Point Presentation of the study was developed and disseminated in consultative and media workshops. (Appendix 4.1c). Currently, the Vietnamese Government is developing the Alcohol Control Law and the findings of the study "*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*" were disseminated to the drafting Committee of Alcohol Law and other related Government's members through the consultative workshops co-organized by HealthBridge and the Department of Legislatives, and the Ministry of Health. Two workshops were organized, including: 1) The workshop on "*Introducing research evidence on the alcohol consumption situation in Vietnam and the draft Alcohol Control Law*" organized on September 29, 2016; and 2) The workshop on "*Advocating for the Alcohol Control Law*" organized on November 11, 2016.
  - In addition, the media is used as a channel to disseminate our research findings to the policy makers (knowledge users). HealthBridge in
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collaboration with the Vietnam Journalist Association organized a media workshop to provide journalists with updated alcohol control information on January 08, 2015. The workshop included findings from the study “*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*”. More than 100 representatives from the central and local newspapers, broadcasting agencies and government agencies participated in the workshop. Within 3 days after the workshop was organized, around 30 news articles on the workshop were published in online and printed national and local newspapers. The factsheet of this study was developed and printed in Vietnamese. (Appendix 4.1d). The factsheets were distributed in above consultative workshops and some other workshops, including: 1) The workshop on “*Integrating gender issue into Alcohol Control Law*”, organized by HealthBridge in collaboration with Department of Legislation on November 30, 2016; and 2) The workshop on “*Occupational safety, environmental safety and public health message to 2<sup>nd</sup> Meeting Session, National Assembly term XIV*”, organized by NCDs-VN Alliance on October 15, 2016.

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## **IV. Synthesis of research results and development outcomes**

### **IV.1 The research results by the research project’s objectives**

There are four research components comprised of six studies were carried out under the research project to meet these 4 project specific objectives. In this section, we will present the main findings of these six studies by project objective:

**Objective 1: To generate an evidence base of existing national policies and international best practices related to alcohol tax and price policies, in support of the government’s desire to amend the Excise Tax Law in a way that is supportive of alcohol control.**

Two studies were conducted under this objective: 1) The literature review on alcohol taxation and price policies in Vietnam and the world; and 2) The study on Vietnam's alcohol tax policy in the context of trade integration. The main findings of these studies are below:

**1.1. The literature review on alcohol taxation and price policies in Vietnam and the world (component 1).**

There are some types of tax applied on alcohol products, including import tax, value- added tax, and excise tax.

In Vietnam, the tax on alcohol products currently applied are the following:

- Value added tax (VAT): has been applied in Vietnam since January 1, 1999. Since 2004, alcohol beverages (both domestically produced and imported) are subject to VAT at the rate of 10% at all stages of importation, production and trade
- Import tax: Before 1991, Vietnam applied the Law on Export Tax and Import Tax of Trade. In 1991, Vietnam issued the Law on Export Tax and Import Tax replacing the Law on Export Tax and Import Tax of Trade. The year 1991 Law has been amended in 1993, 1998 and 2005. By 2016, the National Assembly promulgated the Law on Export Tax and Import Tax No. 107/2014 / QH13. According to current regulations, imported liquors, spirits or wines are applying the import tax rate from 45% to 55% depending on type, for beer the import tax rate is 35%. In the signed Vietnam trade commitments, the import tax rates for alcohol and beer in these commitments are lower and higher than the normal tax rates depending on different signed FTAs.
- Excise tax: Alcohol beverages have been subjected to excise tax since the first issuance of Excise tax law in 1990. The revision of excise tax rate has been made through revision of Excise Tax Law in 2003, 2005, 2008, and recently in 2014. The amended Excise tax law of 2014 (effective since 01/01/2016) pushed up the rate for beer as well as wine and liquor as follows:

<b>Alcohol products</b>	<b>Excise tax rate (%)</b>
<b>Wine and liquor</b>	
a) Wine and liquor with ABV above 20%	
From Jan 1 <sup>st</sup> , 016 to Dec 31, 2016	55
From Jan 1 <sup>st</sup> , 2017 to Dec 31 <sup>st</sup> , 2017	60
Since Jan 1 <sup>st</sup> , 2018	65
b) Wine and liquor with ABV lower than 20%	
From Jan 1 <sup>st</sup> , 016 to Dec 31, 2017	30
Since Jan 1 <sup>st</sup> , 2018	35
<b>Beer</b>	
From Jan 1 <sup>st</sup> , 016 to Dec 31, 2016	55
From Jan 1 <sup>st</sup> , 2017 to Dec 31 <sup>st</sup> , 2017	60
Since Jan 1 <sup>st</sup> , 2018	65

In ASEAN countries, alcohol excise is levied in a variety of ways including: Specific/volumetric taxation (according to strength of the product measured in litres of pure alcohol), Specific/unitary taxation (according to the total volume of liquid in the product); Ad valorem tax, and Mixed/hybrid taxation. A number of ASEAN countries still rely on the ad valorem excise tax system for alcohol products. When looking at a broader regional level in Asia Pacific, no country outside of ASEAN (except for Bangladesh) uses the ad valorem tax system. European countries levy excise taxes on alcoholic beverages by specific tax rates and by hectolitre produced by the company during the year. Small independent producers will be subject to lower preferential tax rates. Similarly to ASEAN countries, alcohol excise is levied in a variety of ways in African countries.

Research found that the minimum price policy is applied in about 10% of countries (out of 165 countries, WHO 2014).

The alcohol price and tax policy is considered the most effective measure for controlling the harmful effects of alcoholic beverages. International experience shows a tendency to set up a simple and transparent alcohol tax system using the specific tax calculation method to alcohol which has the clear benefits expressed in reducing administrative costs, reducing the risk of corruption, ensuring equity and humanity, create stability and sustainability for the tax system and budget revenue.

## **1.2. The study on Vietnam's alcohol tax policy in the context of trade integration (Component 1)**

Vietnam has been active in negotiating and signing new Free Trade Agreements (FTAs) with its partners. Vietnam has signed 11 bilateral and multilateral Free Trade Agreements, including ASEAN Trade in Goods Agreements (ATIGA), ASEAN-China Free Trade Agreement (ACFTA), ASEAN-Korea Free Trade Agreement (AKFTA), Vietnam-Korea Free Trade Agreement (VKFTA), ASEAN-Japan Comprehensive Economic Partnership Agreement (AJCEP), Vietnam-Japan Economic Partnership Agreement (VJEPA), The ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), the ASEAN-India Free Trade Agreement (AIFTA), the Vietnam-Chile Free Trade Agreement (VCFTA), and the Free Trade Agreement of Vietnam - Eurasia Economic Union (VNEAEUFTA).

Negotiations for two important agreements have been concluded, namely the Vietnam-EU Agreement (December 2, 2015) and the Trans-Pacific partnership Agreement (October 5, 2015). These are new generation FTAs with broad and deep commitment. In addition to commitments on liberalization of trade in goods and services, participating countries are committed to other areas such as government procurement, labor, environment, intellectual property, state-

owned enterprises. The conclusion of the negotiation of these two agreements marked Vietnam's most important integration since the accession to the WTO, which is considered a driving force to promote foreign investment in Vietnam.

Agreements still under negotiation include: FTA Vietnam-EFTA (Switzerland, Norway, Iceland and Liechtenstein), the ASEAN Regional Comprehensive Economic Partnership Agreement with six countries Partner (RCEP), and ASEAN-Hong Kong FTA. In addition to economic interests, FTAs with these partners also contribute to the enrichment of Vietnam's trade and political relationships with other countries.

To guide the implementation of signed FTAs, the Ministry of Finance has issued circulars on Vietnam's Special Preferential Import tax rate Schedule: Circular No.162/2013/TT-BTC dated November 15, 2013 on the Vietnam-Chile Special Preferential Import Tariff, Circular No.165/2014/TT-BTC, 166/2014/TT-BTC, 168/2014/TT-BTC, 169/2014/TT-BTC on November 14, 2014 on the Special Preferential Import Tariff tax rate schedule for ASEAN, ASEAN-China, ASEAN-Korea, ASEAN-Australia-New Zealand, ASEAN-India for the period of 2015-2018, Circular No.24/2015/TT-BTC, Circular No.25/2015/TT-BTC dated February 14, 2015 on the Special Preferential Import Tariff tax rate schedule for ASEAN-Japan, Vietnam-Japan for the period 2015-2019, Circular No.44/2015/TT-BTC dated 30 March 2015 amending the Special Preferential Import Tariff tax rate schedule for ASEAN-Korea for the period 2015-2018.

In most of the FTAs Vietnam has signed, the average import tax liberalization is about 90% of all import tax lines, except for the ASEAN Agreement (ATIGA) which is an intra-bloc with an approximate liberalization commitment of about 98%. On the roadmap, the completeness time for these FTAs is: ATIGA (2018), followed by ACFTA (2020) and AKFTA (2021). In 2015, the level of import tax liberalization of Vietnam with FTA partners is considerable: for ATIGA is about 93%, for ASEAN-China is about 84%, for ASEAN-Korea is about 78% and for ASEAN-Japan is about 62%. Accordingly, many commodities having large import quality/value from ASEAN, China and South Korea will enjoy 0% tax from 2015 such as iron and steel, fertilizers, electronic products, trucks, household appliances and machinery device...

These FTAs and import tax on alcohol beverages committed under these FTAs are described briefly as the following:

(1) **Trans-Pacific partnership (TPP)**: TPP was initiated in 2005 by the original 4 member countries that are Brunei, Chile, Singapore and New Zealand and now include 12 members. TPP was officially launched in March 2010, and Vietnam joined in November 2010. On October 2015, all 12 countries have officially concluded TPP negotiations and would conduct their own legal review and technical/procedure works. For alcohol beverages, Vietnam commits to eliminate all import tax in the 3rd year after the agreement comes into effect for the sake, for the

remaining alcohol beverages it is in the 11th year after the agreement becomes effective, for others it is in the 12<sup>th</sup> year.

- (2) **ASEAN – China Free Trade Agreement (ACFTA):** ACFTA was signed in November, 2004 in Laos, MoU between Vietnam and China signed on July, 2005 in China. The agreement has been effective since Jan 1<sup>st</sup>, 2006. Vietnam’s commitment on import tax cuts within the ACFTA is divided into three categories including: Early Harvest Program (EHP), Sensitive Table (ST), Normal Table (NT). Alcohol beverages are on the sensitive list however their committed import tax rate was 5% in 2015 and 0% in 2020
- (3) **ASEAN - Japan Comprehensive Economic Partnership (AJCEP), Vietnam – Japan Economic Partnership Agreements (VJEPA):** April 2008, ASEAN and Japan signed the Agreement on Comprehensive Economic Partnership (AJCEP). AJCEP is considered a comprehensive free trade agreement (FTA) in many areas, including trade in goods, services, investment and economic cooperation. In December 2008, Vietnam and Japan signed Economic Partnership Agreements (VJEPA). The agreement has been effective since October 2009. On the issue of taxes, Vietnam’s Special Preferential Import Tariff tax rate schedule for AJCEP and VJEPA was regulated in Circular 24/2015/TT-BTC and Circular 25/2015/TT-BTC respectively. However, alcohol beverages are on the Highly Sensitive List (HSL), their import tax rates remain high at 65% and would be reduced to 50% in 2025. It is noteworthy in these Agreements that import tax rate on alcohol beverages between Vietnam and Japan are higher than normal MFN import tax rate in Vietnam, therefore alcohol beverages imported under these Agreement from Japan to Vietnam are taxed higher than without these FTA agreements.
- (4) **ASEAN - Australia - New Zealand Free Trade Agreement (AANZFTA):** On 27<sup>th</sup> Feb, 2009 ASEAN, Australia and New Zealand signed the Free trade Agreement to establish the ASEAN - Australia - New Zealand Free Trade Agreement (AANZFTA). The Agreement started effective from Jan 2010. Alcohol beverages are on the Highly Sensitive List (ST2), their import tax rates remain high at 80% and would be reduced 40% to 40% in 2022. In this Agreement, import tax rate on alcohol beverages between Vietnam and Australia and New Zealand are higher than normal MFN import tax rate in Vietnam, therefore alcohol beverages imported under this Agreement from Australia and New Zealand to Vietnam are taxed higher than without this FTA agreement.
- (5) **Vietnam – Chile Free Trade Agreement (VCFTA):** Vietnam - Chile Free trade agreements (VCFTA) was to be signed in November 2011 between Vietnam and Chile. The agreement has been officially effective since Jan 2014. To implement the Agreement of VCFTA, Ministry of Finance issued Circular 162/2013/TT-BTC on the Special Preferential Import Tariff tax rate schedule for VCFTA. Since alcohol beverages are on the sensitive list with high protection, their

import tax rate maintained high at 53% and would be reduced to 40% in 2029. Like AANZFTA, AJCEP and VJEPA, committed import tax rate on alcohol beverages between Vietnam and Chile is higher than the current import tax MFN of Vietnam, so wines and beers imports from Chile to Vietnam have higher tax liability than without the FTA commitment.

- (6) **Vietnam – EU Free Trade Agreement (EVFTA):** EVFTA is a new generation of FTA between Vietnam and 28 EU member states. EVFTA, along with TPP, the two FTAs are Vietnam’s highest level of commitment until now. On Jan 2015, EVFTA officially concluded negotiations. Currently, the two sides are conducting a review of the written agreement and processing further procedures for the agreement to be effective in 2018. Currently, for Vietnam, this Agreement is being submitted to the President and National Assembly to adopt, after adoption, the Ministry of Finance will issue a circular guiding the Special Preferential Import Tariff tax rate schedule for EVFTA (EVFTA Schedule). Vietnam committed to cut import tax to 0% for EU’s wine, spirits, beer, pork and chicken after 10 years.
- (7) **The ASEAN – India Free Trade Agreement (AIFTA):** The ASEAN-India Trade in Goods Agreement was signed in August 2009 and entered into force on 1 January 2010. The Agreement would be effective by 2016. To implement the Agreement of AIFTA, the Ministry of Finance issued Circular 169/2014/TT-BTC on the Special Preferential Import Tariff tax rate schedule for AIFTA. Since alcohol beverages are on the sensitive list with high protection, their import tax rate maintained high at 65% and would be reduced to 50% in 2024. Like AANZFTA, AJCEP, VJEPA and VCFTA, committed import tax rate on alcohol beverages between Vietnam and India is higher than the current import tax MFN of Vietnam, so wines and beers imported from India to Vietnam have higher tax liability than without the FTA.
- (8) **The ASEAN – Korea Free Trade Agreement (AKFTA) and Vietnam - Korea Free Trade Agreement (VKFTA):** The ASEAN-Korea Free Trade Agreement was signed in 2006 and entered into force in 2007, without Thailand. After Thailand joined in, the Agreement was signed by all 11 member countries. The recently signed Vietnam – Korea FTA came in effect in 2016. To implement the Agreement of AKFTA, VKFTA, Ministry of Finance issued Circular 167/2014/TT-BTC, 201/2015/TT- BTC on the Special Preferential Import Tariff tax rate schedule for AKFTA, VKFTA. There are no agreement on alcohol beverages, (expressed by \* in the Import tax schedule). It means that MFN import tax rate will be applied for alcohol beverages imported from Korea to Vietnam and applying the import tax rate of 50% in 2021.
- (9) **ASEAN Trade in Goods Agreement (ATIGA):** ATIGA was signed in Hua Hin on 26 February 2009 during the 14th ASEAN Summit Meeting and came into force of the ASEAN Trade in Goods Agreement (ATIGA) on 17 May 2010. To implement the Agreement of ATIGA, Ministry of Finance issued Circular 161/2011/TT-BTC on the Special Preferential Import Tariff

tax rate schedule for ATIGA for the period of 2012-2014, Circular 165/2014/TT-BTC on the Special Preferential Import Tariff tax rate schedule for ATIGA for the period of 2015-2018. The import tax rate for beers and wines is 5% from 2015 to 2018.

**Objective 2: To generate evidence about alcohol affordability and its determinants over time, including the likely impact of tax increases on alcohol consumption**

There were three studies carried out under this objective, including: 1) The study on affordability of alcohol in Vietnam; 2) The study on estimation of price and income elasticities of demand for wine and beer in Vietnam ; and 3) The study on modeling the impact of alcohol tax.

**2.1. The study on affordability of alcohol in Vietnam (Component 2)**

The annual average price (VND/liter) for alcohol products such as “Hanoi Vodka” (39.5% alcohol), homemade rice spirit (35% alcohol), French red wine (9-14% alcohol) and locally produced red wine (14-16% alcohol) increased by 2.5, 2.9, 3.0 and 3.1 times respectively between 1998 and 2016. For beer products, the average price of types of beer in 2016 increased by 1.8-2.0 times compared to 1998. Tiger canned beer (5% alcohol) and draft beer (4-6% alcohol) were the two types of beer with the sharpest increase (double). Canned Heineken beer (5% alcohol) and bottled Heineken beer (5% alcohol) had the second highest increase (1.9 times). The two remaining products of bottled Saigon beer (4.9% alcohol) and bottled Hanoi beer (4.2% alcohol) increased by 1.8 times.

On average, the percentage of wages required for purchasing 1 liter of “alcohol” (four types of wine/spirit and five types of beer) tended to decrease from 1998 to 2016. By 2016, this percentage dropped sharply by 3 times for all four types of wine. Meanwhile, in 2016, this percentage decreased by about 4 times in all beer products compared to 1998. Similarly, the percentage of per capita GDP to purchase 10 liters of all four types of wine/spirit and five types of beer tended to decrease from 1998 to 2016. This means that the purchasing power for both wine/spirit and beer increased over the period 1998-2016. Thus, in terms of real price, alcohol is now more affordable in Vietnam.

**2.2. The study on estimation of price and income elasticities of demand for wine and beer in Vietnam (Component 2)**

We found that demand for beer and wine in Vietnam is price and income inelastic with the price elasticities of -0.318 and -0.283 and the income elasticities of +0.159 and +0.401, respectively. The quality of wine and beer consumed increases with the size of the household budget and among urban

households, but declines with the size of the household. Households with older and more educated head of household tend to buy more expensive spirit, but cheaper beer. The beer and the wine budget share declines as the total household expenditures increase, and with the years of schooling of the household head. Urban and ethnic minority households as well as households headed by male devote larger budget share to spirits. The result of the study can be used to predict the impact of tax policy on beer/wine consumption and on tax revenue in Vietnam.

### **2.3. The study on “Modeling the impact of alcohol tax” (Component 2)**

#### **Summary of excise tax change as regulated in 2014 Excise Tax Law**

<b>Taxes on beer and alcohol products</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Excise tax rate</b>						
- Beer	50%	55%	60%	65%	65%	65%
- Alcohol products (<=20%)*	25%	30%	30%	35%	35%	35%
- Alcohol products (>20%)*	50%	55%	60%	65%	65%	65%
<b>VAT</b>	10%	10%	10%	10%	10%	10%

*Note: \* Alcohol products mentioned here not include beer*

#### **Impact of tax change on retail price (inflation adjusted)**

In 2016 when the excise tax increased, only alcohol products (<=20%) had a real price increase (18%) while real prices for beer and alcohol products (>20%) decreased. The decrease in average beer prices is very significant, by 9%.

For the period of 2017 to 2020, prices are simulated using the inputs and assumptions as mentioned in section of methods below. In 2017, real prices for beer and alcohol products (<=20%) are projected only to increase by 3.5% when there is an increase in the excise tax rate for these products. Real price for alcohol products (<=20%) does not increase as no tax change for that categories in that year. In 2018, the real price of beer and alcohol products will increase slightly from 3.4%-4.2%. In 2019 and 2020, there will be no real price increase as no tax change is planned yet.

#### **Impact of tax change on sales**

In 2016, given the excise tax increased for all types of beer and alcohol products, the sales still increased. In general, for the period of 2016 – 2020, total sales of beer and alcohol products are projected to increase. That shows that the amount of tax change is not enough to keep pace with inflation and income growth.

In the year with 5 percentage point of tax rate increase, sales for beer will still increase by 6% while sale for alcohol still increase by 1%.

### **Impact of tax change on government revenue**

Government tax revenue will increase every year with or without tax change. In 2016 there were an increase in excised tax rate for both beer and alcohol products and the government tax revenue increased by 5%. and the government revenue is projected to increase by around 11% per year for 2017 and 2018 and 4.9% in 2019 and 2020. Alcohol products has the highest increase in tax revenue due to: 1) Low price elasticity; 2) High income elasticity.

**Objective 3: To generate evidence about industry strategies and practices related to alcohol advertising in Vietnam and to identify barriers and challenges for the enforcement of and compliance with current and future bans on alcohol advertisement and marketing. This study was carried out by Hanoi School of Public Health then was reported separately to IDRC.**

**Objective 4: To generate evidence about the opportunity costs of alcohol use and the inherent link between alcohol abuse and poverty.**

The study on the opportunity costs of alcohol use was carried out under this objective.

#### **4.1. The study on the opportunity costs of alcohol use (Component 4)**

##### *Descriptive analyses of household characteristics, and consumption and expenditure patterns*

- 57.72% of the households had regular spending on alcoholic beverages.
- Drinking households tend to live in rural areas, in the North or Central region of the country, and have higher proportion of male members in the family. Thirty nine percent of the members in drinking households are male compared to 32% in non-drinking households.
- Household heads in drinking households are more likely to be male, at middle ages, and from the ethnic minorities.
- Heads in drinking households tend to have higher education. The proportion of the head of household having “primary education or less” of drinking household group is 11% lower than that of non-drinking household groups, while the proportion of those with secondary education is higher and the proportion of those with “college or above” is similar.
- Richer families are more likely to contain at least a regular drinker. Only 14% of drinking households are at the poorest quintile while 28% of non-drinking households are at the poorest

quintile. Economic quintiles 2, 3, 4, and 5 account for higher proportions in drinking than non-drinking ones. Even with conditional or regular drinking, there is positive correlation between either consumption or spending with household's economic condition and educational level. The monotonic relationship between the consumption and spending with income and education was found. The richer and more educated the household, the more alcoholic beverages they buy and more money they spend on alcohol.

#### Households directly impoverished by drinking habit

After subtracting alcoholic spending from total household expenditure, the number of households who lived below the poverty line increased from 1,106,588 to 1,189,286 (Table 2). 82,695 non-poor households dropped to poverty because their remaining expenditure after excluding alcoholic spending was not sufficient to buy basic goods and services. Thus drinking impoverished an additional 82,698 households, or raised the number of households living below the poverty line by approximately 7.5%.

#### Comparison of essential spending per capita between drinking and non-drinking households by economic quintile

- Essential spending (food, healthcare, education) are statistically higher in non-drinking than drinking households, except for food spending per capita in the rich group.
- Food spending per capita in drinking households at economic quintiles 1 - 4 is equivalent to 81-89% of that in non-drinking households.
- Healthcare spending per capita in the drinking group is 30-52% lower than that in the non-drinking one.
- The average investment in children's schooling in drinking families accounts for only 60-83% of the amount spent on their counterparts' schooling in non-drinking families. Moreover, the difference is largest in the lowest income group.
- Within the same income group, poor drinking households spend only 81% of what poor non-drinking households spend on food. But healthcare and education expenses between the two groups at the poorest quintile are strikingly different. Education spending of the drinking group is 60% of that of the non-drinking, and this figure in healthcare is 48%.

#### Opportunity cost of alcoholic spending in terms of needed commodities in households who live below the poverty line

- With the mean alcoholic spending of 733,058 VND per household, the aggregate amount allocated in alcoholic beverages by all Vietnamese households reaches more than 16,372 billion

VND, equivalent to 982,369 USD. This amount of money can be used to buy approximately 1,770,000 tons of rice at 2010 price, enough to feed nearly 21 million people in a year.

- While drinkers in drinking families consume one glass of alcohol or beer every two and a half day, their children consume less than one glass of milk per year, using 236 ml as a standard glass. If all drink expenses in drinking households are used to buy milk for children, each child will have one glass of milk every three days instead of one glass of milk per year.
- 76% of households not living below the poverty line own at least one motorbike. However, only 53% of household living below the poverty have a motorbike, or 520,096 do not have any motorbike. The total drink expenses by those poor families can actually buy them approximately 65,000 motorbikes at the average price that other poor families bought this vehicle, reducing the number of households without motorbikes by 12.5%.

## **IV.2 The involvement of the research users**

The Department of Legislatives, Ministry of Health (DOL) is in charge of coordinating and drafting the Alcohol Control Law. HealthBridge had informed DOL when HealthBridge and its partners started to conduct the studies. During the implementation of the study, HealthBridge has been updating the Department of the project's progress. HealthBridge and DOL collaborated in conducting the consultative workshops on commenting the draft Alcohol Control Law in which the research findings of the study on *“Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam”* was presented (as mentioned above).

Tax Policy Department, Ministry of Finance (TPD) is government body in charge of developing legal documents on taxation, providing guidelines on implementation, and carrying out research studies related to taxation. TPD worked closely with HealthBridge and consultants to conduct the studies under the component 1, review of existing tax and price policies and international best practices on alcohol taxation; and component 2, the research on the impact of tax increases on alcohol product consumption.

## **IV.3 The development outcomes of the research project**

HealthBridge Country Director cum the Project Director has been invited by Department of Legislatives, Ministry of Health to be the member of technical advisory group for the drafting Committee of the Alcohol Control Law. Through participating in the consultative workshops and directly commenting on every draft of the Law, the findings from this research project are used as evidence to support and advocate for strong contents of the Law.

The presentations of research findings in the consultative workshops and media workshops raised awareness among policy makers of the economic burden of alcohol use in Vietnam and the need to have the Alcohol Control Law with strong contents.

## **V. Methodology**

The methodology of six studies under this research project are described below. There was no difference in the methodology applied in these studies in comparison with proposal approved by IDRC, except for the study on affordability of alcohol in Vietnam which is mentioned below.

### **1. The literature review report of alcohol taxation and price policies in Vietnam and the world (Component 1)**

The information on the policy and law on alcohol tax and price was collected and analyzed from: i) legal documents related to taxation and price of alcohol provided by the Tax Policy Department, Ministry of Finance; and 2) Online search engines (e.g. Google) were used to search for relevant information. Key search words included: Alcohol, Taxation or taxes, Tax rates, Alcoholic beverages, Price policy. In total 70 documents have been reviewed.

### **2. The study on Vietnam's alcohol tax policy in the context of trade integration (Component 1)**

The information on Vietnam's Free Trade Agreement commitments was collected and analyzed by reviewing legal documents related to taxation and price of alcohol and the copy of international trade agreement document provided by the Tax Policy Department, Ministry of Finance and from Multilateral Trade Policy Department, Ministry of Industry and Trade.

### **3. The study on affordability of alcohol in Vietnam (Component 2)**

The average retail price data collected in June 2014 and the monthly CPI of beer and wine products collected for period 1998 to 2014 from General Statistics Office (GSO), the nominal price of 11 alcohol products was calculated for a year during the period 1998 to 2013. To estimate the affordability of alcohol from 1998 to 2016, the study used the Relative Income Price (RIP) measure developed by Blecher and Van Walbeek as well as the “minimum wage” method. The RIP is defined as the percentage of per capita GDP (or of minimum wage) needed to purchase one litre of an alcoholic product. The lower the RIP, the more affordable the alcohol products are.

Originally, we planned to conduct the price survey to collect the retail price of alcohol products then the CPI of beer and wine products for the period 1998-2014 collected from GSO estimate the price

for the same period. However, GSO can collect the retail price of alcohol products through their network at the province level, so instead of conducting a survey we contracted GSO to collect this data.

**4. The study on estimation of price and income elasticities of demand for wine and beer in Vietnam (Component 2)**

This study estimates the price and income elasticities of demand for beer and wine in Vietnam using a linear approximation of Almost Ideal Demand System (AIDS) and data from the Vietnam Household Living Standards Survey 2010, 2012 and 2014.

**5. The study on “Modeling the impacts of alcohol tax” (Component 2)**

The study adopted methods from the simulation model introduced by Van Walbeek<sup>xii</sup> for tobacco . The description of the model is :

**Input data:** The model used 2015 and 2016 retail price and sales to access the real impacts of 2014 Excise Tax Law and they are the base data for projecting the impacts from 2017-2014.

- 2015 and 2016 retail price data of alcohol products which was collected from General Statistics Office
- The sale data of alcohol product was collected from Ministry of Finance. The sale data can be broken down in to 3 categories (beer, alcohol <=20% and alcohol >20%), cannot be broken down to more detail market share by brands with different prices.
- Elasticities: Price and income elasticity were estimated in the research (going to be published) by Nguyen Thu Hien et.al (2016). (see Table. Summary of input and assumptions)

**Assumptions:**

- Retail margin was assumed equal to 25%, based on recent Ministry of Finance study on tobacco products.
- Inflation and income growth forecast are from General Statistics Office and IMF reports.

**Summary of inputs and assumptions**

	<b>MARKET AND MACRO ASSUMPTIONS</b>					
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Price elasticity</b>						
Beer	-0.283	-0.283	-0.283	-0.283	-0.283	-0.283
Alcohol (<=20%)	-0.318	-0.318	-0.318	-0.318	-0.318	-0.318
Alcohol (>20%)	-0.318	-0.318	-0.318	-0.318	-0.318	-0.318

<b>Income elasticity</b>						
Beer	1.336	1.336	1.336	1.336	1.336	1.34
Alcohol (<=20%)	0.469	0.469	0.469	0.469	0.469	0.469
Alcohol (>20%)	0.469	0.469	0.469	0.469	0.469	0.469
CPI	0.6%	4.7%	3.7%	3.9%	4.0%	4.0%
GDP/Capita	5.6%	5.0%	5.1%	5.1%	5.1%	5.1%

## **Methodology**

The impact of tax change is modeled using income and price effect.

- Price effect:
  - o Price will change due to inflation and tax change
  - o Inflation is assumed to fully lead change in taxable price
  - o Tax rate change will lead to change in final retail price (= taxable price + excise tax + VAT + retail margin)
  - o Any changes in inflation adjusted price will lead to change in sale using the estimated price elasticities for each of 3 product categories.
- Income effect
  - o For a developing country like Vietnam, income per capita grows rather significantly every year.
  - o Income growth will lead to consumption increase, calculated using income elasticity estimated by Nguyen Thu Hien et.al.
- Total effect:
  - o Total effect to sale = price effect + income effect

### **6. The study on the opportunity costs of alcohol use (Component 4)**

The study used the dataset of the Vietnam Household Living Standard Survey 2010 (VHLSS), a cross-sectional household survey of a representative sample of the population conducted by the General Statistics Office of Vietnam with the sample of approximately 9,400 households (37,000 non-institutionalized individuals). Logit regression was used to estimate the relationship of personal characteristics with drinking habits. Generalized Linear Model (GLM) with gamma distribution and log-link function was used to estimate the characteristics associated with amount of household spending on alcohol.

## VI. Project Outputs

The main outputs produced under this research project are as the following:

1. The literature review report on “*Alcohol taxation and price policies in Vietnam and the world*” in English and Vietnamese (Appendix 1.1a & 1.1b)
2. The research report on “*Vietnam's alcohol tax policy in the context of trade integration*” is in English (Appendix 1.2a).
3. The research report on “*Price and affordability of alcohol in Vietnam in the period 1998-2016*” are in English and Vietnamese (Appendix 2.1a & 2.1b).
4. The research report on “*Estimation of price and income elasticities of demand for alcohol and beer in Vietnam*” are in English and Vietnamese (Appendix 2.2a & 2.2b).
5. The manuscripts on “*Estimation of price and income elasticities of demand for alcohol and beer in Vietnam*” submitted to Addiction journal. (Appendix 2.2c)
6. The research report on “*Impact of alcohol tax*” is in English. (Appendix 2.3)
7. The report on “*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*” is in English. (Appendix 4.1a)
8. The manuscripts “*Impoverishment effect of regular alcohol consumption in developing countries: the case of Vietnam*” submitted to Addiction journal. (Appendix 4.1b)
9. The Power Point Presentation of the study on “*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*” is in Vietnamese. (Appendix 4.1c)
10. The factsheet of this study on “*Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam*” is in Vietnamese. (Appendix 4.1d).

## VII. Problem and challenges

The study on “*Estimation of price and income elasticities of demand for alcohol and beer in Vietnam*” took longer than originally planned due to: 1) This study was the first implemented in Vietnam by the research team so it took time for the research team to review the methodology used; 2) the acquitance of required input data also took more time than expected 3) Some further data analysis and reanalysis were made after receiving comments and technical input from Hana Ross and Grieve Chelwa when we developed the manuscripts.

There was delay in completing the study “*Estimation of price and income elasticities of demand for alcohol and beer in Vietnam*”, which delayed the study “*Assessing the impact of alcohol tax increase*” as this study needed the data inputs from the first one. At the same time, WHO Headquarters provided technical support to TPD to conduct the study on “Assessing the impact of tobacco tax increase”. To profit from this training opportunity, TPD and HealthBridge decided to apply the same model to estimate the alcohol tax impact on consumption, revenue and health consequence right after we received training from the WHO on developing modeling of tobacco tax impact. This study therefore was conducted later than originally planned, and was conducted in October 2016 to May 2017.

### **VIII. Administrative Reflections and Recommendations**

We would like to thank IDRC and the IDRC’s team who provided support to us in implementing this research project. We highly appreciate your flexibility on giving us a 6 month non-cost extension and on reallocation of the budget which enabled us to do important work on preparation/submission of two manuscripts to Addiction Journal, do updated studies, and disseminate the research findings to policy makers and media via workshops.

To enable us to conduct the dissemination workshops of the research findings to wider audiences internationally and to the policy makers during the development and passing of Alcohol Control Law and Law on Excise Tax in the coming time, we would like to request to accrue 25,000 CAD (CAD 9,000 for the open access fee for two papers submitted to Addiction journal and CAD 15,000 for conducting the dissemination workshops with MOH, NA, and Committee of Ethnic Minority Affairs) which is planned to be conducted in the third and fourth quarter of 2017.

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<sup>iii</sup> FAOSTAT, *World Drink Trends*, 2000.

<sup>iv</sup> World Health Organization, 2011, Global Status report on alcohol and health

<sup>v</sup> World Health Organization, 2014a, Global Status report on alcohol and health 2014, Geneva

<sup>vi</sup> World Health Organization, *Global Strategy to Reduce the Harmful Use of Alcohol*.  
[http://www.who.int/substance\\_abuse/alcstratenglishfinal.pdf](http://www.who.int/substance_abuse/alcstratenglishfinal.pdf)

<sup>vii</sup> National Institute of Health Policies and Strategies, *The Situation of Alcohol Abuse in Vietnam*.

<sup>viii</sup> The Vietnamese National Tobacco Control Law, which includes provisions for a tobacco control fund, was approved by the National Assembly on 18 June 2012.

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<sup>ix</sup> Lachenmeier D, Pham Thi Hoang Anh, Popova S, and Rehm J, “The Quality of Alcohol Products in Vietnam and its Implications for Public Health,” *International Journal of Environmental Research and Public Health*, 6 (2009), [www.mdpi.com/journal/ijerph](http://www.mdpi.com/journal/ijerph)

<sup>x</sup>HealthBridge, *Assessment of the Needs in Cancer Communication*. Research report (2010).

<sup>xi</sup> Van Walbeek, C. “A Simulation Model to Predict the Fiscal and Public Health Impact of a Change in Cigarette Excise Taxes.” *Tobacco Control* 19, no1 (2010): 31–36.

<sup>xii</sup> Van Walbeek, C. “A Simulation Model to Predict the Fiscal and Public Health Impact of a Change in Cigarette Excise Taxes.” *Tobacco Control* 19, no1 (2010): 31–36.

## Appendix 1.1a

# ALCOHOL TAXATION AND PRICE POLICIES IN VIETNAM AND IN THE WORLD



# ALCOHOL TAXATION AND PRICE POLICIES IN VIETNAM AND IN THE WORLD

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*Literature Review*

*The study was conducted in the framework of project “Facilitating Alcohol Control Law Development in Vietnam through Evidence” which was funded with the aid of a grant from the International Development Research Centre, Ottawa, Canada.*

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*Hanoi, May 2015*

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	2
A. INTRODUCTION.....	4
B. RESEARCH OBJECTIVES .....	6
C. RESEARCH METHODOLOGY.....	7
D. RESEARCH FINDINGS.....	8
1. Taxes applicable to alcohol products.....	8
1.1 Import tax .....	8
1.2 Value Added Tax (VAT).....	9
1.3. Excise Tax .....	9
2. Alcohol tax policy in Vietnam.....	12
2.1. Import tax .....	12
2.2. Value added tax .....	13
2.3. Excise tax.....	13
3. Worldwide Alcohol tax policies .....	15
3.1. Alcohol excise tax systems in ASEAN.....	15
3.2. Alcohol tax policy in some European countries.....	20
3.3. Alcohol tax policy in some African countries.....	24
4. International experience in tax and price policy of alcohol.....	27
4.1. Experience in raising alcohol tax and price .....	27
4.2. Experience in failure of reduction in alcohol taxes and prices .....	32
5. Minimum price policy for alcohol .....	34
5.1. Defination of minimum price.....	34
5.2. Canadian experience in minimum price policy.....	34
6. Some recommendations for alcohol related harm prevention and control policy in Vietnam ....	39
6.1. Approach to comprehensive, consistent policy development.....	39
6.2. Further reform of Excise Tax policy .....	41
6.3. Research on application of minimum price policy .....	42
E. CONCLUSION.....	43
REFERENCES .....	55

## **EXECUTIVE SUMMARY**

**Background:** In Vietnam, the total consumption of alcoholic beverages is increasing at an alarming rate. Alcohol use causes an economic and health burden to the users and society as a whole. Alcohol tax and price is one of the most effective measures to control alcohol consumption and increase government revenue.

**Objectives:** The objectives of the review include: i) To describe Vietnam's tax system for alcohol products; and ii) To examine international experiences in alcohol tax and price policy, and policy recommendations for Vietnam.

**Methods:** Information on policies and laws on alcohol tax and price was collected and analyzed from: i) Legal documents related to taxation and price of alcohol provided by the Tax Policy Department, Ministry of Finance; and 2) Online search engines (e.g. Google).

**Findings:** There are several types of tax applied to alcohol products, including import tax, value-added tax (VAT), and excise tax. Alcohol excise tax is levied in a variety of ways including: Specific/volumetric taxation; Specific/unitary taxation; Ad valorem tax; and Mixed/hybrid taxation. In Vietnam, ad valorem tax is used. The import tax rate varies for different types of alcohol products, ranging from 20% - 55%. VAT is 10%; excise tax rate for beer is 60% and effective until Dec 31, 2017 and 65% from Jan 01, 2018; for wine and spirit the rate ranges from 30%-65% depending on the percentage of alcohol.

A number of ASEAN countries still rely on the ad valorem excise tax system for alcohol products. When looking at the broader regional level in Asia Pacific, no country outside of ASEAN (except for Bangladesh) uses the ad valorem tax system. European countries levy excise taxes on alcoholic beverages by specific tax rates and by hectolitre produced by the company during the year. Small independent producers will be subject to lower preferential tax rates. Similar to ASEAN countries, alcohol excise tax is levied in a variety of ways in African countries. The minimum price policy is used in about 10% of countries (out of 165 countries, WHO 2014).

Alcohol price and tax policy is considered the most effective measure for controlling the harmful effects of alcoholic beverages. International experience shows the tendency of setting up a simple and transparent alcohol tax system, using the specific tax calculation method, which has clear benefits on reducing administrative costs, reducing the risk of corruption, ensuring equity and humanity, and creating stability and sustainability for the tax system and budget revenue.

**Recommendations:** The combination measures that lead to increase in alcohol price, including tax increase with specific tax calculation and minimum price, are positive and

effective solutions to minimize the harmful effects of alcohol use, and also contribute to increasing government revenues and savings within the state budget.

## A. INTRODUCTION

Alcohol use is the direct or indirect cause of more than 200 diseases (WHO 2014a), and globally is one of the top 10 risk factors for death (WHO 2009). According to the World Health Organization (WHO), in 2012, there were 3.3 million deaths caused by alcohol-related diseases and injuries, accounting for 5.9% of all deaths worldwide (WHO 2014a). Remarkably, alcohol use is associated with about 20% of road traffic deaths, 30% of deaths from esophageal cancer, liver cancer, epilepsy, and homicide. It is the cause of death in about 50% of cirrhosis cases (WHO 2009a). Alcohol abuse<sup>1</sup> also exacerbates many other negative issues, such as crime and violence, which bring economic burdens to individuals, families and society.

It should be noted, that most consumers were not fully aware of the costs of using alcohol. Because the market price of alcohol does not cover all external expenditures – it means that the true cost is actually higher and consumers and society must compensate for the damages caused by alcohol abuse. Although it is difficult to determine internal costs and external expenditures, many studies have shown that the costs associated with the harmful effects of alcohol are often under-estimated (Navarro et al. 2011). Thus, actual evidence on the negative impact of alcohol abuse on individuals and society show that it is necessary to have government intervention policy, especially through price and tax policy. According to WHO (2010), price and tax policy is among the most effective measures to limit the harm caused by abuse of alcoholic beverages<sup>2</sup>.

Consumers, including heavy drinkers and young people, are often sensitive to changes in beverage price. It is possible to use tax policy to reduce the use of alcohol in people under the legal drinking age, to prevent a progression to heavy alcohol intake and/ or heavy drinking, and to influence consumers' drinking habits. Increasing the price of alcoholic beverages is one of the most effective interventions to reduce the use of alcohol at harmful levels. An effective and efficient tax system, combined with tax collection and enforcement, are factors related to the success of pricing policies that aim to reduce the harmful use of alcohol.

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<sup>1</sup> *The abuse of alcohol and other alcoholic beverages mean using alcohol and other alcoholic beverages at inappropriate levels, volume, or objects leading to alterations of body function or appearance of clinical signs which is harmful to users' health (children, pregnant women or breastfeeding mothers use alcohol and other alcoholic beverages; people at the age of 60 or elder who drink more than 14 units of alcohol per week, more than 2 units of alcohol per day, more than 1/2 units of alcohol per hour; people under the age of 60 who drink more than 21 units of alcohol per week, more than 3 alcohol units/ day, more than 1 units of alcohol per hour) or using alcohol and other alcoholic beverages in the cases prohibited by law (Decision No. 244/QĐ-TTĐ).*

<sup>2</sup> *In this report, the terms “alcoholic beverage” and “alcohol and beer” are used interchangeably, with emphasis on the harmful effects of alcoholic products; while the extent of alcoholic beverages is wider, including spirits, beer and other alcoholic beverages.*

In Vietnam, the total consumption of alcoholic beverages is increasing at an alarming rate. According to the World Health Organization, the consumption per capita among Vietnamese adults has increased from 0.75 liters/ person in 1990 (FAOSTAT 2000) to 3.8 liters/ person in the period 2003 -2005, and 6.6 liters/ person in the period 2008-2010 (WHO 2011). The total consumption of alcohol in Vietnam has increased from 2.8 billion liters in 2012 to over 3 billion liters in 2013. Vietnam has become the third largest consumer of beer in Asia, behind only Japan and China. Alcohol consumption has also increased more than 7.5% within just one year, from 63 million liters in 2012, to nearly 68 million liters in 2013 (Light Industry Department and Vietnamese Ministry of Industry and Trade 2014)<sup>3</sup>. In addition, the proportion of adolescents and young adults who have used alcohol in Vietnam has also increased rapidly. According to the National Survey of Adolescents and Young Adults (SAVY1 and SAVY2), the prevalence of alcohol use among young men increased from 69% in 2003 to 80% in 2008, and increased from 28% in 2003 to 37% in 2008 among young women (GSO 2010).

Given this increase in alcohol consumption in Vietnam, the HealthBridge Foundation of Canada conducted research on the current policy environment on the pricing and taxation of alcohol, as well as the tariff structure in the region and the world. The results will help relevant authorities to develop effective policies and legislation on the pricing and taxation of alcohol. The research findings will inform the relevant authorities by identifying the barriers and challenges associated with current policies, and will recommend alternatives and opportunities for reform in order to limit consumption and reduce the harm caused by alcohol in Vietnam

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<sup>3</sup> This figure has not reflected the amount of alcohol distilled by the people themselves, this amount in 2015 is estimated about 200 million liters (Thuy Hanh 2016).

## **B. RESEARCH OBJECTIVES**

- 1) To describe Vietnam's tax system for alcohol products (beer, wine and spirits, including both local and imported products);
- 2) To examine international case studies in alcohol control and preventing alcohol related harms, specifically the role of taxation and price policy, and policy recommendations for Vietnam.

### C. RESEARCH METHODOLOGY

Ø The research methods for collecting and analyzing secondary data.

The information collected includes:

- Vietnam's price laws and regulations on tax that apply to alcohol products;
- International strategies and scientific research on price and tax policies that apply to alcohol products;
- Documents on tax and price policies that apply to alcohol in several different countries.

Ø The information collected from sources:

- The system of legal documents related to the policy and law in Vietnam on taxation and the price of alcohol provided by the Tax Policy Department - Ministry of Finance.
- Online search engines (e.g. Google) were used to search for relevant information. Key searchwords included:

*Alcohol*

*Taxation or taxes*

*Tax rates*

*Alcoholic beverages*

*Price policy*

The initial review of documents involved screening the heading and content summary. Documents with a heading and/or summary suitable for the purpose of this research were selected for analysis and summary according to the research objectives. In total, more than 70 documents were reviewed and summarized.

## **D. RESEARCH FINDINGS**

The overall finding from research on international experiences highlights that general policy options for controlling alcohol consumption and preventing alcohol-related harm often focuses on a number of key solutions:

- Price and tax policy;
- Regulations on alcohol sale points;
- Changing environmental and cultural factors related to drinking;
- Regulations that limit the alcohol consumption permitted to operate motor vehicles;
- Strict control and regulations on advertising and promotion of alcohol;
- Communication and education campaign;
- Early treatment and intervention of alcohol abuse.

In order to achieve the greatest impact, countries need to synchronously implement the above solutions. Price and tax policy is considered one of the most effective solutions, as it interferes with the selling price, consumption behavior and actively therefore contributes to reducing the harm caused by alcohol abuse. Effective use of the taxation system to influence price is key to the proactive price intervention policy for alcoholic beverages. In fact, increasing the tax rate at various levels can have different effects, depending on the impact level of the tax and its corresponding price increases.

According to the framework recommended by WHO, for tax and price policy, the government could consider the following measures:

- (1) Set up the effective tax and price policy
- (2) The retail price should be indexed by inflation and income growth
- (3) Strict control and regulations on advertising and promotion of alcohol in order to reduce the alcohol price
- (4) Set up minimum price for alcohol products
- (5) Promote to use of drinks without alcohol
- (6) Stop and/or prohibit the privilege for alcohol production.

Within the scope of this overall study, the main contents will focus on clarifying the solutions (1): establishing an effective excise tax system, and solution (2): establishing a minimum price for alcohol, within the price and tax policy group.

### **1. Taxes applicable to alcohol products**

#### **1.1 Import tax**

Almost all countries levy a tariff on imported alcohol products.

An import duty is a tax on a selected commodity imported in a country and destined for domestic consumption (i.e., the goods are not in transit to another country). In general,

import duties are collected from the importer at the point of entry into the country. (WHO, 2010b).

Import duties also vary among countries. Countries impose high import duties either to protect their domestic industry or to generate government revenue. (WHO, 2010b).

In recent years, given bilateral, regional and global trade agreements, import duty rates have been reduced dramatically by many countries. Free trade agreements usually require participating countries to gradually phase out these duties. As import duties are phased out, the government loses the revenue they generate. Replacing import duties with excise taxes or increasing excise taxes can compensate for these revenue losses. (WHO, 2010b)

## **1.2 Value Added Tax (VAT)**

Value added tax – VAT is a consumption tax put on the value added of goods and services arising in the process of production, circulation to consumption. In which, total VAT collected in all stages equals the VAT amount in the selling price to the consumers.

In some countries like Australia, Canada, New Zealand and Singapore, this tax is called "goods and services tax" (GST), i.e. the tax on goods and services; in Japan, it is referred to as a "consumption tax".

In principle, VAT is a general tax on consumption of goods and services, leaving relative prices unaffected, and as such has great practical appeal for revenue generation. It minimizes the amount of detailed information needed for tax administration as only the total value of sales needs to be recorded. Tax authorities have no need to be concerned with the nature of the goods and services traded. (WHO, 2010b)

VAT rates applied for alcohol vary by countries, ranging from 3% to 40% (WHO 2004).

## **1.3. Excise Tax**

### **1.3.1. Definition**

Excise taxes are taxes on consumption of special goods and services in the list specified by the state, in order to regulate the direction of production and consumption of each country in each period.

The stipulation of goods and services subject to excise taxes depends on the regulatory policy of each country, deriving from the economic and social situation, regulatory policy, production and consumption guidelines of the State, consumption customs and practices on a number of goods and services in each period of specific socio-economic development. In general, goods and services subject to excise taxes usually contain the following characteristics:

- Some goods and services have high selling prices;
- The demand for these goods is often less elastic than the price;
- Goods that can be harmful to health, or have negative effects on the environment.

Alcohol is often subject to excise taxes in countries around the world. According to the WHO, in 2012, about 92% of nations (out of 167) applied excise taxes on alcohol (WHO, 2014b).

### **1.3.2. Type of excise taxes applicable to alcohol products**

Excise taxes applicable to alcohol products may be of the following type: specific tax, ad valorem tax and compound tax.

#### **a. Specific tax**

“Specific tax”, or tax by volume or quantity, is levied according to the physical characteristic of the product.

Where alcohol beverages are to be taxed on a specific excise basis, two options exist (APTF 2013):

(1) An excise rate based on the volume of liquid in the product (for example litres of beer, wine or distilled spirits).

This is the simplest approach, and is also known as the single tax (Richupan 2005). However, if the volume of pure alcohol is not being used for calculation, but instead the total volume of the product with no consideration for the alcohol content, it does not really reflect the external factors related to the consumption of alcoholic beverages. Moreover, the tax applied on every liter of the product may have undesirable effects: consumers may prefer stronger alcoholic beverage products of lower production cost leading to lower retail prices. This is not the expected outcome for the tax policy based on human and medical views.

(2) An excise rate based on the alcohol content within the product (for example LPA within the beer, wine or distilled spirits).

This second option of ‘per litre of pure alcohol’ (LPA) best reflects the externalities associated with alcohol consumption in that the excise is levied upon the actual alcohol content. As such, the excise tax (and price to consumer) will rise in line with the alcohol strength of the beverage. The more alcohol consumed – the more excise tax is paid. The WHO (2010) has recommended specific taxation of alcohol based on alcohol content to use price as part of a strategy to curb harmful levels of consumption.

In general, specific tax rates are considered as a basis to ensure the fairness for harmful goods, as it directly addresses the "harmful" side of use, and does not depend on production costs. Specific tax rates are also considered as contributing to more stable budget revenue and increasing by consumption.

Unlike ad valorem tax, specific tax are always associated with consumption and do not vary in economic conditions such as inflation, increase in retail price. The changes in economic conditions can shift the consumption to lower cost products therefore reducing the government's budget revenue but not reducing overall consumption. This makes a difference between the actual consumption model and the health and social welfare objectives of excise taxes.

**b. Ad valorem tax**

An ad valorem excise tax is levied as a percentage of the value of the alcohol products. The value used for excise assessment (the ‘tax base’) will be at a designated point in the supply chain, such as the factory selling price, wholesale price and in some cases the retail price.

One benefit of ad valorem excise taxes is that they maintain their value in real terms, as adjustments to the tax base value recognize inflation increases to raw materials and other costs.

However, ad valorem taxes do not create certainty for governments who are often subject to fluctuations in revenue collection. A change in economic conditions, tax rates and prices can lead to what is known as “trading down”, in which consumers simply switch consumption to lower priced (and therefore lower taxed) products. Manufacturers may also adjust to market conditions such as tax burden increases by instituting practices such as cost cutting, price re-structuring and absorbing tax increases through smaller margins. All of these practices can reduce both excisable value and excise collected. (APTF 2013).

**c. Compound/Mix tax**

Compound tax is arguably the most complex, as it imposes a dual excise tax structure, including both specific and ad valorem tax rate, on producers and importers. Whilst a compound tax system includes some of the benefits attributed to a specific tax system, the existence of an additional ad valorem component can result in lower transparency and uncertainty on more revenues for government and industry (APTF 2013).

**Table 1: Implication of different tobacco tax systems (APTF 2013)**

	<b>Advantage</b>	<b>Disadvantage</b>
<b>Specific</b>	Easy to predict government revenue. Independent from industry’s price strategy. Easy to determine tax amount. Easy to administer. Consistent with both revenue and	Inflation erodes its value

	public health objectives.	
<b>Ad Valorem</b>	Automatic adjustment for inflation. Progressive rate.	Less predictable revenue stream. Difficult to determine value of products to be used as tax base. Requires significant administrative resources. Can be affected by industry's price strategy. Leads to down-trading and higher consumption of low-price brands.
<b>Compound</b>	Less fluctuation in revenue stream. Can keep up with inflation. Does not favor high- or low-priced products. Less affected by industry's price or product strategy. Consistent with public health objective.	Complex system requires significant administrative resources.

## 2. Alcohol tax policy in Vietnam

### 2.1. Import tax

Pursuant to the Import Tariff promulgated in conjunction with Circular No. 164/2013/TT-BTC dated 15/11/2013 of the Ministry of Finance, the tax rates for alcoholic beverages imported into Vietnam shall be applied as follows:

**Table 2: Import tariff for alcoholic beverages into Vietnam**

Description of goods	Tax rate (%)
<b><i>(1) Beer made from malt</i></b>	
- Black beer or brown beer	35
- Others, including ale beer	35
<b><i>(2) Wine made from fresh grapes, including fortified wines; grape must other than that of heading 20.09</i></b>	
- Lightly sparkling wine	50
- Other wines; Grape must with alcohol to prevent or inhibit the fermentation of alcohol:	50
- Other grape must:	
+ With alcoholic content by volume of not more than 15%	55
+ With alcoholic content by volume of over 15%	55
<b><i>(3) Vermouth and other wines of fresh grapes flavoured with herbs or aromatic substances.</i></b>	<b>55</b>
<b><i>(4) Other fermented beverages</i></b> (for example, cider spirit, pery spirit, honey wine); Mixtures of fermented beverages and mixtures of fermented beverages	55

with non-alcoholic beverages, not elsewhere specified or included.	
<b><i>(5) Undenatured ethyl alcohol with an alcohol content by volume of 80% or more; ethyl alcohol and other spirits, denatured, in any content.</i></b>	
- Undenatured ethyl alcohol with an alcohol content by volume of 80% or more	40
- Ethyl alcohol and other spirits, denatured, in any content:	
+ Undenatured ethyl alcohol, including methylated spirits:	20
+ Others	40
<b><i>(6) Undenatured ethyl alcohol with an alcohol content by volume of under 80%; spirits, vermouths and alcoholic beverages</i></b> (Spirits obtained from distilling grape wine or grape marc, Brandy, whiskey, rum, gin, Geneva, vodka, vermouth, reinforced tonic wine, etc.)	45

## 2.2. Value added tax

The VAT on liquors, beer and beverages of all kinds is 10%. This is in accordance to the Decree No. 209/2013/ND-CP dated 18/12/2013 which provides details and guidance on the implementation of a number of articles within the Law on Value Added Tax, and Circular No. 219/2013/TT-BTC dated 31/12/2013 of the Ministry of Finance which guides the implementation of the Law on the Value Added Tax.

## 2.3. Excise tax

The Law on Excise Tax is promulgated by the National Assembly in order to guide the production and consumption of society, regulate consumers' income for the state budget in a rational manner, and enhance the management of production and business for some goods and services.

In Vietnam, before 1/1/2010, the excise tax on beer was differentiated by the type of beer: bottled beer and canned beer are subject to the tax rate of 75% excluding cans; draft beer and fresh beer were subject to the tax rate of 30% in 2006, 2007 and 40% from 2008. Applying for WTO membership, the National Assembly passed the Law on Excise Tax No. 27/2008/QH12 stipulating the uniform application of a tax rate of 45% for all beer from 1/1/2010 to 31/12/2012, and 50% from 1/1/2013 onwards. For alcohol products, before 1/4/2009, the excise taxes were distinguished by type of alcohol: the excise tax for products with an alcohol content of 40% or higher was 65%; for products with an alcohol content from 20% to less than 40% was 30%, and for products with an alcohol content less than 20% , including fruit spirit and medicinal wines the excise was 20%. In 2014, the National Assembly increased the excise tax on alcohol products. The new tax rate is valid from 1/1/2016.

Table 3: Amendments and supplements to the excise rates applicable to alcohol products and the excise rates applicable to alcoholic beverages in Vietnam 1998-2014

<b>Products</b>	<b>Law on Excise Tax in 1998</b>	<b>First amendment and supplement in 2003</b>	<b>Second amendment and supplement in 2005</b>	<b>Law on Excise Tax in 2008</b>	<b>Amendment and supplement in 2014</b>
<b>Beer</b>	Bottled beer, draft beer: 75%	Bottled beer, canned beer, fresh beer: 75%	Uniform tax rate for fresh beer, draft beer and apply on schedule: 2006-2007: 30% From 2008: 40%	Uniform tax rate for all beer (excluding packaging value) and apply on schedule: From 1/1/2010 to 31/12/2012: 45% From 1/1/2013: 50%	Uniform tax rate for all beer (excluding packaging value) and apply on schedule: From 1/1/2016 to 31/12/2016: 55% From 1/1/2017 to 31/12/2017: 60% From 01/01/2018: 65%
	Canned beer: 65%				
	Fresh beer: 50%	Fresh beer: 30%	Bottled beer, canned beer (excluding packaging value): 75%		
<b>Alcohol</b>	Medicinal wines: 15%	Medicinal wines: 15%	< 20% alcohol, fruit spirit, medicinal wines: 20%	<=20% alcohol: 25%	<=20% alcohol: + From 1/1/2016 to 31/12/2017: 30% + From 1/1/2018: 35%
	< 20% alcohol: 20%	<=20% alcohol, fruit spirit: 20%			
	>=20 and <30% alcohol: 25%	>=20 and <40% alcohol: 30%	>=20 to <40% alcohol: 30%	>=20% alcohol: apply on schedule: From 1/1/2010 to 31/12/2012: 45% From 1/1/2013: 50%	>=20% alcohol: + From 1/1/2016 to 31/12/2016: 55% + From 1/1/2017 to 31/12/2017: 60% + From 01/01/2018: 65%
	>=30 and <40% alcohol: 55%				
	>= 40% alcohol: 70%	>= 40% alcohol: 75%	>= 40% alcohol: 65%		

### 3. Worldwide Alcohol tax policies

#### 3.1. Alcohol excise tax systems in ASEAN

WHO observed that, in general, low-income countries are more likely to lean towards an ad valorem excise system while high-income countries are less likely to do so.

In ASEAN countries, alcohol excise is levied in a variety of ways including: Specific/volumetric taxation (according to strength of the product measured in litres of pure alcohol), Specific/unitary taxation (according to the total volume of liquid in the product); Ad valorem tax, and Mixed/hybrid taxation (APTF, 2013).

A number of ASEAN countries still rely on the ad valorem excise tax system for alcohol products. However, when looking at a broader regional level in Asia Pacific, no country outside of ASEAN (except for Bangladesh) uses the ad valorem tax system (APTF, 2013).

##### 3.1.1. Excise tax bases in ASEAN (APTF 2013)

Use of Specific Rates	Use of Ad Valorem Rates	Use of Mixed Rates
Brunei Indonesia Philippines (Beer, wine) Singapore	Cambodia Laos PDR Myanmar VietNam	Malaysia Philippines (Spirit) Thailand

##### 3.1.2. Basis of excise taxation of alcohol beverages in ASEAN (APTF 2013)

Litre	Litre of alcohol	Proof Litre	Ex-factory (or CIF)	Net Retail Price
Brunei Indonesia Malaysia (beer, & wine) Philippines (beer, & wine)	Malaysia (spirits) Thailand Vietnam	Philippines Malaysia (definition only) Singapore	Cambodia Laos PDR Myanmar Thailand Vietnam	Philippines (spirits)

The common “application” such as “ex-factory” does not immediately result in a universal method for determining an excise base across ASEAN. Presently, the actual meaning of this term differs between the countries where it is in use.

##### *Definitions of “Ex-factory” used in ASEAN*

Country	“Ex-factory” definition
Cambodia	Ex-factory sales price recorded on the invoice
Laos PDR	Sale at place of production excluding excise tax
Malaysia	Price the buyer would give for the goods on purchase in the open market at the time duty is payable but will exclude any excise duty, costs, charges, expenses of transportation and storage immediately

	after removal from the place of manufacture
Myanmar	Sales receipt of the producer
Thailand	Not defined (Often set by Excise Department)
Vietnam	Selling price set by producer

### 3.1.3. Alcohol tax systems across ASEAN

#### Cambodia

By regional standards, Cambodia levies a comparatively low ad valorem excise rate on all alcohol beverage categories. Given that market volumes are dominated by beer, a higher ad valorem excise (known as the ‘Specific Tax on Certain Merchandises and Services’) of 25 per cent applies to beer. In contrast, the ad valorem excise rate on wine and spirits products is a considerably lower 10 per cent (APTF 2013).

Product Category	Excise tax rate
Beer	25%
Wine	10%
Spirite	10%

**Laos** Laos applies ad valorem rates for all categories of alcohol beverages, which start at a rate of 50 percent for lower-strength beer products. These rates increase progressively to 60 percent for wine products and 70 percent for distilled spirits beverages (APTF 2013).

Product Categor	Excise duty (as at 2012)
Beer	50%
Wine (alcohol, wine and other alcohol beverages < 15°proof)	60%
Spirits (alcohol or alcoholic beverages > 15°proof)	70%

#### Brunei

Domestic excise is the primary taxation method for the whole alcohol market in Brunei. This country does not levy Customs Duties on imported alcohol beverages. Excises are levied on alcohol beverages in both a unitary and a specific (per proof litre) method (APTF 2013).

Product Categor	Excise tax rate (as at 9 May 2007)
<i>Beer</i>	BND 30.00 per Decilitre
<i>Wine products</i>	
- Sparkling wine	BND 120.00 per Decilitre
- Other wine products ≤ 15° abv	BND 55.00 per Decilitre
- Other wine products > 15° ab	BND 90.00 per Decilitre
<i>Other fermented beverages</i>	
- Cider, perry, shandy, other (including mead)	BND 30.00 per Decilitre
- Sake (rice wine), toddy	BND 90.00 per Decilitre

<b><i>Distilled spirits</i></b>	
- Brandy, whisky, rum, tafia, gin, geneva, vodka, liqueurs, cordials, bitters	BND250.00 per Proof Decilitre
- Samsu, arrack, and pineapple spirit <=40°	BND 90.00 per Decilitre
- Samsu, arrack, and pineapple spirit > 40°	BND120.00 per Proof Decilitre

## Indonesia

Indonesia has one of the simplest alcohol tax structures of the ten ASEAN countries. Often praised by international taxation experts, Indonesia's excise structure does not distinguish between alcohol beverage categories. Indonesia utilises a vertical approach, in which three alcohol taxation categories are solely determined according to the alcohol strength of the product. As such, there is no reference to product characteristics within the alcohol tax system and excise authorities are not faced with product classification issues when determining the appropriate product category (APTF 2013).

Category (by alcohol strength)	Excise (IDR/L) Domestic Products	Excise (IDR/L) Imported Products	Luxury sales tax (removed after tax reforms from 4/2010)
Category A >20°	75.000	130.000	0%
Category B: 5° to <=20°	30.000	40.000	0%
Category C <=5°	11.000	11.000	0%

## Malaysia

Malaysia utilises one of the most complex alcohol tax structures across ASEAN. With numerous alcohol tax categories across beer, wine and spirits, Malaysia's taxation authorities face higher complexity in terms of product categorization and tax treatment. Once categorized, alcohol beverages in Malaysia could be liable for either a unitary or a specific excise rate. Furthermore, all alcohol beverages that enter the Malaysian alcohol market through official channels are liable for an additional ad valorem excise component of 15 per cent. (APTF 2013).

Product Category	Excise Duty (2006)	
	Ad valorem	Unitary (MYR/L)
Beer and stout	15%	7.40 MYR per litre
Sparkling wine	15%	34 MYR per litre
Other wine products	15%	12 MYR per litre
Other fermented beverages; (e.g. cider, perry, Sake)	15%	Various different unitary and specific rates
Spirits		
- Whisky and Brandy	15%	30MYR per litre

- Rum, Gin and Vodka	15%	30MYR per litre
- Liqueurs and cordials > 1.14°abv	15%	Various different unitary and specific rates

### Myanmar

Myanmar currently levies a Commercial Tax on alcohol beverage products, at a flat ad valorem rate of 50 percent (APTF 2013).

Product Category	Commercial Tax (as at 15 March 2012)
Beer	50%
Wine	50%
Distilled spirits	50%

### Philippines

The Philippines presently utilises an alcohol tax system based on the Net Retail Price (NRP) of the beverage category. NRP plays a key role in the alcohol tax system through: (1) Setting price tiers to determine the unitary tax rate for beer and wine products; and (2) Providing a tax base, as a component of the 'NRP per proof litre' calculation for distilled spirits products (APTF 2013).

Product Category	Excise Duty (1 January 2013)
Beer (levied according to Net Retail Price per litre of volume capacity)	
≤ PHP50.60 (per litre of volume capacity)	PHP15.00 per L
> PHP50.60 (per litre of volume capacity)	PHP20.00 per L
Sold at microbreweries, pubs and restaurants, regardless of NRP	PHP28.00 per L
Sparklingwine and champagnes (levied according to Net Retail Price per 750 ml bottle)	
≤ PHP500.00 per 750 ml bottle	PHP250.00 per L
> PHP500.00 per 750 ml bottle	PHP700.00 per L
Still wines and carbonated wines (levied according to Net Retail Price)	
< 14° abv	PHP30.00 per L
> 14° abv ≤ 25° abv	PHP60.00 per L
Fortifiedwines > 25° abv	Taxed as distilledspirits
Distilled spirits	PHP20.00 per Proof Litre + 15% of the product's NRPper Proof Litre

### Singapore

Singapore levies a high excise tax for alcohol products. Singapore's alcohol tax system reflects simplicity and transparency, whilst also providing tax equivalence between products with similar alcohol volumes (APTF 2013).

Product category	Excise duty (S\$/LPA)
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	<b>Old excise duty</b>	<b>New excise duty since 21/02/2014<sup>4</sup></b>
Beer	S\$48 per LPA	S\$60 per LP
Cider or perry	S\$48 per LPA	S\$60 per LP
Wine made from fresh grapes, Vermouth and other wine of fresh grape flavoured	S\$70 per LP	S\$88 per LP
Fermented beverages, fermented beverages mixed with non-alcoholic beverages	S\$70 per LP	S\$88 per LP
Sake, toddy, shandy, other rice wine	S\$70 per LP	S\$88 per LP
Spirits (Brandy, whiskies, rum, gin, vodka, v.v.)	S\$70 per LP	S\$88 per LP

### **Thailand**

Thailand is another country that can arguably lay claim to ASEAN's most complex and cumbersome alcohol tax system. Alcohol taxation in Thailand utilises a 'mixed' specific (per LPA) and ad valorem system, in which products are levied a specific or an ad valorem excise rate depending upon which approach results in the highest total excise duty collection (Ministry of Finance of Thailand 2013).

	<b>Tax rate (since 3/9/2013)</b>		
	The Ad Valorem rate (% of the last wholesale price)	<b>The Specific rate</b>	
		Baht per litre of pure alcohol	Baht per the quantity of 1 litre
<b>1. Fermented beverages</b>			
<b>1.1. Beer (Ceiling rate)</b>	<b>60</b>	<b>300</b>	<b>30</b>
(1) Less than 7 degree beer	48	155	8
(2) Over than 7 degree beer , collect additional tax from (1) per degree	0	0	3
<b>1.2. Wine and Sparkling wine made from grape (Ceiling rate)</b>	<b>60</b>	<b>2000</b>	<b>300</b>
(1) Less than 15 degree wine, the last wholesale price is not exaggerated 600 baht exclude VAT	0	1000	225
(2) Less than 15 degree, the last wholesale price is exaggerated 600 Baht exclude VAT	36	1000	225

<sup>4</sup> Refer to Circular No 03/2014, Singapore Customs for more details on the excise tax for specific alcohol beverage category.

(3) Over 15 degree, collect additional tax from (1) and (2) for each degree	0	0	3
<b>1.3. Local fermentation and other fermentation aside of 1.1 – 1.2 (Ceiling rate)</b>	<b>25</b>	<b>150</b>	<b>30</b>
(1) Less than 15 degree	5	70	10
(2) Over 15 degree, collect additional from (1) for each degree			3
<b>2. Distilled beverages (Ceiling rate)</b>	<b>50</b>	<b>400</b>	<b>60</b>
<i>2.1. White alcohol without other mixers or tasty alcohol</i>			
(1) Less than 40 degree	4	145	40
(2) Over 40 degree, collected additional tax from (1) for each degree	0	0	3
<i>2.2. Other distilled beverages aside of 2.1 such as mixed alcohol, tasty beverages and special beverages (brandy and whiskey and etc.)</i>			
(1) Less than 45 degree	25	250	50
(2) Over 45 degree, collect additional tax from (1) for each degree	0	0	3

In addition to the excise taxes, alcoholic beverages in Thailand are subject to local taxes (10%, 2009), taxes paid to ThaiHealth (2%, 2009) and Thai PBS (1.5%, 2009) (General Royal Thai Excise Department 2009).

### 3.2. Alcohol tax policy in some European countries

European countries levy excise taxes on alcoholic beverages by specific tax rates and by hectolitre (1 hectolitre = 100 liters) produced by the company during the year. Small independent producers will be subject to lower preferential tax rates.

For tax purposes, alcoholic beverages in Europe are classified by category: beer, wine, fermented products other than beer and wine, intermediate products, and ethyl alcohol (Table 4).

**Table 4: Classification of alcoholic beverages for tax purposes in Europe**

CN code		Classification of product categories as per Directive 92/83/EEC									
		BEER		Wine		Other fermented beverages		Intermediate products		Spirits	
2203	Beer made from malt	X									

2204	Wine made from fresh grapes, including fortified wines			X	X	X	X	X	X		X
2205	Vermouth and other wine of fresh grapes flavoured			X	X	X	X	X	X		X
2206	Other fermented beverages		X								X
2207	Undenatured ethyl alcohol of an alcoholic strength exceeding 80									X	
2208	Undenatured ethyl alcohol less than 80% abv; Spirits, liqueurs and other spirituous beverages.									X	
ABV (%)		>0.5	>0.5	>1.2 <15	>15 <18	>1.2 <10	>10 <15	>1.2 <22	>5.5	>1.2	>22
Alcohol entirely of fermented origin (Y yes; N No)				Y	Y		Y		N		
Production with no enrichment					X						

Source: London Economics 2010

EU sets out the structures of excise duties on alcohol and alcoholic beverages, the categories of alcohol and alcoholic beverages subject to excise duty, the basis on which the excise duty is calculated (Directive 92/83/EEC) and sets out the minimum rates that must apply to each category of alcoholic beverage (Directive 92/84/EEC). Member States are free to apply excise duty rates above these minima, according to their own national needs.

**Table 5: Categories and the minimum tax rates in EU**

Product	Rate expressed per	Minimum Rate
Beer	Hectolitre per degree Plato <sup>5</sup> or Hectolitre per degree alcohol	0.748€  1.87€
Wine (still and sparkling)	Hectolitre of volume	0€
Intermediate Products (e.g. port, sherry)	Hectolitre of volume	45€
Spirits	Hectolitre of pure alcohol	550€

Source: EU Commission

<sup>5</sup> Plato: hydrometer scale to measure density of beer in terms of percentage of extract by weight (1 degree Plato is equivalent to 0.4% alcohol)

The table 6 below ranks and distributes European countries into groups according to the excise tax for each alcoholic beverage. Accordingly, there are huge differences across Europe. The excise tax of beer ranges from 1.9 EUR in Bulgaria to 32 EUR/ hl/ % alcohol in finished products in Finland.

An important feature of the EU is that EU directives allow the special treatment for wines, in which excise rates can be set at zero. About half of the EU countries do not levy excises on wines. On the other hand, in other countries such as England, Northern Europe, wines are subject to quite high excise taxes of 334 Euro - 703 Euro.

The excise taxes on ethy alcohol are the highest and vary across Europe. The minimum excise tax is set at EUR 550 or 1000 EUR<sup>6</sup>. England, Ireland and the Nordic countries apply the highest tax rates; Southern European countries apply the lowest tax rates on spirits.

**Table 6: Excise taxes on alcoholic beverages in the EU in 2014 (Viktor Trasberg, 2016)**

Beer, tax/hectolitre/% alcohol of finished products				
The minimum excise tax approved by the Council: 1.87 EUR				
1.9-3.5	3.6- 5.4	5.5-7.2	7.3-23.5	23.6-52.7
Bulgaria	Slovakia	Hungary	France	Portugal
Germany	Malta	Latvia	Denmark	UK
Luxembourg	Poland	Cyprus	Slovenia	Spain
Romania	Belgium	Estonia	Netherlands	Finland (32.1)
Lithuania	Austria	Greece	Sweden	Norway Iceland
Wine, tax/hectolitre				
The minimum excise tax approved by the Council: 0 EUR				
0		3.7-84.6	84.7-334.0	334.1-703
Bulgaria	Greece	France	Estonia	UK
Germany	Italy	Poland	Netherlands	Finland
Luxembourg	Slovenia	Belgium	Denmark	Ireland (424.8)
Romania	Portugal	Latvia	Sweden	Norway
Czech R. Slovakia	Spain	Lithuania		
Malta	Croatia			
Austria	Hungary			
	Cyprus			

<sup>6</sup> Article 3.1, Directive 92/83/EEC regulate: the minimum rate of excise duty on alcohol and alcohol contained in beverages other than those referred to in Articles 4, 5 and 6 shall be fixed at ECU 550 per hectolitre of pure alcohol. However, Member States which apply to alcohol and alcoholic beverages a rate of duty not exceeding ECU 1 000 per hectolitre of pure alcohol may not reduce their national rate. In addition Member States which apply to the said products a rate of duty exceeding ECU 1 000 per hectolitre of pure alcohol may not reduce their national rate below ECU 1 000

Ethyl alcohol, tax/hectolitre

The minimum excise tax approved by the Council: 550 EUR or 1000 EUR by hectolitre of pure alcohol

562-1,064	1,065-1,291	1,292-1,642	1,643-3,534	3,535-8,999
Bulgaria	Romania	Lithuania	Estonia	UK
Croatia	Slovakia	Germany	Netherlands	Ireland
Spain	Czech R.	Slovenia	France	Finland
Italy	Hungary	Latvia	Denmark	Sweden (5,866.0)
Cyprus	Austria	Poland	Belgium	Iceland
Luxembourg	Portugal	Malta	Greece	Norway

*Note: Please see Appendix 1 for detailed information on alcohol taxation in EU countries*

### 3.3. Alcohol tax policy in some African countries

*Alcohol tax structure in some African countries (Bird & Wallace 2010)*

Countries	Import Tax	VAT/ Retail tax	Excise Tax		
			Beer	Wines	Spirits
<b>Benin</b>		18%	10%	10%	10%
<b>Botswana</b>	Malt Beer: 5% Wines: 25% Spirits: 154 c/liter	10% (ret stage)	Malt: 2.563 c/liter Sorghum: 7.82 c/liter	Fortified still: 182.5 c/liter Unfortified still: 80.7 c/liter Sparkling: 227.6 per liter	3,671 c/liter
<b>Burkina Faso</b>		18%	25%	25%	25%
<b>Burundi</b>			31% or 51% (Depending on the brand)		
<b>DRC</b>	20%	13%	< 6% alcohol: 20% > 6% alcohol: 25%	Domestic: + Sparkling: 20% + < 15% alcohol: 20% + > 15% alcohol: 25% Imported: + Sparkling: 15% + < 15% alcohol: 20% + > 15% alcohol: 20%	40%
<b>Ghana</b>			30%		25%
<b>Guinea Bissau</b>			5%		30%
<b>Kenya</b>	Beer: 30% Wines: 30% Spirits: 250 kshs/liter or 30%	16%	Beer with low alcohol content: + Domestic: 85% + Imported: 85% (CIF+ import tax) Beer with high alcohol content: 60% (both domestic and imported)	+ Domestic: 45% + Imported: 45% (CIF + import tax)	+ Domestic: 100 kshs/liter or 65% + Imported: 100 kshs/liter or 65% (CIF + import tax)

Countries	Import Tax	VAT/ Retail tax	Excise Tax		
			Beer	Wines	Spirits
<b>Lesotho</b>		15%	2.239c/liter	Fortified: 169 c/liter Unfortified: 77.82 c/liter	254.8 c/liter
<b>Malawi</b>	30%	17.5%	Opaque: 15% Others: 30%	65%	65%
<b>Mali</b>			5%	5%	5%
<b>Mauritius</b>	25-300 Rs/liter	15%	Domestic: 12.1 Rs/liter Imported: 25 Rs/liter Actual rate (effective rate) – Domestic beer: 37.8%	Domestic: 4.4 Rs/liter Imported: 30 Rs/liter	Domestic: 30-200 Rs/liter Imported: 150-300 Rs/liter
<b>Niger</b>		19%	25% (Malt beer), 45%	45%	45%
<b>Rwanda</b>	30%	18%	Domestic: 57% Imported: 22%	Domestic: 70% Imported: 70%	Domestic: 70% Imported: 70%
<b>Senegal</b>		18%	30%	30%	30%
<b>South Africa</b>	Beer and wines: 25% Spirits: 154 c/liter	14%	Domestic: 46.41 R/liter + Sorghum: 7.82 c/liter Imported: + Malt/clear beer: 46.41 R/liter + Traditional beer: 7.82 c/liter	Fortified still wine: 3.72 R/liter Sparkling: 6.16 R/liter Unfortified: 1.98 R/liter	44.67 R/liter absolute alcohol
<b>Swaziland</b>	Imported products are charged via an ad valorem duty rate of 25%	Traditional beer: 14% Other alcoholic beverages: 25%	Malt beer: 43.57 E/340 ml Traditional beer: 7.82 E/liter	Unfortified, still: 80.7 c/liter Fortified, still: 182.5 c/liter	1.184 E/750 ml
<b>Tanzania</b>	25%	20%	220.5 Tshs/liter	Domestic: >75%: 350 Tshs/liter <75%: 708 Tshs/liter Imported: 350 Tshs/liter	1.050 Tshs/liter

Countries	Import Tax	VAT/ Retail tax	Excise Tax		
			Beer	Wines	Spirits
<b>Togo</b>		18%	10%	15%	15%
<b>Uganda</b>	15%	15%	Domestic: + Malt beer: 60% + Beer not made from malt and beer uses more than 75% of domestic ingredients: 30% Imported: 60% (Malt beer)	Domestic: 60% Imported: 60%	Domestic: 60% Imported: 60%
<b>Zambia</b>	25%	17.5%	Domestic: + Opaque: 35% + Clear beer: 75% Imported: + Opaque: 35% + Clear beer: 70%	Domestic: 125% Imported: 125%	Domestic: 125% Imported: 125%

## **4. International experience <sup>7</sup> in tax and price policy of alcohol**

### **4.1. Experience in raising alcohol tax and price**

In order to generalize the scientific research of the relationship between taxes and prices with the consumption of alcohol, Patra et al. (2012) compiled and analyzed 25 studies in the United States, and 29 studies in other countries, including Australia, Canada, Denmark, Finland, Germany, Sweden, Switzerland, and the United Kingdom. Of these, 15 studies focused on the impact of taxes or prices for high risks from drinking; 28 studies analyzed the harmful effects of alcohol abuse; and 11 studies analyzed both the model of alcohol consumption and its harmful effects. The majority of the studies above focused on the impact of raising taxes, rather than reducing taxes; studied the relationship between types of structure (such as by age, gender, and drinking group) with one of the effects of alcohol abuse. General findings of Patra et al showed that: Increasing excise taxes often leads to a reduction in alcohol consumption and a reduction in the various types of harm caused by the use of alcohol, such as drunk driving, criminal arrests, cirrhosis, and death.

Assessing the effects of increased alcohol taxation in 1983 and 2002 for alcohol-related deaths in Alaska, Wagenaar et al. (2009), found that after the taxes increased, the number and percentage of deaths from alcohol decreased significantly. Cook (2007) estimated that in the US, every 10 cent increase in the excise taxes on each 01 ounce (equivalent to 28.35g) of pure alcohol, the consumption of alcohol fell by an average of 12%, accidents caused by alcohol decreased by 7%, death from cirrhosis decreased by 32%. A study by Hollingworth et al. (2006) on youth in the United States showed that, if a corresponding tax increase of \$1 per bundle of 6 cans of beer was made, the proportion of users, in the age group of 20-30 participating in "drunks" reduced by about 13-14% for women, and about 24-27% for men. Thus, the tax increase may reduce the number of deaths due to alcohol abuse, and reduce the potential death burden. The studies above have reinforced the recommendation that the increase in excise tax is a strategic and effective solution to reduce the burden of alcohol-related disease and deaths.

Other studies have also confirmed the success of tax increases to curb excessive consumption of alcohol, increase revenues, and reduce the burden on the state budget. In Australia, it is estimated that the application of a volume tax increased revenue by 492

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<sup>7</sup> This report uses a secondary data analysis methodology, derived from scientific studies in many countries around the world on tax and price policy (often accompanied by one another) for alcoholic beverages, as well as general studies on alcoholism.

million Australian dollars, reduced annual consumption of pure alcohol by 2.8%, reduced 21,000 units of disease burden, with a cost savings of about 110 million Australian dollars per year (Byrnes et al. 2010). In Canada, a 25% tax increase would save the healthcare system 175.2 million to 211.3 million Canadian dollars per year (Rehm et al. 2008, 2011). In Germany, over the past 40 years, the average price of alcohol has dropped by about 30%. If the excise tax rate were on par with Europe's average, it is estimated that the average consumption of alcohol would be reduced by about 1 liter of pure alcohol, and the number of "drunks" would be reduced by about 37% (Adams & Effertz 2010). These numbers show the positive impact, and encourage an optimistic outlook in the practice of taxation policy in many different countries for curbing alcohol abuse.

In addition, it is important to note that the different tax rates for alcoholic beverages will have different effects. For example, the death rate associated with vodka in Russia is high, as the price of a bottle of vodka is only equivalent to about 3-4 bottles of beer, and the price of wine is much more expensive than vodka. The increase in excise taxes in Russia affecting the price increase rate for vodka is also lower than the inflation rate since 1998, although per capita income has increased rapidly. It is estimated that in order to reduce the mortality rate effectively, the excise taxes should increase the vodka price by more than 10 times the beer price, coupled with the strict management of illegal alcohol products (Khaltourina & Korotayev 2008). In comparison with Poland, which also consumed a lot of vodka before, from 1996 to 2001, the excise taxes in Poland increased 2.5 times, about 15.7 euro per liter of pure alcohol (Szymczak 2002). Meanwhile, the price of a bottle of beer is 12 times cheaper, and most Polish people choose to drink beer instead of vodka. The average life expectancy of Polish people increased from 66 in 1991 to 70 in 2000 (World Bank 2006), and is said to be associated with reduced consumption of spirits.

In contrast, Japan is a special case with the highest tax rate applicable to beer among alcoholic beverages (Higuchi et al. 2007). In Japan, the tax rate on average retail price is 47% for beer, 18% for sake, 35% for shochu, 23% for whiskey and brandy. This can be an important factor associated with the increasing number of people choosing to drink alcohol. Notably, alcohol abuse is believed to correlate with high rates of suicide among men in Japan. . A study by Norström et al. (2012) showed that, between 1963 and 2007, the suicide rate for men in Japan increased, while it fell slightly among women. On the other hand, the correlation between suicide rate and other alcoholic beverages such as beer or wine is unclear. Thus, the general analysis of the above studies shows that the policy implication

here is that Japan, like other countries in similar circumstances, should consider increasing taxes and sale prices of alcoholic beverages, in order to prevent the negative effects of alcohol abuse, especially for men.

Regarding the tax structure, the model applied in Thailand, which is called "Two pick one" (2C1) was effective, especially in increasing budget revenue. The alcohol tax structure in Thailand is a mixed tax, including absolute and ad valorem taxes, which is calculated simultaneously at the tax rates specified for each type of alcohol, and chooses to apply the method of calculation for higher tax returns. This system has also proven effective for the spirits preferred by heavy drinkers, as well as the light alcoholic beverages preferred by new drinkers, as compared to individual tax calculations (Shield & Rehm). Therefore, 2C1 is considered to reduce the number of drinkers more than an absolute or ad valorem tax calculation. In addition, it increases the relatively high price for products that appeal to young people, leading to reduced consumption of these products. This is considered a model that low to middle income countries can refer to, as it both increases the total tax revenue paid into the state budget, and can be effective in controlling the consumption of alcohol. However, its disadvantage, similar to many other mixed models, is that the calculation becomes complicated, can lead to a lack of transparency in performance, is not as simple, predictable and fair as specific tax calculation.

According to a study by Holm et al. (2014), in Denmark in 2010, 6% of the burden of disease was from alcohol use. Through the cost-effectiveness analysis tool, Holm et al. analyzed scenarios of changes in tax policy: an increase of 20%, an increase of 100%, and a decrease of 10%. Variables of lifelong health are measured by the difference in the burden of disease between: the rate of alcohol consumption at current tax and price; and the change in alcohol consumption due to change in tax and price. The result is the two scenarios: an increase of 20%, and an increase of 100% in taxes can prevent 20,000 and 95,500 units of disease burden respectively (DALY), while simultaneously saving respective costs : -€19 (million) and -€75 (million). In contrast, for the scenario of a 10% reduction in taxes, the additional burden of disease is 10,100 (DALY), and the extra cost is €60 (million). In all three cases of such intervention, the health impact is expected to reach a maximum of 15-20 years after the change in taxes. This contributes to affirming effectiveness of the price and tax policy, especially that increases in excise tax will help to save costs, reduce morbidity and mortality rates, and is one of the effective solutions to reduce alcohol consumption. Conversely, studying this evidence also indicates that a tax reduction scenario would increase

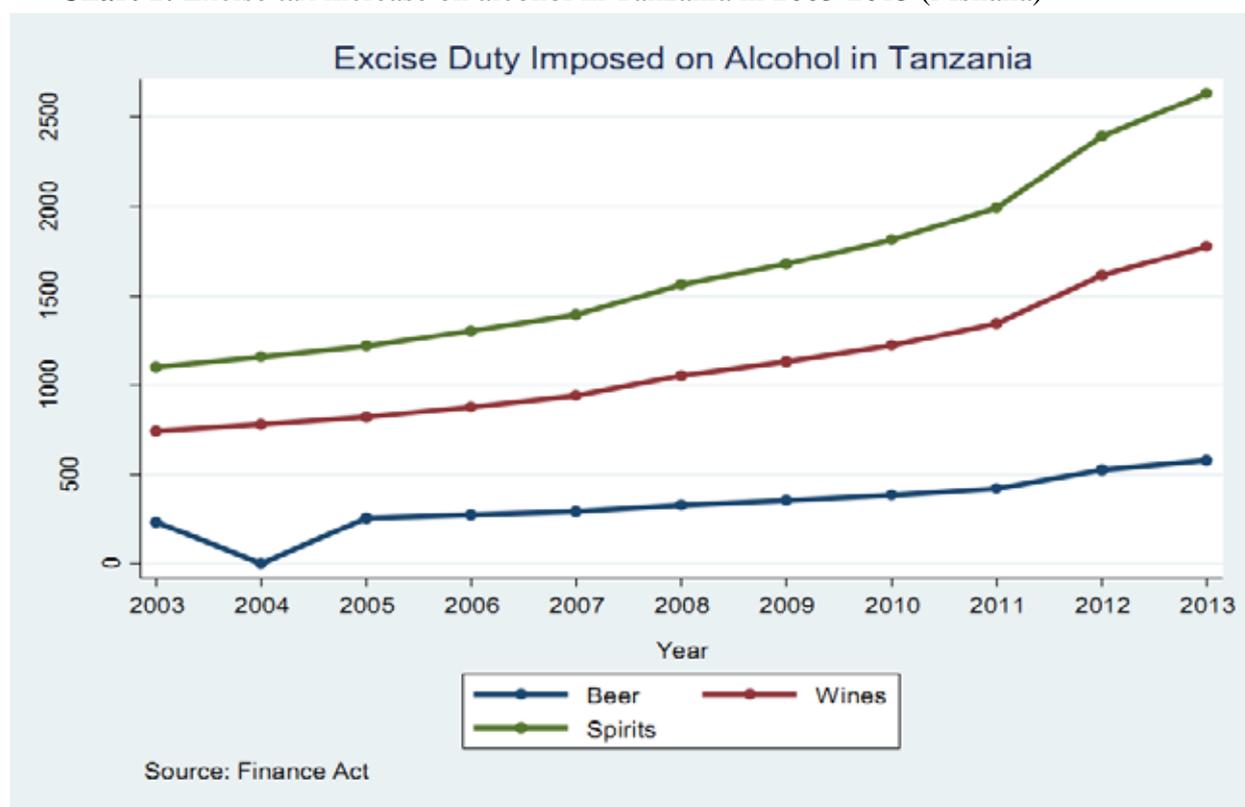
the burden of disease and increase the cost of health care. This will be clarified in Section 4.2.

**Example: Excise tax increase policy on alcohol in Tanzania**

Table 7: Taxes on alcohol products in Tanzania Bird & Wallace 2010

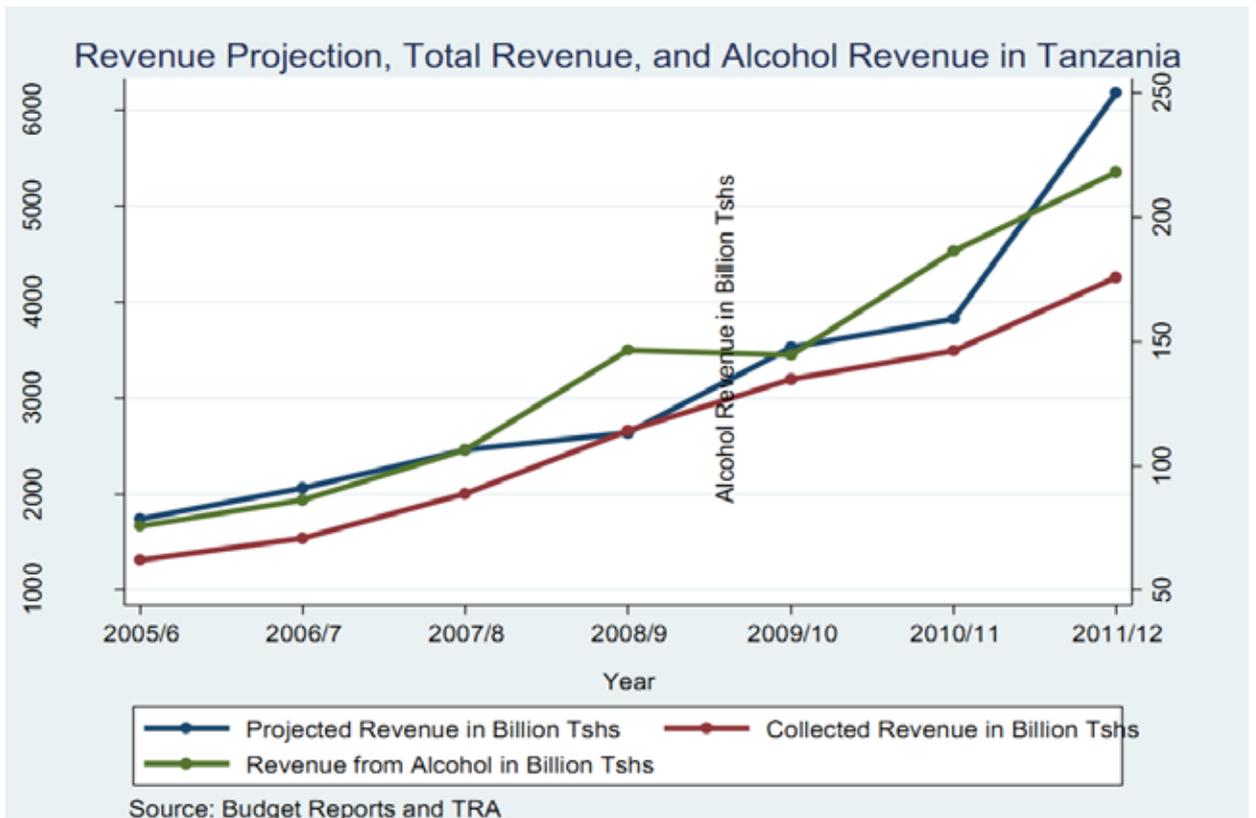
Customs duties	VAT	Thué TTĐB (2003)		
		Beer	Wines	Spirits
25%	20%	220.5 Tshs/liter	Domestic: >75%: 350 Tshs /liter <75%: 708 Tshs /liter Imported: 350 Tshs/liter	1.050 Tshs/liter

**Chart 1: Excise tax increase on alcohol in Tanzania in 2003-2013 (Mshana)**



It can be seen that the excise tax on alcohol in Tanzania has increased steadily for about 10 years (2003-2013), with the highest increase for spirits. This policy has in fact contributed to an increase in total tax revenue, and an increase in the tax revenue from alcoholic beverages actually paid into the annual state budget.

**Chart 2: Estimated revenue increase, actual revenue and amounts paid into the state budget from alcohol taxes in Tanzania, 2005-2012 (Mshana)**



## **4.2. Experience in failure of reduction in alcohol taxes and prices**

In Switzerland, a policy to reduce taxes on imported spirits by 30% -50% in 1999 led to a 28.6% increase in total spirits consumed; meanwhile, there was no significant change in the consumption of wine and beer. Assessing the impact of this tax reduction policy, Gmel et al. (2008) believed that in the short term, people who had consumed more alcohol increased the consumption of spirits, and such increase was more than those who drank less before. Meanwhile, in the long term, this policy intervention mainly affected people who previously had only little to moderate alcohol intake. The consequence of the policy is that this group increased their consumption and total spirit consumption increased. Sweden had a similar experience, according to an estimate by Andreasson et al. (2006), a 40% tax reduction on spirits and a 15% tax reduction on wines in Sweden resulted in an increase in total alcohol consumption, the estimated per capita increase was about 0.35 liters per person. As a consequence, this country recorded an increase of about 289 deaths, 1,627 violent attacks, and 1.6 million cases of sick leave due to alcohol abuse. Thus, tax reduction leading to a discount on spirits not only increased total consumption, but also resulted in increased consumption of spirits among those who had previously been little to moderate drinkers. It also increased the long term negative impact of alcohol consumption on the community and society.

Meanwhile, Nigeria, one of the 30 countries with the highest per capita alcohol consumption in the world, was a negative example of a "no policy" decision in preventing and controlling alcohol related harms. Until 2010, this country still had no clear policy on alcohol control (Dumbili 2014). One of the reasons for this is corruption, especially related to the participation of alcohol producers hindering the promulgation of tax and price policies for control of alcohol consumption. Thus, the extension of the situation of no clear policy; or the promulgation of policies to reduce taxes, reduce selling prices; or prevention of tax increases and price increases can result in negative impacts due to the increased risk of alcohol abuse.

Also relating to corruption, a study in the United States showed the extent of how corruption affects beer taxation (Fredriksson et al. 2009). In this relationship, the corruption tends to foster the formation of beer tax reduction policies; In its turn, the reduction of beer taxation is a condition that increases alcohol-related road traffic deaths, based on analytical data from 1982 to 2001. In fact, while the state may work to reduce the consumption of alcohol through tax increase policy, alcohol producers may, by bribing state officials who are competent or influential in the decision-making process, campaign for the promulgation of

alcohol tax reduction policy. Producers are more likely to be successful in political campaigning when there is a high rate of corruption in the state and the principles of the rule of law are not complied with. This is more serious if the policy of tax and price reduction on alcoholic beverage products is planned based on fake and prejudiced evidence.

The case of Finland is another good example, demonstrating the effects of counterintuitive policies regarding alcohol taxes and prices. In March 2004, Finland reduced taxes on alcoholic beverages by a third in an effort to reduce cross border trade, which was implemented by Finnish people in other EU countries, especially the neighboring Estonia, where the price of alcoholic beverages is much cheaper. Along with the removal of alcohol quotas for tourists, the consumption of alcohol in Finland increased by 10% in 2004, causing many negative effects related to alcohol, such as drunk driving, alcohol-related arrests, increase in mortality and cirrhosis. The group seriously affected by this tax reduction policy included many young people; singles; unemployed people and early retirees. The consumption of alcoholic beverages increased by 10%, and the mortality rate from cirrhosis increased by 30% in just one year (Herttua 2008).

In order to overcome the harmful effects of the tax reduction policy for alcoholic beverages, policymakers in Finland then reversed the measures. In 2008, the taxes on spirits increased by 15%, and further increased by 10% for other alcoholic beverages. In 2009, total alcohol consumption reduced by 2%, the number of related-alcohol hospitalization reduced by 5%, and the number of deaths from alcohol reduced. The tax increase policy continued to be promoted in 2009, there were two more increases in the excise taxes on all alcoholic beverages, the first time on 01/01/2009, and the next on 01/10/2009 (National Institute for Health & Welfare 2010).

This is a very useful lesson in comparing the costs with benefits, as well as the societal consequences of two opposite policies, applied in the same country. This is similar to the impact of the two scenarios of increasing or decreasing the tax rates in the Danish study mentioned in section 4.1. Thus, from the above studies, it can be argued that there are many negative consequences of tax and price reduction policies, as compared to the positive effects of policies that increase the tax and price for alcohol.

## **5. Minimum price policy for alcohol**

### **5.1. Definition of minimum price**

The minimum price policy is to set a floor price that alcohol products cannot be sold under. The minimum floor price is determined based on the pure alcohol content in the product measured in gram or unit of alcohol (Royal College of Physicians of Ireland 2013).

The formula for calculating the minimum price:

*“(Price for 1 unit of alcohol) x (alcohol content of the product) x (product capacity) x 100”*

Note: it should be multiplied by 100 because the alcohol content of the product is a percentage (Royal College of Physicians of Ireland 2013).

The impact of this policy depends on the minimum price applied, if the minimum price offered is lower than the price of most alcohol products currently on the market, the price policy will have very little impact. The impact of the minimum price policy is particularly large for low-cost alcohol products. Minimum prices have a significant impact on the consumption behavior of young people, alcohol abusers and low-income groups as they tend to use cheap alcoholic beverages. (Hunt et al. 2011).

According to WHO (2004), about 10% of countries (out of 165 countries) apply minimum prices for alcohol products.

The study model of the University of Sheffield 2012 shows that applying a minimum price of 50 pence per unit of drink will bring the following effects:

- Reducing 60 deaths from alcoholic beverages in the first year of implementation, and reducing 318 deaths per year after 10 years of implementation;
- Reducing 1,600 hospitalizations from using alcoholic beverages in the first year of implementation, and reducing 6,500 hospitalizations on average per year after 10 years of implementation;
- Reducing 3,500 crimes per year;
- Reducing 32,300 cases of absenteeism from using alcoholic beverages.

### **5.2. Canadian experience in minimum price policy**

Canada is one of the few countries that has implemented the minimum price policy for alcoholic beverages, and is the only country to have strong empirical evaluations of the effectiveness of this policy.

Currently, all 11 provinces in Canada implement the minimum price policy for alcoholic beverages sold in wine shops and/ or bars (Stockwell 2013).

*Impact of minimum price policy in Saskatchewan, Canada*

The minimum price policy was first applied to spirits in 2003, beer in 2005, wines in 2008, and others (cocktails, coolers) in 2010. The minimum price is per unit of Canadian standard drink (17.05 ml ethanol) (*See Table 8*). The minimum price increased in 2010, affecting 216 out of 2,542 alcohol products (8.5%). The new minimum price applied in 2010 reduced the motivation for choosing high alcoholic beverages, because new price policy applied a higher minimum price for higher alcoholic products (Stockwell et al. 2012).

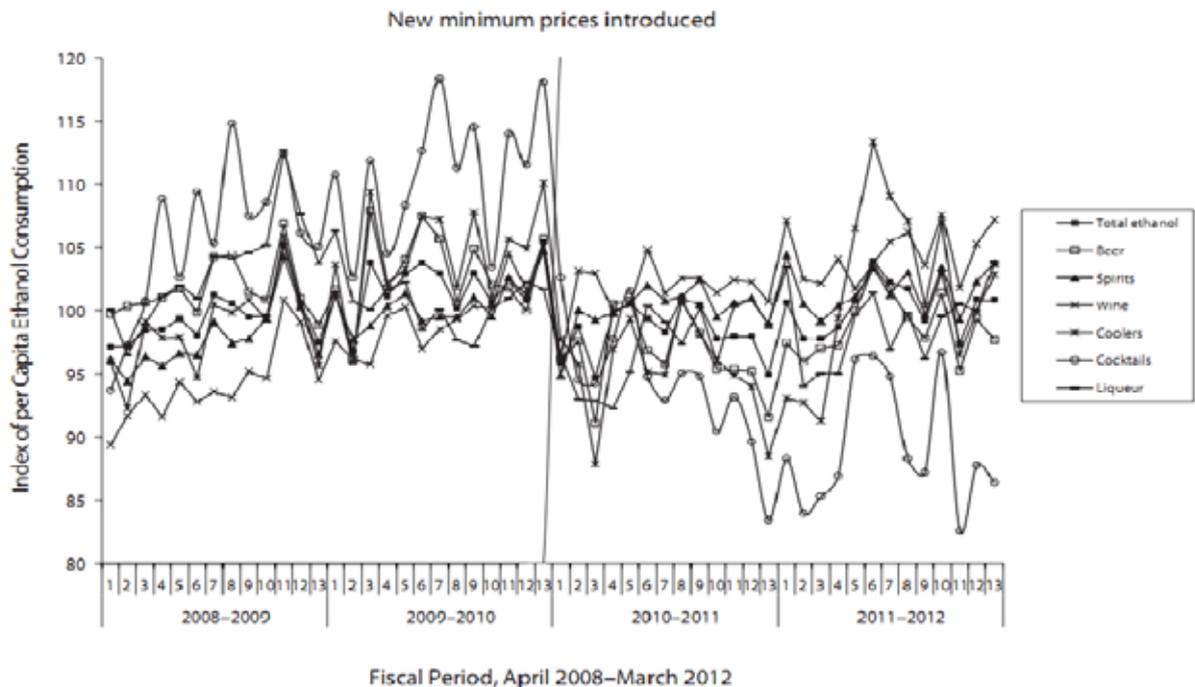
**Table 8:** Average minimum price/ unit of drink (17.05 ml of ethanol) for alcoholic beverages in Saskatchewan Province, Canada, 7/2003-4/2010

Categories (capacity) and % alcohol	7/2003 (\$)	1/2005 (\$)	6/2005 (\$)	1/2007 (\$)	2/2007 (\$)	1/2008 (\$)	3/2008 (\$)	1/2009 (\$)	4/2010 (\$)
<b><i>Spirits (750 mL)</i></b>									
35% to ≤ 44.9%	1.23	1.25		1.30		1.29	1.30		1.37
45% to ≤ 54.9%	1.03	1.05		1.09		1.09	1.09		1.45
≥ 55%	0.66	0.67		0.70		0.70	0.70		1.18
All spirits	1.23	1.25		1.30		1.29	1.30		1.39
<b><i>Alcohol (750 mL)</i></b>									
≤ 22.9%									1.84
23% to ≤ 34.9%									1.59
All alcohol									1.79
<b><i>Wines (750 mL)</i></b>									
≤ 15.9%							1.32		1.41
≥ 16%							0.82		1.20
All wines							1.28		1.39
<b><i>Beer (6 packages, 2,046 L)</i></b>									
≤ 6.5%			1.28		1.32		1.36	1.40	1.56
> 6.5% to ≤ 7.5%			1.00		1.03		1.06	1.10	1.72
> 7.5% to ≤ 8.5%			0.75		0.77		0.80	0.82	1.46
≥ 8.5%			0.64		0.67		0.69	0.71	1.39
All beer			1.27		1.32		1.35	1.40	1.56
<b><i>Cocktails (1L)</i></b>									
≤ 7%									1.71
> 7% to ≤ 13.7%									1.16
> 13.7% to ≤ 22.9%									1.49
23% to ≤ 34.9%									1.44
≥ 35%									1.46
All cocktails									1.50
<b><i>Coolers (6</i></b>									

<i>packages, 2.046L)</i>									
≤ 5.99%									1.48
≥ 6%									1.29
All coolers									1.33

The results of the impact assessment on the minimum price policy for alcohol consumption show that each 10% increase in the minimum price reduced 10.06% of beer consumption, 5.87% of spirits consumption and 4.58% of wine consumption; the consumption of alcoholic beverages decreased by 13.2%, cocktail consumption decreased by 21.3% and alcohol consumption decreased by 5.3%. In general, the consumption of alcoholic beverages decreased by 8.43%. The impact of the policy was particularly strong on beers with high alcohol content, a 10% increase in the minimum price reduced 22% of beer consumption (> 6.5% alcohol) compared to a decrease of 8.17% in the consumption of beers with lower alcohol content. As concluded by Stockwell et al (2012), the minimum price is an effective policy to reduce the health burden related to harmful alcohol consumption.

**Chart 3:** Seasonal consumption trend of alcoholic beverages in people at the age of 15 in the two years before and two years after implementation of the new minimum price policy in Saskatchewan, Canada, April 2008 to March 2012.



Note. 100 = mean per capita ethanol for each fiscal year.

***Impact of minimum price policy in British Columbia, Canada***

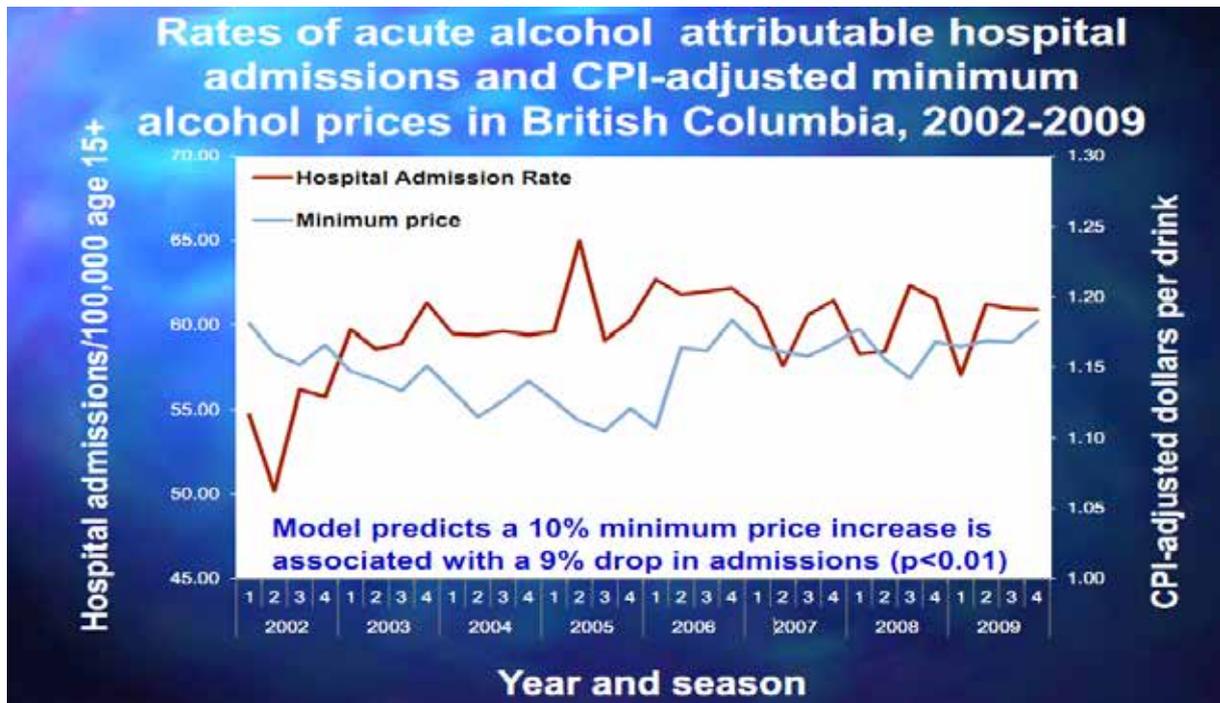
Table 9: Average minimum price/ unit of drink (17.05 ml of ethanol) for alcoholic beverages in Bristish Columbia, Canada (Stockwell 2013).

Categories	% alcohol	Minimum price
Coolers/Cider	7%	0.73 \$
Beer	8%	0.75 \$
Wine	12%	1.02 \$
Hard wine	22%	0.56 \$
Spirits (Tequila)	40%	1.35 \$
Spirits (Rum)	75.4%	0.72 \$

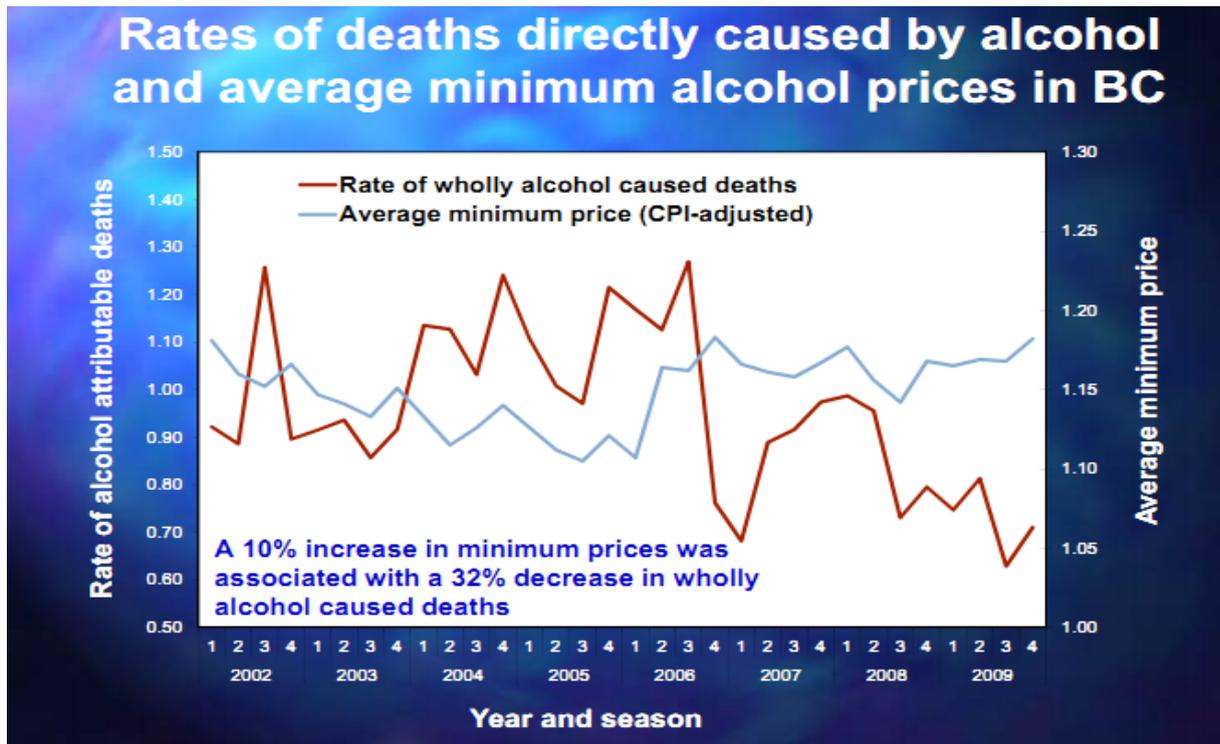
The results of the impact assessment for the minimum price policy through a 20-year data analysis, with control of seasonal factors, trends in average alcohol prices and trends in average household income show that: each increase of 10% in the minimum price led to a 1.5% decrease in beer consumption, a 6.8% decrease in spirits consumption, and a 8.9% decrease in wine consumption (Stockwell et al. 2012, Stockwell 2013).

The assessment model of the impact of minimum price policy on decreasing the harmful effects of alcohol shows that:

- A 10% increase in the minimum prices was related to a 9% decrease in the proportion of the population (more than 15 years old) hospitalized from alcohol-related acute illnesses (Stockwell 2013).



- A 10% increase in the minimum price was related to a 32% decrease in alcohol-related deaths (Stockwell 2013).



Thus, a reasonable minimum price policy promulgated will be highly efficient in reducing the consumption of alcohol, preventing harmful effects, especially for beverages with high alcohol content.

## **6. Some recommendations for alcohol related harm prevention and control policy in Vietnam**

On 12/2/2014, the Prime Minister issued the Decision No. 244/QĐ-TTg on national policy to prevent harmful effects from the abuse of alcoholic beverages by 2020, clearly stating the objectives, solutions, roadmap and implementation responsibilities. On such basis, on 15/7/2015, the Prime Minister decided to establish the National Steering Committee to prevent the harmful effects of alcohol abuse with the Minister of Health as the Manager. In addition, there was an amendment and supplement to a number of articles in the Law on Excise Tax adopted by the 13<sup>th</sup> National Assembly, issued on November 26, 2014, which officially took effect from January 1, 2016 to increase the excise tax rate for alcohol products. However, the political will and legal regulations have not been effective in practice. The institutionalization into legal provisions and specific solutions to implement national policy against alcohol related harms has been limited. The Law on alcohol related harm prevention and control has not been issued in time for the period 2014-2016 as previously expected, and so far, the Draft Law has not yet been included in the program of law and ordinance development in 2017 of the National Assembly.

In order to contribute to the successful implementation of the National Strategy on the prevention of alcohol related harms, support is needed for the early introduction of the National Assembly's agenda for comments and approval on the Law on alcohol related harms, prevention and control. This serves as an important basis to revise and supplement policies and laws related to price and tax, within the scope of the research<sup>8</sup>, this review outlined a number of specific recommendations as follows:

### **6.1. Approach to comprehensive, consistent policy development**

The general purpose of alcohol related harm prevention policy is to minimize the damage caused by alcohol abuse to individual users and societal welfare. Effective alcohol related harm prevention policies and solutions will contribute to protecting the health of individuals, families, communities, protecting the social order and safety and promoting sustainable economic development.

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<sup>8</sup> *Although there are broad and related issues, the main research and recommendations in this section focus on the content of price and tax policy, not overall recommendation for alcohol related harms prevention policy in general.*

At the same time, the implementation of national policy and legislation on prevention of alcohol abuse must ensure it provides consumers with the necessary information, based on a certain knowledge of the benefits and possible harms in case of abuse (OECD 2015), such as driving in a drunken state, causing traffic accidents, illness, violence, increased crime, and decline in labor productivity.

In Vietnam, however, it is still common to distill alcohol manually, and consume smuggled or counterfeit products at a low price. Alcohol is not subject to quality inspection but still widely circulated. This can cause serious harm and is difficult to control.

Some authorities try to propagate the harmful effects of alcohol, warn about the alarming alcohol consumption (Thuy Hanh 2016). However, this is undermined by the planning for development by the beer, wine and soft drinks sector by 2025 with a vision to 2035 (Decision No. 3690/QD-BCT) sets the target that the country will produce 4.1 billion liters of beer in 2020, and 5.5 billion liters of beer in 2035. Alcohol output is expected to be stable at 350 million liters/ year in the period 2020-2035. Although the proportion of alcohol production compared to other soft drinks has decreased, the absolute number of total alcohol production in Vietnam will increase significantly (the beer output in 2016 is 3.788 billion liters, over 41 liters/ person on average - Cuc Nhi 2017). Such as that, on the one hand, we try to propagate the harm caused by the abuse of alcoholic beverages, on the other hand, try to promote the supply of alcoholic beverages. This "conflict of interest" paradox shows that there is no consensus, consistency and determination to act in a timely manner, leading to an ineffective implementation of alcohol abuse prevention policies.

The references to international experiences in this report also demonstrate that many countries have encountered difficulties implementing alcohol related harm prevention policy in general, and tax and price policies for alcohol in particular<sup>9</sup>. International experience has, however, also helped to make it clear that the solutions leading to tax and price increases are often most effective at reducing the harmful effects caused by alcohol abuse (WHO 2004).

On that basis, in order to ensure success in the coming time, the State of Vietnam needs a comprehensive approach, a synchronous and unified policy, along with strong political will and high consensus. In line with the recommended general policy framework, each country including Vietnam needs to pay attention to the issue of public acceptance of

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<sup>9</sup> See the experience of some countries on the application of the alcohol tax and price reduction policy, the related experience between tax, price and corruption in Niger, USA... in section 4.2.

policies related to health and welfare. For example, research in England, showed that specific policy proposals to reduce alcohol consumption may be opposed, as people are affected by other factors, such as the cultural environment, rather than merely being affected by evidence or comparisons (Cohn 2016). Therefore, a good tax and price policy is not enough, in order to implement effectively, the support of agencies in the political system and the public is required. The systems of value, culture, belief and knowledge should be considered as useful elements (WHO 2009b).

## **6.2. Further reform of Excise Tax policy**

As much international research has claimed, the increase in excise tax on alcohol is an effective policy to prevent harm caused by alcohol abuse. The tax increase contributes to reducing the consumption of alcoholic beverages in general (Wagenaar 2009), consumption among youth adults in particular, reducing alcohol-related traffic accidents, reducing deaths from cirrhosis, reducing violence and sexual abuse (Lippy & DeGue 2016), increasing labor efficiency and social welfare. The increase in tax rate leads to a 10% increase in alcohol price, which can reduce alcohol consumption from 3% to 10% (Elder et al. 2010), and positively impact the behavior of all drinkers (OECD, 2015). In addition, according to research on the relationship between alcohol tax, drinking alcohol during pregnancy and neonatal health, the increase in beer tax (each one cent) will reduce the effects on low birth weight (1-2% reduction) (Zhang 2010). This also demonstrates the potential for a positive, cross-generational effect of the increase in alcohol tax.

At the legal level in Vietnam, although the excise tax on alcohol has been stipulated in the Law on Excise Tax issued in 1998, replaced in 2008 and amended twice (2014, 2016), there is still plenty of space to sharply increase the excise tax rate for alcohol, and stronger reforms are required to achieve clear effects in the long run.

Specific increases in excise tax should be calculated on the basis of objective, scientific evidence, summary of the actual data in Vietnam over time, especially since the application of the recent increase (from 01/01/2016) according to the Law on Excise Tax in 2008, revised in 2014. The roadmap for increasing alcohol taxation needs to be compared with the increase in inflation and average annual income growth, as well as considering the impact of price increases greater than 10%, as specified by some researchers. There should also be comparative analysis of the benefits of tax and price increase on the health, community health care costs, social security, as well as operations of alcohol enterprises in Vietnam. In this connection, the issue of health, quality of life and social security and safety

must be considered as leading factors, ensuring sustainable development goals. In order to avoid potential conflicts of interest, the government should accelerate the process of divesting state capital in some enterprises manufacturing and trading in alcohol.

International experience, particularly the experience of switching to application of the specific tax calculation method in Australia and some ASEAN countries (APTF 2013), shows the tendency of setting up a simple and transparent alcohol tax system. The clear benefits of switching to a simple and transparent tax system, using the specific tax calculation method to alcohol, are to reduce administrative costs, increase predictability, reduce transaction costs for enterprises, reduce the risk of corruption, ensure equity and humanity, create stability and sustainability for the tax system and budget revenue. This is an important issue that should be consulted in order to select the overall reform and adjustment plan as the basis for further recommendations on amendments and supplements to the Law on Excise Tax in 2008, or the promulgation of the new Law on Excise Tax accordingly.

### **6.3. Research on application of minimum price policy**

When other conditions do not change, the increase in alcohol price will lead to the same outcome as an increase in excise tax. Research on the drinking age structure also showed that, in most cases, the increase in selling price leads to a reduction in alcohol consumption. The various price increases have different impacts on each group, social class or on the brands of alcoholic beverages consumed. In addition, moderate drinking is associated with age, and is concentrated in groups of older people (Rehm et al. 2009), while price increases often target groups of people in adolescence, youth and middle age. Therefore, the combination of policies that lead to the increase in alcohol price such as tax increases and minimum pricing is a sensible option that effects key objects targeted by the alcohol related harm prevention and control policy.

The minimum price policy being used in Canada, as well as discussed in many European countries, is assessed to overcome the limitations of tax use, and is a more effective remedy for heavy drinkers. Through the analysis in Section 5, this report recommends policymakers to acquire lessons learned from Canada and several other countries, who have applied the minimum price policy effectively and successfully. The implementation of specific research in Vietnam helps to clarify the basis for choosing the appropriate minimum price policy, and adopt good policies to deal with the problem that manufacturers gain surplus income from high selling prices, while some consumers may suffer a loss from this price policy, such as through corporate social responsibility.

In addition, it should be noted that the price intervention approach in general has a positive impact on alcohol consumers when they are alert, can control their behavior and consider potential benefits and losses. While a consequence of alcohol abuse is the loss of control occurred during or after use and can lead to harmful behavior. At this point, it is necessary to have strong legal sanctions to intervene, at the same time ensuring the requirements on prevention. Thus, in addition to the tools of price policy in general, it is required to implement simultaneously other policy measures within the policy framework stated, and it is necessary to promulgate the Law on alcohol related harm prevention and control with effective policies.

This review is mainly based on secondary data, referenced from domestic and international research. Referring to international experience and refining common values and popular conclusions are also very important in policy making as a reference for developing policy recommendations on alcohol related harm prevention and control in Vietnam. If this information and experience is connected to the domestic analysis results, there will be a more solid foundation for the formation or adjustment of the policy in line with global trends and progress.

## **E. CONCLUSION**

Alcohol related harm prevention and control is a public policy issue in many countries around the world, including Vietnam, which faces a rapid increase in alcohol consumption. Without effective policy solutions, Vietnam will face a lot of social issues that challenge sustainable development goals, partly due to the negative impact of high alcohol abuse in the particular groups. Therefore, it is necessary to synchronously implement the recommended general solutions in the prevention of harmful effects of alcohol and to make specific adjustments in line with the cultural traditions and socio-economic conditions in our country. This research has outlined the general policy framework for alcohol related harm prevention and control implemented and encouraged in many countries around the world. In order to be effective, it is necessary to have a comprehensive and consistent approach when pursuing general and specific policy objectives, and synchronously implement policies with political will from the highest level in central government to local and individual.

Among policy options that the state enforces to control alcohol consumption and prevent harmful effects, *Price and tax policy* is widely applied in countries around the world, and is considered the most effective approach for controlling the harmful effects of alcoholic

beverages. Therefore, in order to successfully implement the national strategy on the prevention alcohol-related harm and abuse, , the state should focus on promoting the role of price and tax policy, developing a reform roadmap, appropriate excise tax increase methods, and studying the application of the minimum price policy. This research has shown that the increase in excise tax rate, application of specific tax calculation, and minimum price for alcoholic beverages are positive and effective solutions to minimize the harmful effects of alcohol, and also contribute to increasing revenues and savings the state budget.

## APPENDIX

### Appendix 1: Alcohol taxes in European countries in 2014

#### ✓ Beer (European Commission, 2014)

	VAT%	Excise tax (EUR)			
		Standard rates		Preferential rates	
		Excise tax/hectolitre/ <sup>o</sup> Plato	Excise tax /hectolitre/% alcohol	Small independent breweries (annual output ne 200,000 hl) Excise tax/hectolitre/ <sup>o</sup> Plato or % alcohol	Low-alcohol beer (Ne 2.8%) Excise tax /hectolitre/% alcohol
Minimum excise tax provided by the EU		0.748 EUR per hectolitre/ <sup>o</sup> Plato	1.87 EUR per hectolitre/% alcohol	Rates not lower than 50% of national standard rates	
<b>BELGIUM</b>	21.00	1.8473 EUR		<=12.500 hl: 1.6063 EUR <=25.000: 1.6599 EUR <=50.000: 1.7134 EUR <=75.000: 1.7670 EUR <=200.000: 1.8206 EUR	
<b>BULGARIA</b>	20.00	0.767 EUR		0.38	
<b>CZECH REPUBLIC</b>	21.00	1.2477 EUR		<=10.000 hl: 0.624 EUR <=50.000 hl: 0.749 EUR <=100.000 hl: 0.873 EUR <=150.000 hl: 0.998 EUR <=200.000 hl: 1.153 EUR	
<b>DENMARK</b>	25.00		7.51 EUR		
<b>GERMANY</b>	19.00	0.787 EUR		<=5.000 hl: 0.4407 EUR <=10.000 hl: 0.5288 EUR <=20.000 hl: 0.6170 EUR <=40.000 hl: 0.6610 EUR	

	VAT%	Excise tax (EUR)			
		Standard rates		Preferential rates	
		Excise tax/hectolitre/° Plato	Excise tax /hectolitre/% alcohol	Small independent breweries (annual output ne 200,000 hl) Excise tax/hectolitre/ ° Plato or % alcohol	Low-alcohol beer (Ne 2.8%) Excise tax /hectolitre/% alcohol
<b>ESTONIA</b>	20.00		6.28 EUR	<=3.000 hl: 3.14 EUR	
<b>EL SALVADOR</b>	23.00			<200.000 hl: 1.30	
<b>SPAIN</b>	21.00	<=11° Plato: 7.48 EUR >11°≤15° Plato: 9.96 EUR >15°<=19° Plato:13.56 EUR >19° Plato:0.91 EUR			0.5%-1.2%: 0 EUR 1.2%-2.8%: 2.75 EUR
<b>FRENCH</b>	20.00		>2.8% vol: 7.33 EUR	3.66 EUR	0.5%-2.8%: 3.66 EUR
<b>CROATIA</b>	25.00		5.25 EUR		
<b>IRELAND</b>	23.00		>2.8%: 22.55 EUR		>0.5%≤1.2%: 0 EUR >1.2%≤2.8%: 11.27 EUR
<b>ITALY</b>	22.00	2.70 EUR			
<b>CYPRUS</b>	19.00		6.00 EUR		
<b>LATVIA</b>	21.00		3.10 EUR	<10.000 hl: 1.55 EUR	
<b>LITHUANIA</b>	21.00		2.71 EUR	2.71 EUR	
<b>LUXEMBOURG</b>	15.00	15.00 EUR		<=50.000 hl: 0.3966 EUR <=200.000 hl: 0.4462 EUR >200.000 hl: 0.7933 EUR	
<b>HUNGARY</b>	27.00		5.47 EUR	<8.000 hl: 2.74 EUR	
<b>MALTA</b>	18.00	1.73 EUR		0.86 EUR	0.25 EUR
<b>NETHERLANDS</b>	21.00	<7° Plato: 7.59 EUR 7°<11° Plato: 28.49 EUR 11°<15° Plato: 37.96 EUR		<7° Plato: 7.59 EUR 7°<11° Plato: 26.35 EUR 11°<15° Plato: 35.11 EUR	

	VAT%	Excise tax (EUR)			
		Standard rates		Preferential rates	
		Excise tax/hectolitre/ <sup>o</sup> Plato	Excise tax /hectolitre/% alcohol	Small independent breweries (annual output ne 200,000 hl) Excise tax/hectolitre/ <sup>o</sup> Plato or % alcohol	Low-alcohol beer (Ne 2.8%) Excise tax /hectolitre/% alcohol
		≥ 15° Plato: 47.48 EUR		≥ 15° Plato: 43.92 EUR	
<b>AUSTRIA</b>	20.00	2.00 EUR		<12.500 hl: 1.20 EUR <25.000 hl: 1.40 EUR <37.500 hl: 1.60 EUR ≤50.000 hl: 1.80 EUR	
<b>POLAND</b>	23.00	1.84 EUR			
<b>PORTUGAL</b>	23.00	≤7° Plato: 15.06 EUR >7°≤11 Plato: 15.06 EUR >11°≤13 Plato: 18.86 EUR >13°≤15 Plato:22.61 EUR >15° Plato: 26.45 EUR	>0.5%≤1.2%: 7.53 EUR	≤7° Plato: 4.715 EUR >7°≤11 Plato: 7.53 EUR >11°≤13 Plato: 9.43 EUR >13°≤15 Plato:11.305 EUR >15° Plato: 13.225 EUR	>0.5%≤1.2%: 3.765 EUR
<b>ROMANIA</b>	24.00	0.874 EUR		≤200.000 hl: 0.494 EUR	
<b>SLOVENIA</b>	22.00		12.10 EUR		
<b>SLOVAKIA</b>	20.00		3.587 EUR		
<b>FINLAND</b>	24.00		>2.8%: 32.05 EUR	≤ 2000 hl: 16.025 EUR ≤30.000 hl: 22.435 EUR ≤ 55.000 hl: 25.64 EUR ≤ 100.000 hl: 28.845 EUR	0.5% - 2.8%: 8 EUR
<b>SWEDEN</b>	25.00		>2.8%: 178.00 EUR		
<b>ENGLAND</b>	20.00		>2.8%: 19.12 EUR	≤ 60.000 hl	1.3%-2.8%: 11.49 EUR

✓ Wines (European Commission, 2014)

Country	VAT%	Standard rates		Preferential rates
		Distilled wine	Sparkling wine	
Minimum excise tax provided by the EU		0 EUR	0 EUR	0 EUR
<b>BELGIUM</b>	21.00	56.9700 EUR	161.1308 EUR	14.8736 EUR
<b>BULGARIA</b>	20.00	0	0	
<b>CZECH REPUBLIC</b>	20.00	0	94.06 EUR	
<b>DENMARK</b>	25.00	6%-15% vol: 147.68 EUR 15%-22% vol: 197.71 EUR	6%-15% vol: 190.20 EUR 15%-22% vol: 240.23 EUR	Still 1.2%-6% vol 67.87 EUR Spark 1.2%-6% vol: 110.39 EUR
<b>GERMANY</b>	19.00	0	136.00 EUR	Spark <6%: 51.00 EUR
<b>ESTONIA</b>	20.00	84.67 EUR	84.67 EUR	<=6%: 36.71 EUR
<b>EL SALVADOR</b>	23.00	0	0	
<b>SPAIN</b>	21.00	0	0	0
<b>FRENCH</b>	20.00	3.72 EUR	9.23 EUR	
<b>CROATIA</b>	25.00	0 EUR	0 EUR	
<b>IRELAND</b>	23.00	>5.5%≤15%: 424.84 EUR >15%: 616.45 EUR	>5.5%: 849.68 EUR	≤5.5%: 141.57 EUR
<b>ITALY</b>	22.00	0 EUR	0 EUR	
<b>CYPRUS</b>	19.00	0 EUR	0 EUR	
<b>LATVIA</b>	21.00	64.03 EUR	64.03 EUR	
<b>LITHUANIA</b>	21.00	65.16 EUR	65.16 EUR	24.62 EUR
<b>LUXEMBOURG</b>	15.00	0 EUR	0 EUR	
<b>HUNGARY</b>	27.00	0 EUR	55.59 EUR	
<b>MALTA</b>	18.00	0 EUR	0 EUR	
<b>NETHERLANDS</b>	21.00	88.36 EUR	254.41 EUR	Still: 44.18 EUR Spark: 48.25 EUR
<b>AUSTRIA</b>	20.00	0 EUR	100.00 EUR	0 EUR
<b>POLAND</b>	23.00	37.35 EUR	37.35 EUR	
<b>PORTUGAL</b>	23.00	0 EUR	0 EUR	
<b>ROMANIA</b>	24.00	0 EUR	36.26 EUR	
<b>SLOVENIA</b>	22.00	0 EUR	0 EUR	
<b>SLOVAKIA</b>	20.00	0 EUR	79.65 EUR	per ht: 54.16 EUR
<b>FINLAND</b>	24.00	339.00 EUR	339.00 EUR	>1.2%<2.8%: 22.00 EUR >2.8%<5.5%: 169.00 EUR >5.5%<8.0%: 241.00 EUR
<b>SWEDEN</b>	25.00	267.47 EUR	267.47 EUR	<2.25%: 0 EUR 2.25%-4.5%: 93.94 EUR 4.5%-7%: 138.77 EUR 7%-8.5%: 191.01 EUR

Country	VAT%	Standard rates		Preferential rates
		Distilled wine	Sparkling wine	
ENGLAND	20.00	334.11 EUR	427.95 EUR	Still >1.2% ≤4%: 102.94 EUR Still >4% ≤5.5%: 141.56 EUR Spark >5.5% <8.5%: 258.23 EUR

✓ **Other fermented beverages (other than beer and wine) (European Commission, 2014)**

Country	VAT %	Preferential rates		Preferential rates
		Other still beverages	Other sparkling beverages	Ne 8.5% vol
Minimum excise tax provided by the EU		0 EUR	0 EUR	0 EUR
<b>BELGIUM</b>	21.00	56.9700 EUR	194.9400 EUR	18.0360 EUR
<b>BULGARIA</b>	20.00	0	0	
<b>CZECH REPUBLIC</b>	20.00	0	91.24 EUR	
<b>DENMARK</b>	25.00	6%-15%: 147.68 EUR	6%-15%: 190.20 EUR	Still 1.2%-6%: 67.87 EUR Spark 1.2%-6%: 93.39 EUR
<b>GERMANY</b>	19.00	0	136.00 EUR	Spark <6%: 51.00 EUR
<b>ESTONIA</b>	20.00	84.67 EUR	84.67 EUR	<=6%: 36.71 EUR
<b>EL SALVADOR</b>	23.00	0	0	
<b>SPAIN</b>	21.00	0	0	0
<b>FRENCH</b>	20.00	3.72 EUR	3.72 EUR	
<b>CROATIA</b>	25.00	0 EUR	0 EUR	
<b>IRELAND</b>	23.00	Cider & Perry >8.5%: 309.84 EUR Others>5.5%: 424.84 EUR	Cider & Perry >8.5%: 619.70 EUR Others>5.5%: 849.68 EUR	Cider & Perry: + Still & Spark ≤2.8%: 47.23 EUR + Still & Spark >2.8% ≤6%: 94.46 EUR + Still & Spark >6% ≤8.5%: 218.44 EUR Others: Still & Spark ≤5.5%: 141.57 EUR
<b>ITALY</b>	22.00	0 EUR	0 EUR	
<b>CYPRUS</b>	19.00	0 EUR	0 EUR	
<b>LATVIA</b>	21.00	64.03 EUR	64.03 EUR	
<b>LITHUANIA</b>	21.00	65.16 EUR	65.16 EUR	24.62 EUR
<b>LUXEMBOURG</b>	15.00	0 EUR	0 EUR	
<b>HUNGARY</b>	27.00	33.34 EUR	55.59 EUR	
<b>MALTA</b>	18.00	0 EUR	0 EUR	
<b>NETHERLAND</b>	21.00	88.36 EUR	254.41 EUR	Still: 44.18 EUR Spark: 48.25 EUR
<b>AUSTRIA</b>	20.00	0 EUR	100.00 EUR	0 EUR
<b>POLAND</b>	23.00	Cider & Perry ≤5%: 22.93 EUR Others: 37.35 EUR	Cider & Perry ≤5%: 22.93 EUR Others: 37.35 EUR	

Country	VAT %	Preferential rates		Preferential rates
		Other still beverages	Other sparkling beverages	Ne 8.5% vol
<b>PORTUGAL</b>	23.00	0 EUR	0 EUR	
<b>ROMANIA</b>	24.00	Cider & Perry in the list of CN codes 22060051 and CN codes 2206 0081: 10.65 EUR Hydromel CN codes 22060059 and 22060089 obtained by fermenting honey in water: 0 EUR	47.93 EUR	
<b>SLOVENIA</b>	22.00	0 EUR	0 EUR	
<b>SLOVAKIA</b>	20.00	0 EUR	79.65 EUR	per ht: 54.16 EUR
<b>FINLAND</b>	24.00	339.00 EUR	339.00 EUR	>1.2% <2.8%: 22.00 EUR >2.8% <5.5%: 169.00 EUR >5.5% <8.0%: 241.00 EUR
<b>SWEDEN</b>	25.00	267.47 EUR	267.47 EUR	<2.25%: 0 EUR 2.25%-4.5%: 93.94 EUR 4.5%-7%: 138.77 EUR 7%-8.5%: 191.01 EUR
<b>ENGLAND</b>	20.00	334.11 EUR	427.95 EUR	Still cider & perry: + >1,2% and <7,5%: 49.68 EUR + >7,5% and <8,5%: 74.56 EUR Spark cider & perry: + >1,2% and <5,5%: 49.68 EUR + >5,5% and <8,5%: 323.47 EUR Others: + >1,2% and <4%: 102.94 EUR + >4% and <5,5%: 141.56 EUR

✓ **Intermediate beverages (European Commission, 2014)**

Country	VAT%	Standard rates	Preferential rates (Ne 15% vol)
<i>Minimum excise tax adopted by the Council on 19/10/1992</i>		45 EUR/hectolitre	<i>Not lower than 40% of standard rates and not lower than rates for still-wines etc.</i>
<b>BELGIUM</b>	21.00	119.8800 EUR Spark: 194.9400 EUR	89.9640 EUR 194.9400 EUR
<b>BULGARIA</b>	20.00	46.01 EUR	
<b>CZECH REPUBLIC</b>	20.00	91.24 EUR	
<b>DENMARK</b>	25.00	Still 15%-22%: 197.71 EUR Spark 15%-22%: 240.23 EUR	Still 1.2%-6%: 67.87 EUR Still 6%-15%: 147.68 EUR Spark 1.2%-6%: 93.39 EUR Spark 6%-15%: 123.45 EUR
<b>GERMANY</b>	19.00	>15%-22%: 153 EUR	≤15%: 102 EUR Spark: 136 EUR
<b>ESTONIA</b>	20.00	180.81 EUR	
<b>EL SALVADOR</b>	23.00	102.00 EUR	
<b>SPAIN</b>	21.00	61.08 EUR	36.65 EUR
<b>FRENCH</b>	20.00	186.36 EUR	
<b>CROATIA</b>	25.00	<15%: 65.65 EUR ≥15%-22%: 105.05 EUR	
<b>IRELAND</b>	23.00	Still>15%: 616.45 EUR Spark: 849.68 EUR	Still<15%: 424.84 EUR
<b>ITALY</b>	22.00	80.71 EUR	
<b>CYPRUS</b>	19.00	45.00 EUR	
<b>LATVIA</b>	21.00	99.60 EUR	64.03 EUR
<b>LITHUANIA</b>	21.00	115.85 EUR	81.38 EUR
<b>LUXEMBOURG</b>	15.00	>15%: 66.93 EUR	≤15%: 47.10 EUR
<b>HUNGARY</b>	27.00	86.20 EUR	
<b>MALTA</b>	18.00	150.00 EUR	
<b>NETHERLANDS</b>	21.00	Still>15%-22%: 149.29 EUR Spark >15%-22%:254.41 EUR	Still≤15%: 105.98 EUR
<b>AUSTRIA</b>	20.00	Still: 80.00 EUR Spark: 100.00 EUR	
<b>POLAND</b>	23.00	75.16 EUR	
<b>PORTUGAL</b>	23.00	68.68 EUR	
<b>ROMANIA</b>	24.00	175.74 EUR	
<b>SLOVENIA</b>	22.00	132.00 EUR	
<b>SLOVAKIA</b>	20.00	84.24 EUR	
<b>FINLAND</b>	24.00	Still & Spark 15%-22%: 670 EUR	Still & Spark 1.2%-15%: 411 EUR
<b>SWEDEN</b>	25.00	Still & Spark 15%-22%: 559.84 EUR	Still & Spark 1.2%-15%: 337.08 EUR

Country	VAT%	Standard rates	Preferential rates (Ne 15% vol)
ENGLAND	20.00	15%-22%: 445.43 EUR	Ne 15%: 334.11 EUR

✓ Ethyl alcohol (European Commission, 2014)

Country	VAT%	Standard rates	Preferential rates	
<i>Minimum excise tax adopted by the Council on 19/10/1992</i>		<i>555 EUR or 1000 EUR/ 1 hectolitre of pure alcohol</i>		<i>Preferential rates not lower than 50% of standard rates</i>
<b>BELGIUM</b>	21.00	2118.96 EUR		
<b>BULGARIA</b>	20.00	562.43 EUR		≤30 liters: 281.28 EUR
<b>CZECH REPUBLIC</b>	20.00	1111.24 EUR		≤30 liters: 557.57 EUR
<b>DENMARK</b>	25.00	2011.69 EUR		
<b>GERMANY</b>	19.00	1303.00 EUR		730.00 EUR
<b>ESTONIA</b>	20.00	1643.00 EUR		
<b>EL SALVADOR</b>	23.00	2450.00 EUR	1225.00 EUR	
<b>SPAIN</b>	21.00	913.28 EUR		799.19 EUR
<b>FRENCH</b>	20.00	1718.61 EUR	859.79 EUR	
<b>CROATIA</b>	25.00	695.92 EUR		
<b>IRELAND</b>	23.00	4257.00 EUR		
<b>ITALY</b>	22.00	942.49 EUR		
<b>CYPRUS</b>	19.00	956.82 EUR		
<b>LATVIA</b>	21.00	1337.50 EUR		
<b>LITHUANIA</b>	21.00	1291.71 EUR		
<b>LUXEMBOURG</b>	15.00	1041.15 EUR		
<b>HUNGARY</b>	27.00	1126.03 EUR		
<b>MALTA</b>	18.00	1350.00 EUR		
<b>NETHERLANDS</b>	21.00	1686.00 EUR		
<b>AUSTRIA</b>	20.00	1200.00 EUR		648.00 EUR
<b>POLAND</b>	23.00	1348.21 EUR		
<b>PORTUGAL</b>	23.00	1251.72 EUR	Azores: 312.93 EUR Madeira: 296.14 EUR	625.86 EUR
<b>ROMANIA</b>	24.00	1065.08 EUR		505.91 EUR
<b>SLOVENIA</b>	22.00	1320.00 EUR		
<b>SLOVAKIA</b>	20.00	1080.00 EUR		540.00 EUR
<b>FINLAND</b>	24.00	4555.00 EUR	>1.2%<2.8%: 800 EUR	

<b>Country</b>	<b>VAT%</b>	<b>Standard rates</b>	<b>Preferential rates</b>	
<b>SWEDEN</b>	25.00	5866.16 EUR		
<b>ENGLAND</b>	20.00	3535.01 EUR		

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## Appendix 1.2a

# VIETNAM'S ALCOHOL TAX POLICY IN THE CONTEXT OF TRADE INTEGRATION

**Study on  
Vietnam's alcohol tax policy  
in the context of trade integration**

**Tax Policy Department  
Ministry of Finance**

*The study was conducted with the financial support of Health Bridge Canada in Viet Nam in the framework of project “Facilitating Alcohol Control Law Development in Vietnam through Evidence”. The project was carried out with the aid of a grant from the International Development Research Center, Ottawa, Canada*

**Hanoi, May 2017**

**Contents**

- I. Preface: ..... 3
- II. Tax policy on alcohol beverage ..... 4
  - 1. Import tax: ..... 4
  - 2. Excise tax:..... 7
  - 3. Value added tax (VAT) ..... 9
- III. Overview of Vietnam's commitments to alcohol beverages: ..... 9
  - 1. Trans-Pacific partnership (TPP): ..... 12
  - 2. ASEAN – China Free Trade Agreement (ACFTA) ..... 13
  - 3. ASEAN - Japan Comprehensive Economic Partnership (AJCEP), Vietnam – Japan Economic Partnership Agreements (VJEPA)..... 15
  - 4. ASEAN - Australia - New Zealand Free Trade Agreement (AANZFTA)..... 17
  - 5. Vietnam – Chile Free Trade Agreement (VCFTA)..... 18
  - 6. Vietnam – EU Free Trade Agreement (EVFTA) ..... 19
  - 7. The ASEAN – India Free Trade Agreement (AIFTA)..... 22
  - 8. The ASEAN – Korea Free Trade Agreement (AKFTA) and Vietnam - Korea Free Trade Agreement (VKFTA) ..... 23
  - 9. ASEAN Trade in Goods Agreement (ATIGA) ..... 24
- IV. Policy Recommendations..... 26
- REFERENCES..... 27

## I. Preface:

There are more and more articles and programs in the media on the harms of alcohol beverage abuse. It reflects the fact that gradually more attention is being paid to the harms associated with alcohol and the risks of abuse.

Alcohol abuse adversely affects not only the health and well-being of consumers (health costs, opportunity costs, etc.) but also the community as a whole (traffic, accidents, public disturbances, labor lost, gross domestic product lost, medical treatment costs, etc.). In Vietnam, it is estimated that trillions of dollars lost each year due to the abuse of alcohol.

On February 12<sup>th</sup>, 2014, the Prime Minister issued Decision No. 244/ QD-TTg, a national policy to prevent harm from alcohol abuse until 2020. Point c, Clause 1, Section III of the Decision has defined the solution as *"applying suitable tax policies on alcohol beverages (spirits, wine, beers, etc. ) to reduce alcohol beverage abuse as well as restrict smuggling and use of under-standard alcohol beverages."* In paragraph 8 of Section V of the Decision, the Prime Minister has assigned the Ministry of Finance to *"Lead research and propose a roadmap to adjust excise tax on alcoholic beverages."*

Implementing the task assigned by the Prime Minister, in 2014, the Ministry of Finance had conducted research and proposed the Government National Assembly approve a number of amendments and supplements to several Articles on the Law of Excise Tax, including a roadmap for increasing the excise rate for alcohol beverages as follows:

For wines and spirits:

- Wines and spirits with Alcohol by volume (ABV) from 20% and above: From the excise tax rate of 50% before 2016 up to 55% in 2016, and up to 60% in 2017, 65% from 2018.
- Wines and spirits with Alcohol by volume (ABV) below 20%: From the excise tax rate of 25% before 2016 up to 30% in 2016, 2017 and up to 35% from 2018.

For beer: From the excise tax rate of 50% before 2016 up to 55% in 2016, up to 60% in 2017 and 65% from 2018.

In 2014, the Ministry of Finance issued Circular No. 175/2014/TT-BTC regulating the management and use of funds from state budgets to preventing harm and abuse of alcohol. The circular guided ministries, provinces and localities assigned in the Decision No. 244/QD-TTg to budget for allocating funds for the prevention and control of the harms caused by alcohol abuse. Accordingly, funds will be allocated from the annual budget of the Ministry of Health and other ministries, provinces and localities assigned in disease control and prevention (including prevention and control of tobacco-related harm).

In the end of 2015, ASEAN economic community was officially established. The process of negotiating a free trade agreement between Vietnam and the European Union, and the Trans-Pacific Strategic Partnership (TPP) has ended. Vietnam has signed many bilateral and multilateral free trade agreements. The signed agreement on import tariff policy commitments will have an impact on the domestic market and domestic tax policy. In the context of integration, joining the ASEAN economic community and integrating more deeply, it is necessary to actively study, analyze and orient tax policy, especially the excise tax policy in accordance with the regional and international integration.

With support from the HealthBridge Foundation of Canada, this study was prepared to (1) provide information on Vietnam's tax policy on alcohol beverages and (2) to provide information on Vietnam's FTA commitments on alcohol beverages as well as (3) to provide recommendations for policy makers.

## **II. Tax policy on alcohol beverage**

Alcohol beverages are subject to a number of different taxes, including import duties (for imported alcohol beverages), excise tax and VAT.

### **1. Import tax:**

Before 1991, Vietnam applied the Law on Export Tax and Import Tax of Trade. In 1991, Vietnam issued the Law on Export Tax and Import Tax replacing the Law on Export Tax and Import Tax of Trade. The 1991 Law was amended in 1993, 1998 and 2005. By 2016, the National Assembly promulgated the Law on Export Tax and Import Tax No. 107/2014 / QH13.

According to the provisions of these Export Tax and Import Tax Laws:

- The base for calculating export tax or import tax is the quantity of units of each good actually imported inscribed in the customs declarations, the taxable prices and the ad valorem tax rate (%); For goods subjected to specific tax, the tax base shall be the quantity of units of each good actually imported inscribed in the customs declarations, the specific tax per unit of goods.

- The tax calculation method is as follows:

a) The import tax liability shall be calculated by the quantity of units of each good actually imported inscribed in customs declarations multiplied by the taxable prices and tax rates of each goods stated in the tax rate schedule at time of tax calculation;

b) In cases where the goods are subject to specific tax, the payable import duty shall be equal to the quantity of units of each goods actually imported inscribed in customs

declarations multiplied by the specific tax rates per unit of goods at the time of tax calculation.

- The tax currency is Vietnam Dong. In cases where paying taxes in foreign currencies is permitted, tax must be paid in freely-convertible foreign currencies.

- Tax rate on imported goods includes:

- **Preferential tax rates** are applicable to import goods originating from countries, groups of countries or territories, which apply the most favored nation treatment in their trade relations with Vietnam;

- **Special preferential tax rates** are applicable to import goods originating from countries, groups of countries or territories, which apply special preferences on import tax to Vietnam.

- **Normal tax rates** are applicable to import goods originating from countries, groups of countries or territories, which do not apply the most favored nation treatment or special preferences on import tax to Vietnam. The ordinary tax rates shall not be 70% higher than the preferential tax rates for the same goods items specified by the Government.

Export tax and import tax are very important tools for the government to implement its economic policies, manage export and import activities; expand external economic relations; improve the efficiency of export and import activities. Based on each historical period and socio-economic condition, export tax and import tax are used for a variety of purposes. However, generally the nature of the export tax or import tax is expressed in the following ways:

- Export tax and import tax are effective tools to protect domestic production. High tariffs on imported goods will enable domestic producers to compete with imported goods. Particularly, the export tax and import tax could give “young” domestic industries’ goods a better chance to compete with imported goods. Export tax and import tax could also reduce unemployment because of high import tax, the quantity of imported goods would decrease; To compensate for the volume of imported goods, domestic industries must expand investment, production, create more jobs, thereby contributing to a reduction in unemployment. Export tax and import tax are good tools for the government to implement discriminatory policies in trade with other countries.

- Export tax and import tax are an important source of revenue for the state budget. The general objective of tax, including export tax and import tax, is to generate revenue for the state budget. At the same time, export tax and import tax are the “easiest” to collect tax since they are less likely to be opposed domestically, and could even gain support from many people. Export tax, import tax liability is calculated into commodity prices, therefore lead to the increase in commodity prices, thus adjusting quantity of commodity’s

export and import and its consumption. Because the amount of goods exported or imported depends on their consumption, and the consumption depends on the price. High or low commodity prices will determine whether to reduce or increase the competitiveness of that commodity in the market. Export taxes and import duties will also limit the consumption of luxury goods or goods that are not encourage of using such as alcohol beverages.

Alcoholic beverages have been subjected to import tax since the Law on Export Tax and Import Tax was first issued. Only imported alcoholic beverages are subject to import duties. Alcohol is only imported into Vietnam through international border custom gates. Alcohol is imported for instant consumption (e.g. bottled, barreled) and as semi-finished products or materials used for further processing to become beverages for consumption in Vietnam.

According to current regulations, imported liquors, spirits or wines are applying the import tax rate from 45% to 55% depending on type, for beer the import tax rate is 35%. In the signed Vietnam trade commitments, the majority of tax rates for alcohol and beer in these commitments are lower than the normal tax rates. However, commitments in the ASEAN - Australia - New Zealand (AANZFTA), ASEAN - India (AIFTA), Vietnam - Chile (VCFTA), ASEAN – Japan (AJCEP), Vietnam – Japan (VJEPA) have the import tax rate for alcohol beverages higher than the normal rate.

**Table 1: Import tax rate in MFN defined in MOF’s Circular 182/2015/TT-BTC versus the higher import tax rate of some FTAs**

	<b>Normal MFN</b>	<b>AANZFTA</b>	<b>AIFTA</b>	<b>VCFTA</b>	<b>AJCEP/VJEPA</b>
Beer	35%	80%	65%	53%	65%
Alcohol products (except beer)					
- Wine	50%	80%	65%	53%	65%
- Sake, toddy, shandy, ...	55%	80%	65%	53%	65%
- Liquors, spirits, whisky, brandy, cognac, vodka, ...	45%	80%	65%	53%	65%

The bases for calculating the import tax on imported alcohol are the quantity of units for each of the goods inscribed in the customs declaration, the taxable price, the ad valorem tax rate (%). Import tax liability shall be calculated by the quantity of units of each good actually imported inscribed in customs declarations multiplied by the taxable prices and tax rates for each good stated in the tax rate schedule at time of tax calculation.

Alcohol beverages are not subjected to export tax.

Only enterprises having an alcohol distribution business license may import alcohol directly and are responsible for the quality and safety of imported alcohol. Enterprises importing semi-finished alcohol and materials used for the further processing of finished alcohol are only allowed to sell to enterprises which have the license.

**2. Excise tax:**

Excise tax is an indirect tax levied on goods and services that the government needs to regulate its consumption, ensuring compliance with international practices and contributing to stable budget revenue.

In Vietnam, the basic role of excise tax is:

- Firstly, excise tax is a tool for the Government to regulate production and social consumption.
- Second, excise tax limits a number of goods and services of which production and consumption causes environmental pollution, harmful effects to human health or negative impacts on national political and social.
- Third, excise tax is a tool for the Government to regulate/redistribute income from segments of consumers who purchase luxurious and unnecessary goods and services.
- Fourth, excise tax is an important source of revenue for the State budget.

Because of their impact on human health and society, alcohol beverages have been subjected to excise tax since the first issuance of Excise tax law in 1990. In 2003, the National Assembly issued an amendment and supplement on the Law for Excise Tax that regulated taxable price as well as amended the excise tax rate on alcohol:

+ Reducing excise tax rate on

	<b>Before 2003 (%)</b>	<b>Amended rate (%)</b>
Draught beer	50	30
Wine and liquor with Alcohol by volume (ABV) from 30 – 40%	55	30

+ Increasing excise tax rate on

	<b>Before 2003 (%)</b>	<b>Amended rate (%)</b>
Beer	65	75
Wine and liquor with ABV above 40 %	70	75
Wine and liquor with ABV from 20 – 30%	25	30

In 2005, to prepare for the process of becoming a member of the World Trade Organization (WTO) and following the WTO national treatment rule, Vietnamese National Assembly passed an amendment and supplement to some articles of the Law on Excise Tax and VAT No. 57/2005/QH11 dated Feb 29, 2005. The amended Law eliminated all discrimination between domestically produced and imported alcohol beverages. The law reduced the tax rate for alcohol from or above ABV 40% from 75% to 65% and raised the tax rate for medical liquor from 15% to 20%. Applying uniform tax rates to beer and draught beer following the roadmap: In 2006-2007: a tax rate of 30%; from 2008 the tax rate is has been set at 40%.

The implementation of a uniform tax rate for both bottled and draught beer was due to international economic integration under the principles of non-discrimination between domestic goods and imported goods.

In 2008, the Excise Tax Law No. 27/2008/QH12 (effective from April 1st, 2009) had amended excise tax rate of alcohol beverages as following:

	<b>Before April 2009 (%)</b>	<b>Amended rate (%)</b>
- Wine and liquor	§ Medical liquor and wine and liquor with ABV from and lower than 20%: 20% § Liquor with ABV from 20% to 40%: 30% § Liquor with ABV above 40%: 65%	§ Wine and liquor with ABV lower than 20%: 25% § Wine and liquor with ABV above 20% Applying the roadmap: + From Jan 1st, 2010 to Dec 31st, 2012: 45%; + From Jan 1st, 2013: 50%
- Beer	§ Draught beer: 40% § Beer: 75%	§ Uniform tax rate for beer under the roadmap: + From Jan 1st, 2010 to Dec 31st, 2012: 45%; + From Jan 1st, 2013: 50%

In 2014, the amended Excise tax law of 2014 (effective 01/01/2016) increased the rate for beer as well as wine and liquor as follows:

<b>Wine and liquor</b>	<b>(%)</b>
a) Wine and liquor with ABV above 20%	
From Jan 1 <sup>st</sup> , 016 to Dec 31, 2016	55
From Jan 1 <sup>st</sup> , 2017 to Dec 31 <sup>st</sup> , 2017	60
Since Jan 1 <sup>st</sup> , 2018	65

b) Wine and liquor with ABV lower than 20%	
From Jan 1 <sup>st</sup> , 016 to Dec 31, 2017	30
Since Jan 1 <sup>st</sup> , 2018	35
<b>Beer</b>	<b>(%)</b>
From Jan 1 <sup>st</sup> , 016 to Dec 31, 2016	55
From Jan 1 <sup>st</sup> , 2017 to Dec 31 <sup>st</sup> , 2017	60
Since Jan 1 <sup>st</sup> , 2018	65

### 3. Value added tax (VAT)

Value added tax (VAT) has been applied in Vietnam since January 1, 1999.

Before 2004, alcoholic beverages were not subjected to VAT because at that time, goods subjected to Excise tax were not subjected to VAT.

Since 2004, alcoholic beverages (both domestically produced and imported) are subject to VAT at the rate of 10% at all stages of importation, production and trade.

In general, for alcohol, VAT is high and difficult to change because it is at its maximum rate and is also a universal tax rate. Import tax is gradually reduced due to the commitments, so in order to prevent alcohol and beer from becoming more affordable Decision No. 244 / QD-TTg on national policies to prevent harmful effects of alcohol abuse should be implemented. Decision No. 244/QD-TTg advises: *"Apply suitable tax policies for alcohol beverages to reduce abuse as well as smuggling and the use of non-standard alcohol beverages."* The adjustment on excise tax for alcohol is essential to ensure alcohol does not become more affordable.

### III. Overview of Vietnam's commitments to alcohol beverages:

The 11th National Congress of the Communist Party of Vietnam in January 2011 set out Vietnam's foreign policy, including the policy of "active integration". On April 10, 2013, the Politburo issued Resolution No. 22-NQ-TW on international integration, which clearly defined that international integration would be carried out in many fields, economic integration must be linked to restructuring the economy. This is an important resolution that solidifies the foreign policy and advocates "active international integration" in order to successfully implement the task of developing the country. In implementing Resolution 22-NQ-TW, the Government issued Resolution No. 31 / NQ-CP dated May 13, 2014 promulgating the Government's action plan with specific objectives: Strengthening law and enhancing international integration capacity, to actively integrate into the international economy.

Vietnam has been active in negotiating and signing new Free Trade Agreements (FTAs) with its partners. Vietnam has signed 11 bilateral and multilateral Free Trade Agreements, including ASEAN Trade in Goods Agreements (ATIGA), ASEAN-China Free Trade Agreement (ACFTA), ASEAN-Korea Free Trade Agreement (AKFTA), Vietnam-Korea Free Trade Agreement (VKFTA), ASEAN-Japan Comprehensive Economic Partnership Agreement (AJCEP), Vietnam-Japan Economic Partnership Agreement (VJEPA) The ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), the ASEAN-India Free Trade Agreement (AIFTA), the Vietnam-Chile Free Trade Agreement (VCFTA) and the Free Trade Agreement of Vietnam - Eurasia Economic Union (VNEAEUFTA).

Two important agreements have been concluded, namely the Vietnam-EU Agreement (December 2, 2015) and the TPP Agreement (October 5, 2015). These are new generation FTAs with broad and deep commitments. In addition to commitments on liberalization of trade in goods and services, participating countries are committed to other areas such as government procurement, labor, environment, intellectual property, state-owned enterprises, The conclusion of the negotiation of these two agreements marked Vietnam's important integration since the accession to the WTO, which is considered as a driving force to promote foreign investment in Vietnam.

Agreements still under negotiation include: FTA Vietnam-EFTA (Switzerland, Norway, Iceland and Liechtenstein), the ASEAN Regional Comprehensive Economic Partnership Agreement with six countries Partner (RCEP), ASEAN-Hong Kong FTA. In addition to economic interests, FTAs with these partners also contribute to the enrichment of Vietnam's trade and political relations with other countries.

The agreements that Vietnam participates in are based on the selection of partners in line with the international economic integration strategy.

To guide these FTAs, the Ministry of Finance has issued circulars on Vietnam's Special Preferential Import tax rate Schedule: Circular No.162/2013/TT-BTC dated November 15, 2013 on the Vietnam-Chile Special Preferential Import Tariff, Circular No.165/2014/TT-BTC, 166/2014/TT-BTC, 168/2014/TT-BTC, 169/2014/TT-BTC on November 14, 2014 on the Special Preferential Import Tariff tax rate schedule for ASEAN, ASEAN-China, ASEAN-Korea, ASEAN-Australia-New Zealand, ASEAN-India for the period of 2015-2018, Circular No.24/2015/TT-BTC, Circular No.25/2015/TT-BTC dated February 14, 2015 on the Special Preferential Import Tariff tax rate schedule for ASEAN-Japan, Vietnam-Japan for the period 2015-2019, Circular No.44/2015/TT-BTC dated 30 March 2015 amending the Special Preferential Import Tariff tax rate schedule for ASEAN-Korea for the period 2015-2018.

In most of the FTAs Vietnam has signed the average import tax liberalization accounts for about 90% of all import tax lines, except for the ASEAN Agreement (ATIGA) which is

an intra-bloc with an approximate liberalization commitment of about 98%. On the roadmap, the timeline for completing these FTAs are: ATIGA (2018), followed by ACFTA (2020) and AKFTA (2021). In 2015, the level of import tax liberalization for Vietnam with FTA partners is considerable: for ATIGA is about 93%, for ASEAN-China is about 84%, for ASEAN-Korea is about 78% and for ASEAN-Japan is about 62%. Accordingly, many commodities have a large import quantity/value from ASEAN, China and South Korea will enjoy 0% tax from 2015 on items such as iron and steel, fertilizers, electronic products, trucks, household appliances and machinery.

For imported goods to enjoy special preferential tax rate through the FTAs above, there are 4 requirements: (i) Be included as the goods on the Special Preferential Import Tariff tax rate schedule; (ii) Be imported into Vietnam from countries that are members of the Agreement; (iii) Be shipped directly from the exporting country that is a member of the Agreement; and (iv) Satisfy regulations on the origin of goods, with certificate of origin prescribed by the Ministry of Trade.

Vietnam's good exports to the ASEAN countries, Australia - New Zealand, China, Korea, Japan, India will enjoy a 0% tax rate at around 90% of total import tax lines in 2018 if having certificates of origin and would reach 100% of total import tax lines in the following year, depending on the commitment. All Vietnam's eleven FTA commitments as follows:

## 1. Trans-Pacific partnership (TPP):

Trans-Pacific partnership (TPP) was initiated in 2005 by the original 4 member countries, Brunei, Chile, Singapore and New Zealand. TPP was officially launched in March 2010. Vietnam joined the TPP in November 2010.

Until now, the TPP includes 12 members: Australia, New Zealand, Singapore, Japan, Malaysia, Indonesia, Brunei, Peru, Chile, Canada, Mexico and Vietnam. With the participation of Japan (June 7/2013), TPP became the world's largest FTA, accounting for about 40% of global GDP and about one third of total world trade volume.

On October 2015, all 12 countries have officially concluded TPP negotiations and conducted their own legal review and technical/procedure works.

The countries committed to eliminating import duties for goods from Vietnam immediately after the agreement becomes effective, including about 78-95% of all import tax lines.. The remaining goods that are still subjected to import tax have a roadmap to remove import tax within 5-10 years, except for some sensitive products which have a roadmap timetable of over 10 years or the option of applying an import quota. Many key export goods from Vietnam would enjoy a 0% import tax rate immediately after the agreement becomes effective or after 3-5 years such as agriculture, fisheries, textiles, shoes, furniture, electrical goods, and rubber.

Vietnam has committed to eliminate almost 100% of its import tax lines in the TPP as followings:

- Eliminating 65.8% of import tax lines to 0% as soon as the agreement becomes effective;
- Eliminating 86.5% of import tax lines to 0% in the 4th year after the agreement becomes effective;
- Eliminating 97.8% of import tax lines to 0% in the 11<sup>th</sup> year after the agreement becomes effective;
- For the remaining items, Vietnam committed to eliminating all import tax in the 16th year after the agreement becomes effective or will apply an import quota.
- For alcohol: elimination of all import tax in the 3rd year after the agreement becomes effective for sake, for the remaining alcoholic beverages in the 11<sup>th</sup> or 12<sup>th</sup> year after the agreement becomes effective.

The TPP was of special importance to Vietnam, as many planned TPP members are Vietnam's top trade partners and primary sources of FDI. In terms of trading, the US and Japan were in the top three exporting markets of Vietnam in the first seven months of 2015, with US\$18.9 billion and US\$8.0 billion in export value. Over the same period, Japan ranked

third among the main importing markets of Vietnam, at US\$8.5 billion in imports. However, after the USA president Donald Trump signed an executive order in January 2017 for the U.S. to withdraw from the TPP deal, Vietnam should pay more attention to the EVFTA and others regional deals.

**Table 2: Vietnam’s commitments on alcohol beverages are as follows (%):**

	Y 1	Y 2	Y 3	Y 4	Y 5	Y 6	Y 7	Y 8	Y 9	Y 10	Note
Beer	34	33	32	30	29	25	22	18	15	11	From Year 11: 0%
Alcohol products (except beer)											
-Wine	45	41	36	32	27	23	22	20	15	10	From Year 11: 0%
-Sake, toddy, shandy, ...	45	41	36	32	27	23	22	20	15	10	From Year 11: 0%
-Liquors, spirits, whisky, brandy, cognac, vodka, ...	45	41	36	32	27	23	22	20	15	10	From Year 11: 0%

The TPP has officially been concluded by all member countries in 2015 and each member country would conduct its own legal review and technical/procedure works. Currently, for Vietnam, this Agreement is being submitted to the President and the National Assembly to adopt. Following its adoption, the Ministry of Finance will issue a circular guiding the Special Preferential Import Tariff tax rate schedule for TPP (TPP Schedule).

## 2. ASEAN – China Free Trade Agreement (ACFTA)

ACFTA was signed in November, 2004 in Laos, a MoU between Vietnam and China was signed on July, 2005 in China. The agreement has been effective since Jan 1<sup>st</sup>, 2006.

Vietnam’s commitment on cutting import tax within the ACFTA is divided into three categories including: Early Harvest Program (EHP), Sensitive Table (ST), Normal Table (NT), as follows:

**Early Harvest Program (EHP):** includes most of the agricultural products and fisheries from Chapter 1-8 of import tax schedule. Commitment for import tax cut for these items have been started since 2004 and finished to 0% by 2008.

### **Sensitive Table (ST):**

For Vietnam, sensitive goods include 388 commodity groups at the HS 6 (Annex III of the Memorandum of Understanding), such as: eggs, sugar, tobacco, engines, means of transport (cars, motorcycles), petroleum, steel, building materials, electronics, refrigeration,

paper, and textiles. These sensitive goods are not subjected to annual import tax reductions, but are subjected to the commitment on the final tax rate at the last year of implementation as follows:

- Sensitive List (SL): final tax rate of 20% for the last year (2015) and reduced to 0-5% by 2020.

- Highly sensitive list (HSL): final tax rate of 50% at the final year of 2018.

**Normal Table (NT):** Tax cuts started in 2006 and would reach about 0% in 2015.

The ASEAN-China Free Trade Agreement (ACFTA) is a significant step in regional economic integration for both China and the ASEAN countries. It was the first important Free Trade Agreement (FTA) for China; it also represents a significant development in East Asian integration. As is often the case with FTAs, positive impacts on trade and foreign direct investment (FDI) flows were linked as desired objectives by the participating countries in their agreement leading to the establishment of the ACFTA.

To implement the Agreement, Ministry of Finance issued Circular 166/2014 /TT-BTC on the Special Preferential Import Tariff tax rate schedule for ACFTA.

Alcohol beverages are included on the sensitive list, however their committed tax rate was 5% in 2015 and 0% in 2020. Specifically:

**Table 3. Vietnam's commitments related to alcohol tax in ACFTA (Unit: %)**

	2015	2016	2017	2018	2019	2020	Note
Beer	5	5	5	0	0	0	0% - 2018
Alcohol products (except beer)							
- Wine	5	5	5	0	0	0	0% - 2018
- Sake, toddy, shandy, ...							
- Liquors, spirits, whisky, brandy, cognac, vodka, ...	5	5	5	0	0	0	0% - 2018

The appearance of the ACFTA means the removal of the China trade protection barrier . It was the first time the trade relationship between the two countries was put in an agreement that included import tax reduction under the framework of a free trade agreement. Before ACFTA, China was applying an import tax rate for Vietnamese goods over 20% on 29.9% of Vietnam's export to China, an import tax rate between 11-20% accounted for 32.86% and a rate of less than 10% accounted for 37.14% of Vietnamese exports to China. Under the commitments of ACFTA, the import tax rate China applies for most Vietnamese goods is down to 0% within five years. This is important because Vietnam should have the

appropriate adjustments to seize opportunities and respond to challenges in order to benefit as much as possible from the ACFTA in the future.

### **3. ASEAN - Japan Comprehensive Economic Partnership (AJCEP), Vietnam – Japan Economic Partnership Agreements (VJEPA)**

April 2008, ASEAN and Japan signed the Agreement on Comprehensive Economic Partnership (AJCEP). AJCEP is considered a free trade agreement (FTA) comprehensive in many areas, including trade in goods, services, investment and economic cooperation .

On the issue of tax, Vietnam’s Special Preferential Import Tariff tax rate schedule for AJCEP (Circular 24/2015/TT-BTC) includes 9,390 import tax lines (based on AHTN 2007) with roadmap on tax reduction for 8,771 lines. The other lines are automobile CKD lines (57 lines) and lines on import tax that Vietnam has not committed to cut (562 lines), specifically:

- The list of import tax elimination: Vietnam has committed to eliminate import tax on 62.2% of import tax lines for 10 years, including the elimination of import tax immediately after the agreement comes into effect (for 26.3% of lines). In the final year of the import tax cut roadmap (2025), the number of lines having import tax cut would be 88.6% of all lines in the schedule of commitments (schedule on Circular 24/2015/TT-BTC).

- Sensitive list (SL) contains 0.6% of import tax lines, their tax rate is maintained in the tax rate basis and reduced to 5% in 2025.

- High Sensitive List (HSL) accounted for 0.8% of all import tax lines, their import tax rates remain high (reduced to 50% in 2023).

- List of import taxes not being eliminated: Their import taxes remain in the tax base (3.3% of import tax lines).

- Exclusion List: accounted for 6.0% of import tax lines.

Tax reduction roadmap of Vietnam in AJCEP started in 2008 and would end in 2025.

In December 2008, Vietnam and Japan signed Economic Partnership Agreements (VJEPA). The agreement has been effective since October 2009.

Similar to AJCEP, in VJEPA, both Vietnam and Japan agreed to cut “massive” tax lines: 92.95% of tax lines for Vietnam and 94.53% of tax lines for Japan.

Vietnam’s Special Preferential Import Tariff tax rate schedule for VJEPA (Circular 25/2015/TT-BTC) includes 9,390 import tax lines (based on AHTN 2007) with a roadmap for tax reduction on 8,873 lines. The other lines are automobile CKD lines and import tax lines that Vietnam has not committed to cut, specifically:

- The list of import taxes to be eliminated: Vietnam has committed to eliminate import tax on 75.2% of import tax lines over 10 years, including the elimination of import taxes immediately after the agreement takes effect for 27.5% of lines. In the final year of the import tax cut roadmap, the number of lines having import tax cut would be 91% of all lines in the schedule of commitments (schedule on Circular 25/2015/TT-BTC).

- Sensitive list (SL) contains 0.6% of import tax lines. Their tax rate is maintained until 2024 to 2026 when it is reduced to 5%.

- Highly Sensitive List (HSL) accounted for 0.8% of all import tax lines, their import tax rate remain high (reduced to 50% in 2025).

- List of import taxed not being eliminated: Their import taxes remain in the tax base (2% of import tax lines).

- Exclusion List: accounted for 4.6% of import tax lines.

Tax reduction roadmap for Vietnam in VJEPA started in 2009 and would end in 2026.

To implement the Agreement of AJCEP and VJEPA, Ministry of Finance issued Circular 24/2015/TT-BTC, 25/2015/TT-BTC dated 14th, Feb 2015 on the Special Preferential Import Tariff tax rate schedule for AJCEP and VJEPA respectively for the period of 2015-2019

Alcohol beverages are on the Highly Sensitive List (HSL), their import tax rates remain high at 65% , but would be reduced to 50% in 2025.

**Table 4. Vietnam’s commitments related to alcohol tax in AJCEP and VJEPA (Unit: %)**

	2015	2016	2017	2018	2019	Note
Beer	65	65	65	65	65	50%-2025
Alcohol products (except beer)						
- Wine	65	65	65	65	65	50%-2025
- Sake, toddy, shandy, ...	65	65	65	65	65	50%-2025
- Liquors, spirits, whisky, brandy, cognac, vodka, ...	65	65	65	65	65	50%-2025

It is noteworthy that in these Agreements the import tax rate on alcohol between Vietnam and Japan are higher than the normal MFN import tax rate in Vietnam, therefore alcohol beverages imported under these Agreement from Japan to Vietnam are taxed higher than without these FTA agreements.

#### 4. ASEAN - Australia - New Zealand Free Trade Agreement (AANZFTA)

On 27<sup>th</sup> February, 2009 ASEAN, Australia and New Zealand signed the Free trade Agreement to establish the ASEAN - Australia - New Zealand Free Trade Agreement (AANZFTA). The Agreement became effective in January, 2010.

Tax commitments of Vietnam within the AANZFTA are as follows:

- Vietnam has committed to eliminate import tax for 90% of all import tax lines including:

+ Cut 54% of all import tax lines in 2016;

+ Cut 85% of all import tax lines in 2018;

+ Cut 90% of all import tax lines in 2020.

- Sensitive Table 1 (normally sensitive) (ST1) accounted for 6% of all import tax lines, their tax would be reduced gradually to the final tax rate of 5% in 2022.

- Sensitive Table 2 (highly sensitive) (ST2) accounted for 3% of all import tax lines, their tax would maintain high (unchanged) or reduced to 50% or decrease 20% or 50% in 2022.

To implement the Agreement of AANZFTA, Ministry of Finance issued Circular 168/2014/TT-BTC on the Special Preferential Import Tariff tax rate schedule for AANZFTA.

Alcohol beverages are on the Highly Sensitive List (ST2), their import tax rates remain high at 80% and would be reduced to 40% in 2022.

**Table 5. Vietnam's commitments related to alcohol tax in AANZFTA. (Unit: %)**

	2015	2016	2017	2018	Note
Beer	80	80	80	80	40%-2022
Alcohol products (except beer)					
- Wine	80	80	80	80	40%-2022
- Sake, toddy, shandy, ...	80	80	80	80	40%-2022
- Liquors, spirits, whisky, brandy, cognac, vodka, ...	80	80	80	80	40%-2022

In this Agreement, the import tax rate on alcoholic beverages between Vietnam, Australia, and New Zealand are higher than the normal MFN import tax rate in Vietnam. Therefore, alcoholic beverages imported under this Agreement from Australia and New Zealand to Vietnam are taxed higher than without this FTA agreement.

## 5. Vietnam – Chile Free Trade Agreement (VCFTA)

Vietnam - Chile Free Trade Agreement (VCFTA) was to be signed in November 2011 between Vietnam and Chile. The agreement became effective in January, 2014.

Vietnam committed to eliminate 87.8% of all import tax lines (which accounted for 91.22% of their import volumes in 2007) for Chile over a 15 year period. In turn, over a 10 year period, Chile would eliminate import tax lines for Vietnam that accounted for 99.62% of their export volume in 2007, of which 83.54% of tax lines and 81.8% of trade volume would be removed immediately.

The rules of origin within the agreement were simple, stating that goods made from 40% or more domestically produced materials.

Trade between Vietnam and Chile increased by an average of 26% over the past five years, including a more than 41% increase in Vietnam's exports to Chile. By signing the FTA, in addition to enhancing market access to Chile, Vietnam has an opportunity to penetrate Vietnamese goods into other markets in the Latin American region.

To implement the Agreement of VCFTA, the Ministry of Finance issued Circular 162/2013/TT-BTC on the Special Preferential Import Tariff tax rate schedule for VCFTA.

Since alcohol beverages are on the sensitive list with high protection, their high import tax rate was maintained at 53% and will be reduced to 40% in 2029. Like AANZFTA, AJCEP and VJEPA, the committed import tax rate on alcohol between Vietnam and Chile is higher than the current import tax MFN for Vietnam, so wine and beer imported from Chile have higher tax liability than without the FTA committing. In detail:

**Table 6. Vietnam's commitments related to alcohol tax in Vietnam – Chile (Unit: %)**

	2015	2016	End rate/End date
Beer	53	53	40%-2029
Alcohol products (except beer)			
- Wine	53	53	40%-2029
- Sake, toddy, shandy, ...	53	53	40%-2029
- Liquors, spirits, whisky, brandy, cognac, vodka, ...	53	53	40%-2029

## 6. Vietnam – EU Free Trade Agreement (EVFTA)

Vietnam - EU Free trade agreement (EVFTA) is a new generation of FTA between Vietnam and 28 EU member states. EVFTA, along with the Trans-Pacific Partnership Agreement (TPP), the two FTAs are Vietnam's highest level of commitment until now.

On Jan 2015, the EVFTA officially concluded its negotiations. Currently, the two sides are conducting a review of the written agreement and they are processing further procedures for the agreement to become effective in 2018.

The EVFTA is a comprehensive trade agreement and it ensures a balance of interests for both Vietnam and the EU. The agreement covers various fields such as customs, trade, services and investment, government's procurement, and intellectual property rights. The agreement also includes a new and more progressive approach on investment protection and dispute settlement.

The EVFTA commits to a strong market opening. Vietnam and the EU will eliminate import duties on over 99% of import tax lines. For the very few remaining import tax lines, both parties will grant each other import quotas or an import tax reduction solution. The EVFTA is expected to be a key FTA for Vietnam since it helps to expand the market for Vietnamese exports, especially products that both Vietnam and the EU have advantages in, such as textiles, footwear, agriculture, fisheries, wooden furniture, machinery and equipment, automobiles, alcohol, and certain types of EU agricultural products.

For EU exports, Vietnam committed to cut import tax to 0% for major EU goods such as automobiles and motorcycles after a period of 9 to 10 years.. Vietnam also committed to cut import tax to 0% for EU wine, spirits, beer, pork and chicken after a period of 10 years.

The EVFTA is expected to promote the flow of investment capital from EU and its partners to Vietnam. Vietnam also has the opportunity to become the transfer warehouse connecting commercial activities between EU and the region, therefore accelerating the process of economic restructuring and promoting growth in Vietnam.

The elimination of import tariffs is the key priority for the wines and spirits industry. CEEV and EUROPE seek the full elimination of tariffs on European wine and spirits upon the entry-into-force of the agreement. As part of its WTO accession, Vietnam agreed to reduce its tariffs on spirits to 45% in 2013 (from 48% in 2012). This 2013 rate would be the starting point for negotiations.

This priority is all the more essential since Vietnam is engaged in a FTA negotiation with leading wine and spirits exporters, namely the United States and Australia, via the Transpacific Partnership (TPP) negotiations. Currently holding a significant market share, the

EU wine and spirits sector needs to secure import tax liberalization sooner than its international competitors to maintain and improve their position in the market.

Moreover, import tax liberalization would be in the Vietnamese government's self-interest: according to industry estimates, a large share of imported alcohol enters the Vietnamese market without full payment of duties and taxes, resulting in significant revenue loss for the government. High import tariffs and excise taxes create major incentives for smuggling imported spirits. A vivid example of the benefits of tariff liberalization would be China's import tax reduction on spirits from 65% to 10% between 2000 and 2007. Combined with relatively low excise tax rates, it has led to a massive growth in legal spirits imports (from US\$30 million to roughly US\$500 million), and greatly increased government overall revenue collection (from US\$ 30 million to US\$265 million, including import tariffs, and special consumption taxes such as VAT).

The increase in European wine and spirits exports could be undermined by the persistence or creation of non-tariff barriers by the Vietnamese government that contradicts the WTO commitments of the country. Protection of European geographical indications (GIs) could be enhanced while Vietnam has taken some positive steps, such as recognition of some EU GIs.

The current Vietnamese enforcement of intellectual property laws is inefficient, with long proceedings leading to unreliable and unpredictable protection. The Vietnamese Government acknowledges the unacceptably high prevalence of contraband and counterfeit goods. Significant volumes of goods are smuggled, a share of it being counterfeited, and counterfeit products are also being produced in Vietnam, for domestic consumption and export.

European producers, abiding by EU law and following *Codex Alimentarius* guidelines, place a lot code on individual packages to be able to trace their products throughout the supply chain. This allows producers to conduct an effective and targeted product recall if needed. Lot codes are mandatory for the circulation of foodstuff in the EU and tampering with them is forbidden. In Asia, traceability information is not being protected from tampering or blurring by any kind of legislation and smugglers routinely destroy lot codes to ensure their sales cannot be traced back to them. This breach in the traceability is detrimental to consumers in these countries, and is highly detrimental to producers since any safety issue would trigger a vast call back to their products, or in a worst-case scenario could lead to a complete shutdown of their market. Traceability is key to building confidence in our products in a region prone to food scandals and goods smuggling, and it should be considered as a tool against a protectionist reflex and a long-term insurance to keep markets open.

EU spirit producers seek legal prohibitions on the removal of traceability information (i.e. "decoding") to help discourage informal activities, ensure the authenticity of their brands

and protect consumers. The EU would greatly appreciate the future protection of EU producers' lot codes through Vietnamese legislation. The EU could share with Vietnam the depth of expertise it has in this field especially since Member States' implementation of traceability requirements offers a wide range of enforcement examples. The industry would favor the adoption by Vietnam of definitions based on raw materials and methods of production, an approach consistent with the one adopted by most of the world's major spirits producing and exporting countries. Should Vietnam insist on keeping analytical parameters, it is essential to closely monitor Vietnamese legislation to make sure it does not exclude any genuine EU products. The industry would support a dialogue between the EU and Vietnam in the context of the FTA to bridge the gap between their regulatory systems on alcoholic beverages and favor compatibility.

The use of reference prices for imported goods results in de facto minimum import values. This is in violation of the WTO Agreement on Customs Valuation and triggers higher customs duty amounts. For example, Vietnam maintains a 'check price' database for imported alcohol brands and this has raised issues for industry over the years. Accordingly, the industry supports the inclusion of language that incorporates the WTO Agreement on Customs Valuation as an integral part of the agreement, subject to the dispute settlement provisions of the FTA.

The EVFTA negotiations were officially concluded in 2015 and each country will conduct its own legal review and technical/procedure works. Currently, for Vietnam, this Agreement is being submitted to the President and the National Assembly for adoption, after which, the Ministry of Finance will issue a circular guiding the Special Preferential Import Tariff tax rate schedule for EVFTA (EVFTA Schedule).

## 7. The ASEAN – India Free Trade Agreement (AIFTA)

The ASEAN-India Trade in Goods Agreement was signed in August 2009 and entered into force on 1 January 2010. The Agreement would be effective by 2016.

The ASEAN-India Framework Agreement was drawn up on the same model as the ASEAN-China Framework Agreement, covering the same issues. Tariff elimination on the early harvest products is planned for October 2007 (for ASEAN-6 of Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand and India) and October 2010 (for ASEAN-4 of Singapore, Malaysia, Thailand and Brunei). It is planned that the normal track products will enter India and ASEAN-6 (with the exception of the Philippines) duty free by 2011. Duty free reciprocal access is to be accorded between India and ASEAN-4 (plus the Philippines) by 2016.

To implement the Agreement of AIFTA, Ministry of Finance issued Circular 169/2014/TT-BTC on the Special Preferential Import Tariff tax rate schedule for AIFTA.

Since alcohol beverages are on the sensitive list with high protection, their import tax rate maintained high at 65% and would be reduced to 50% in 2024. Like AANZFTA, AJCEP, VJEPA and VCFTA, committed import tax rate on alcohol beverages between Vietnam and India is higher than the current import tax MFN of Vietnam, so wines, beers imports from India to Vietnam have higher tax liability than without the FTA.

**Table 7. Vietnam's commitments related to alcohol tax in AIFTA (Unit: %)**

	2015	2016	2017	01/01/2018	31/12/2018	2021	2024
Beer	65	65	65	65	65	65	50
Alcohol products (except beer)	65	65	65	65	65	65	50
- Wine	65	65	65	65	65	65	50
- Sake, toddy, shandy, ...	65	65	65	65	65	65	50
- Liquors, spirits, whisky, brandy, cognac, vodka, ...	65	65	65	65	65	65	50

## **8. The ASEAN – Korea Free Trade Agreement (AKFTA) and Vietnam - Korea Free Trade Agreement (VKFTA)**

The ASEAN-Korea Free Trade Agreement was signed in 2006 and entered into force in 2007, without Thailand. After Thailand joined, the Agreement was signed by all 11 member countries who agreed to cut import duties on 94% of lines. More than 90% of the import tax lines for ASEAN-6 (Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand) and Korea were already cut as of the 1st January, 2012.

The recently signed Vietnam – Korea FTA came in effect in 2016. This agreement is expected to increase Vietnam’s exports to Korea and to more than double bilateral trade within next 5 years. For South Korea, Vietnam is the 9th largest trading partner in the world, and 2nd largest among ASEAN nations.

Import duties on more than 95% of Vietnamese goods will be reduced, amongst which garment and textiles is included. South Korea will open up its market for 499 more items from Vietnam. Import tax on Korean fabrics and textiles will be eliminated within 3 years, and import tax on ROK’s auto parts will be removed in 5-15 years. Vietnam will eradicate its duties on an additional 272 South Korean goods.

The agreement consists of some of the items that were omitted from the earlier ASEAN-Korea FTA. Vietnam will eliminate import tariffs on 92.2% of all product lines under the FTA, accounting for 86.2% of goods in the ASEAN-Korea FTA.

To implement the Agreement of AKFTA, VKFTA, the Ministry of Finance issued Circular 167/2014/TT-BTC, 201/2015/TT- BTC on the Special Preferential Import Tariff tax rate schedule for AKFTA, VKFTA.

Under these agreements, there is no agreement on alcohol beverages, (expressed by \* in the import tax schedule). It means that MFN import tax rate will be applied to alcoholic beverages imported from Korea and the import tax rate of 50% will be applied from 2021 onward.

**Table 8. Vietnam’s commitments related to alcohol tax in AKFTA and VKFTA (Unit: %)**

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2021</b>
Alcohol products (except beer)	*	*	*	*	50
Wine	*	*	*	*	50
Sake, toddy, shandy, ...	*	*	*	*	50
Liquors, spirits, whisky, brandy, cognac, vodka, ...	*	*	*	*	50
Beer	*	*	*	*	50

## 9. ASEAN Trade in Goods Agreement (ATIGA)

In 1995, Vietnam joined the ASEAN Free Trade Area (AFTA), which was established in 1992. The AFTA was based on the Agreement on the Common Effective Preferential Tariff Scheme (CEPT) for the ASEAN FTA, which was the trade instrument for the scheduling of import tax reductions. The agreement divides products on different tracks based on the sensitivity of the single product in order to grant policy space to governments. The CEPT divides products between those in the general exclusion list, the temporary exclusion list and the sensitive list. From 2010 all the applied import taxes for the ASEAN-6 (Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand) in 2010 and CLMV (Cambodia, Laos, Myanmar, Vietnam) are reduced to 0%, while Cambodia, Lao PDR, Myanmar and Vietnam are expected to reach that target by 2015.

Excise taxes currently represent different priorities across the 10 members of ASEAN, as reflected in the different range of goods and services subject to excise, and approaches to levying excise. It is therefore critical that any reform of excise taxes in the context of the AEC is undertaken with great care.

The creation of the AEC will to a large extent lead to the elimination of import duties on intra-ASEAN trade, this will not result in major duty rate reductions for some excisable goods. In the case of alcoholic beverages, excisable goods have been “excluded” from some member states ASEAN Trade in Goods Agreement (ATIGA) tariff reduction commitments. For these items, import duties will continue to remain on intra-ASEAN trade – for example, the import duty for whisky will remain at MYR 58 per liter in Malaysia, and the import duty for distilled spirits will remain at IDR 125,000 per liter in Indonesia.

Alcohol beverages are one of the key products that are subject to excise tax on production and importation across the 10 ASEAN countries. Across ASEAN, excise taxes on alcohol carry various titles and exist within different taxation regimes within governments. Formal titles for alcohol taxes across ASEAN include Law on Excise Tax as defined in Vietnam. The APTF ASEAN Excise Study Group has identified that ASEAN member countries currently utilize a broad, and evolving range of alcohol tax structures. From a tax system design perspective, Vietnam currently utilize the ad valorem taxation method for calculating excise tax liability on locally produced or imported alcohol beverages.

Alcohol taxation across ASEAN varies in terms of application and complexity. Numerous factors influence the design and application of alcohol taxation in the region. These include:

- Alcohol market characteristics: Consumption preferences, climate and local supply chains;

- Socio-economic factors: Median incomes and income dispersal;
- Domestic law: Factors influencing policy design and practical administration of the law;
- Beverage industry profile: The level of domestic alcohol production and the level of alcohol beverage importation; and
- Emerging regional industry supply chains. Greater vertical integration of local alcohol beverage industries into the ASEAN, Asia-Pacific, and global beverage industry.

The above factors, among others, have contributed to the development of alcohol taxes over recent years. Furthermore, many of these factors continue to influence recent changes and developments to alcohol taxation within several ASEAN countries.

Recent alcohol tax reforms across ASEAN have simplified the classification process for alcohol beverages. Each of the reforms below has removed categories from the alcohol taxation system, streamlining the process for administrators and lessening the potential for activities such as tax avoidance.

“Global best practice” specific taxation is applied internationally as a best practice approach. The WHO recognizes a specific tax system as best practice as such a system correlates the level of alcohol in the product to the tax payable. A specific tax system is a feature of industrialized economies, with a majority of OECD economies currently employing such a system. Specific taxes on alcohol have long been considered a smart policy reform to enable a better-functioning economic community.

To implement the Agreement of ATIGA, the Ministry of Finance issued Circular 161/2011/TT-BTC on the Special Preferential Import Tariff tax rate schedule for ATIGA for the period of 2012-2014, Circular 165/2014/TT-BTC on the Special Preferential Import Tariff tax rate schedule for ATIGA for the period of 2015-2018.

**Table 9. Vietnam’s commitments related to alcohol tax in ATIGA (Unit: %)**

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Beer	5	5	5	5
Alcohol products (except beer)	5	5	5	5
- Wine	5	5	5	5
- Sake, toddy, shandy, ...				
- Liquors, spirits, whisky, brandy, cognac, vodka, ...	5	5	5	5

## IV. Policy Recommendations

In Vietnam's current tax context: VAT on alcoholic beverages is at its highest tax rate and is difficult to change because it is a universal tax rate. Import tax on imported alcoholic beverages is gradually being reduced due to Vietnam's FTA commitments. In order to prevent alcoholic beverages from becoming more affordable, the tax burden over retail prices should be increased. To limit the risk of alcohol abuse, and to implement Decision No. 244 / QD-TTg on national policies to prevent the harmful effects of alcohol abuse, Vietnam should increase its excise tax on alcohol beverages. The excise tax increase must meet the following criteria:

- The increase must be high enough to offset the reduction in import tax obligations due to FTA commitments.

- The increase should be no less than the rate of inflation and income growth.

- To implement the national strategy on preventing the harms of alcohol abuse, Vietnam should raise its excise tax high enough to make the price of alcoholic products increasingly more expensive compared to the price of other goods and services.

- Raising excise taxes should go under a roadmap so it will not dramatically impact production and employment from the domestic alcohol industry. Because in the case of sudden tax increases, the domestic alcohol manufacturing sector will face difficulties, leading to bankruptcy and job loss, creating opportunities for low quality homemade alcoholic beverages which are more harmful to human health. The increase in tax under the appropriate roadmap can orient production, gradually shifting labor away from the alcohol manufacturing sectors to other sectors. People can also become accustomed to the effects of the policy and demand low quality homemade alcohol which contains more formaldehyde.

- In order to achieve the greatest impact, increased excise taxes on alcohol should go hand in hand with increased control and management to combat smuggling, counterfeiting, and homemade alcohol.

- Besides increasing taxes on alcoholic beverages, there are demands for educational campaigns against alcohol abuse, as well as other measures such as warnings about the dangers of alcohol abuse, banning advertising, promotion and sponsorship of alcohol.

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## Appendix 2.1a

### PRICE AND AFFORDABILITY OF ALCOHOL IN VIETNAM IN THE PERIOD 1998-2016

# Study Report

## Price and affordability of alcohol in Vietnam in the period 1998-2016

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*Hanoi, May 05, 2017*

# Table of contents

Executive Summary	3
I. Introduction .....	5
II. Study objectives .....	6
III. Study methodology .....	6
III1. Estimate of the average retail price of 11 alcohol products in Vietnam in the period 1998-2016.....	6
III.2. Estimate of the affordability of alcohol from 1998 to 2016.....	8
IV. Study results.....	9
IV.1. Annual average price of alcohol products in the period 1998-2016.....	9
IV.2. Affordability of alcohol in the period 1998-2016.....	11
IV.2.1. Price index by percentage of the minimum wage .....	11
IV.2.2. Price index by percentage of per capita GDP.....	12
V. Conclusion and recommendations .....	13
References.....	14

## Executive Summary

**Background:** Alcohol use is responsible for more than 200 types of illnesses, and is one of the top 10 risks of death in the world. In Vietnam, the consumption of alcohol is increasing alarmingly.

**Objectives:** The aim of this study was to estimate the average retail price and affordability of 11 alcohol products in Vietnam in the period 1998 to 2016.

**Methods:** From the average retail price data collected in June 2014 and the monthly CPI of beer and wine products collected for the period 1998 to 2014 from the General Statistics Office (GSO), the nominal price of 11 alcohol products was calculated for each month and then for a year in the period 1998 to 2013. The average retail price data of these alcohol products for 2015 and 2016 was collected from GSO. To estimate the affordability of alcohol from 1998 to 2016, the study used the Relative Income Price (RIP) measure developed by Blecher and Van Walbeek as well as the “minimum wage” method. The RIP is defined as the percentage of per capita GDP (or of minimum wage) needed to purchase one litre of an alcoholic product. The lower the RIP, the more affordable the alcohol products are.

**Findings:** The annual average price (VND/liter) for alcohol products such as “Hanoi Vodka” (39.5% alcohol), homemade rice spirit (35% alcohol), French red wine (9-14% alcohol) and local produced red wine (14-16% alcohol) increased by 2.5, 2.9, 3.0 and 3.1 times respectively between 1998 and 2016. For beer products, the average price of types of beer in 2016 increased by 1.8-2.0 times compared to 1998. Tiger canned beer (5% alcohol) and draft beer (4-6% alcohol) were the two types of beer with the sharpest increase (double). Canned Heineken beer (5% alcohol) and bottled Heineken beer (5% alcohol) had the second highest increase (1.9 times). The two remaining products of bottled Saigon beer (4.9% alcohol) and bottled Hanoi beer (4.2% alcohol) increased by 1.8 times.

The percentage of wages required for purchasing 1 liter of all four types of wine/spirit and five types of beer tended to decrease from 1998 to 2016. By 2016, this percentage dropped sharply by 3 times for all four types of wine. Meanwhile, in 2016, this percentage decreased by about 4 times in all beer products compared to 1998.

Similarly, the percentage of per capita GDP to purchase 10 liters of all four types of wine/spirit and five types of beer tended to decrease from 1998 to 2016. This means that the purchasing power for both wine/spirit and beer increased over the period 1998-2016. Thus, in terms of real price, alcohol is now more affordable in Vietnam.

**Recommendations:** Increase in excise taxes on alcohol products to increase price is an effective solution to reduce alcohol consumption and related consequences, while also improving health, and increasing government revenue. Therefore, increasing alcohol tax is a priority for Vietnam, and the excise tax rate should be increased to at least keep the affordability stable.

## I. Introduction

The consumption of alcohol in Vietnam is increasing dramatically. According to the World Health Organization, the per capita alcohol consumption of Vietnamese adults has increased from 0.75 liters/ person in 1990<sup>i</sup> to 3.8 liters/ person between 2003-2005<sup>ii</sup>. Total beer consumption in Vietnam has increased from 2.8 billion liters in 2012 to more than 3 billion liters in 2013, becoming the third highest beer consumer in Asia, surpassed only by Japan and China. Wine and spirit consumption has also grown more than 7.5% in just one year, from 63 million liters in 2012, to nearly 68 million liters in 2013<sup>iii</sup>. The proportion of adolescents and young adults who have used alcohol in Vietnam has also rapidly increased. According to the National Survey of Adolescents and Young Adults (SAVY1 and SAVY2), the prevalence of alcohol use among young men increased from 69% (2003) to 80% (2008), and increased from 28% (2003) to 37% (2008)<sup>iv</sup> among young women.

Alcohol use is responsible for more than 200 illnesses<sup>v</sup>, and globally is one of the top 10 risk factors for death<sup>vi</sup>. According to the World Health Organization, 3.3 million people died from alcohol-related diseases and injuries in 2012, accounting for 5.9% of all deaths worldwide<sup>vii</sup>. Notably, alcohol use is responsible for around 20% of road traffic deaths, 30% of deaths from esophageal cancer, liver cancer, epilepsy, and homicide. It is the cause of death in about 50% of cases of cirrhosis<sup>viii</sup>. Alcohol abuse is also associated with many other negative social issues, such as crime and violence, which bring economic and social burdens to individuals, families, and society. In Vietnam, alcohol related disorders were one of the 10 leading causes of death in men in 2008, accounting for 5% total DALY. In 2012, alcohol related deaths accounted for 8.3% of total deaths. Cost for purchasing beer in 2012 was estimated at nearly 3 billion USD (2,8 billion liter), an amount equivalent to nearly 3% of the national budget revenue (not including indirect cost). The cost for purchasing beer in 2012 was three times higher than the contribution to state budget from the alcohol and beverage industry.<sup>ix</sup>

According to the WHO, high taxation and price policies are among the most effective measures to control the harmful effects of alcohol (along with retail licensing; bans on drinking and driving, bans on advertising, promotion, alcohol financing; educational communication, and detoxification)<sup>x</sup>.

In support of the development of the Law on Alcoholism Prevention in Vietnam, the Healthbridge Foundation of Canada conducted a study on fluctuations in alcohol affordability in Vietnam in the period 1998 - 2016. The results obtained will provide evidences for advocacy and help authorities develop policies on taxes and prices of alcohol in Vietnam.

## **II. Study objectives**

1. To estimate the average retail price of 11 alcohol products in Vietnam in the period 1998-2016
2. To estimate the affordability of 11 alcohol products and changing trends from 1998 to 2016

## **III. Study methodology**

### ***III.1. Estimate of the average retail price of 11 alcohol products in Vietnam in the period 1998-2016***

The Consumer Price Index (CPI), one of Vietnam's key socio-economic indicators, is published once a month and reflects trends and changes in the relative prices of essential products and services over the base year (2009); over the same time last year; over the December last year; over the previous month; and over the average of the same period. The General Statistics Office (GSO) is responsible for calculating this CPI.

Information on the price of the 572 most popular consumption products and services is used to calculate the CPI. This information is collected thrice per month (alcohol products are only collected once per month) by the GSO network of information gathering staff in 64 provinces. Of the 572 consumption products and services, there are

11 alcohol products. These are the most popular brands of spirits, wine and beer (bottled beer, canned beer, and draft beer), including:

- Spirits:
  - 1 Johnnie Walker, Black Label (750ml, 43% alcohol, imported)
  - 2 “Hanoi” Vodka (750ml, 39.5% alcohol)
  - 3 Homemade rice spirit (35% alcohol)
- Wine:
  - 4 Local produced red wine (600-700ml, 14-16% alcohol, “Thang Long” wine or “Da Lat” wine)
  - 5 French red wine (600-700ml, 9-14% alcohol)
- Bottled beer:
  - 6 Hanoi Beer (450ml, 4.2% alcohol)
  - 7 Red/ green Saigon Beer (300-500ml, 4.9% alcohol)
  - 8 Heineken (300ml, 5% alcohol)
- Canned beer:
  - 9 Tiger (330ml, 5% alcohol)
  - 10 Heineken (330ml, 5% alcohol)
- Draft beer:
  - 11 Vietnamese draft (fresh) beer (4-6% alcohol)

To estimate the affordability of alcoholic beverages, information on the retail price of these products should be available along with information on average income per capita over time. However, before 2014, this figure was not recorded by the GSO. To estimate the detailed retail price of alcohol in the period prior to 2014, the team used the extrapolation method using the average retail price for each alcoholic beverage collected in 2014 and the CPI of wine and beer .

The research team collaborated with GSO's Center for Documentation and Statistical Services to collect the average retail price data for these 11 alcohol products in June 2014. The average retail price per unit of alcohol (VND/ liter), and the monthly CPI for wine and beer were calculated for the period 1998-2014. Due to dramatic price

differences between provinces, for Johnnie Walker and Black Label (750ml 43% alcohol, imported) the research team excluded these products from analysis.

Using the average retail price data collected in June 2014 and the monthly CPI of wine and beer products, the research team calculated the average retail price (nominal price) of 11 alcohol products for each month in the period 1998 - 2013. Average price of a month = Average price of next month/ CPI of the month to be calculated x 100. From the average price of each month, the average annual price was calculated.

### ***III.2. Estimate of the affordability of alcohol from 1998 to 2016***

The study used the Relative Income Price (RIP) measure developed by Blecher and Van Walbeek as well as the “minimum wage” method. The RIP is defined as the percentage of per capita GDP (or of minimum wage) needed to purchase one litre of an alcoholic product. The lower the RIP, the more affordable the alcohol products are.

Annual income per capita (Per capita GDP/year) during the period 1998-2016 was provided by the Center for Documentation and Statistical Services, GSO; and monthly minimum wages were collected from the Department of Labor-Salary, Ministry of Labor, Invalids and Social Affairs (Table 1).

**Table 1: Minimum wage/month and Per capita GDP/year**

<b>Year</b>	<b>Minimum wage (VND)</b>	<b>GDP/person (VND)</b>
1998	144,000	4,784,438
1999	144,000	5,221,413
2000	180,000	5,689,049
2001	210,000	6,121,710
2002	210,000	6,735,866
2003	210,000	7,623,400
2004	290,000	8,783,487
2005	350,000	10,185,401
2006	450,000	11,694,021
2007	450,000	13,579,916
2008	540,000	17,445,939
2009	650,000	19,278,079
2010	730,000	24,822,000
2011	830,000	31,647,000
2012	1,050,000	36,559,000
2013	1,150,000	39,989,000

2014	1,150,000	43,899,000
2015	1,150,000	45,717,000
2016	1,210,000	48,600,000

From the average retail price of 11 alcoholic beverages and Per capita GDP/year and the monthly minimum wage, the research team calculated the affordability of alcohol. Microsoft Excel was used for data analysis.

## **IV. Study results**

### ***IV.1. Annual average price of alcohol products in the period 1998-2016***

Over the past 20 years (1998-2016), the annual average price (nominal price) of alcohol products has tended to increase.

For alcohol products, the price of “Hanoi” Vodka (39.5% alcohol) increased by 2.5 times from 40,000 VND/ liter (1998) to 94,500 VND/ liter (2016). Similarly, the price of homemade rice spirit (35% alcohol) and the price of French red wine also increased by 2.9 times and 3 times respectively from 7,500 VND/ liter; 92,800 VND/ liter to 21,300 VND/ liter and 281,800 VND/ liter. Among alcohol products, the price of local produced red wine (14-16% alcohol) increased the most (3.1 times) from 28,400 VND/ liter (1998) to 88,600 VND/ liter (2016).

For beer products, the average price of beer in 2016 increased by 1.8-2 times compared to 1998. Tiger canned beer (5% alcohol) and draft beer (4-6 alcohol) were the two types of beer with sharpest increase in annual average price by 2 times from 20,100 VND/liter; 6,800 VND/liter (1998) to 39,900 VND/liter; 13,400 VND/liter (2016). The second highest increase in the annual average price was for two products of canned Heineken beer (5% alcohol) and bottled Heineken beer (5% alcohol) which increased by 1.9 times from 25,900 VND/liter; 26,500 VND/liter (1998) to 50,300 VND/liter; 50,000 VND/liter. The annual average price for bottled Saigon beer (4.9% alcohol) and bottled Hanoi beer (4.2% alcohol) increased by 1.8 times from 16,000 VND/liter; 11,700 VND/liter (1998) to 29,400 VND/liter and 21,300 VND/liter.

**Table 2: Annual average retail prices of alcohol products (VND/liter)**

Year	Alcohol prices (VND/liter)									
	“Hanoi” Vodka, 39.5% alcohol	Homemade rice spirit, 35% alcohol	Local produced red wine 14-16% alcohol	French red wine, 9-14% alcohol	Vietnamese draft beer, 4-6% alcohol	Bottled Hanoi beer, 4.2% alcohol	Bottled Saigon beer, 4.9% alcohol	Bottled Heineken beer, 5% alcohol	Canned Tiger beer, 5% alcohol	Canned Heineken beer, 5% alcohol
1998	39,084	7,447	28,361	91,200	6,759	9,962	16,023	26,495	18,825	25,934
1999	40,964	7,805	29,725	95,587	6,799	10,020	16,116	26,650	18,935	26,085
2000	41,377	7,884	30,024	96,550	6,756	9,957	16,014	26,481	18,815	25,920
2001	42,638	8,124	30,939	99,492	6,745	9,942	15,990	26,441	18,787	25,881
2002	43,349	8,260	31,455	101,152	6,804	10,029	16,129	26,672	18,951	26,107
2003	44,314	8,444	32,156	103,403	6,956	10,252	16,488	27,265	19,373	26,688
2004	46,289	8,820	33,589	108,012	7,266	10,709	17,223	28,480	20,236	27,877
2005	48,612	9,262	35,274	113,432	7,630	11,246	18,088	29,910	21,252	29,276
2006	50,099	9,546	36,353	116,902	8,081	11,910	19,155	31,675	22,505	31,004
2007	53,372	10,169	38,728	124,540	8,630	12,720	20,458	33,829	24,037	33,113
2008	61,317	11,683	44,494	143,080	9,355	13,788	22,175	36,669	26,054	35,893
2009	67,929	12,943	49,292	158,508	10,138	14,942	24,032	39,740	28,236	38,898
2010	74,338	14,164	53,942	173,462	10,748	15,841	25,478	42,131	29,935	41,239
2011	82,519	15,723	59,879	192,553	11,491	16,937	27,240	45,044	32,005	44,091
2012	88,439	16,851	64,174	206,367	12,194	17,973	28,906	47,800	33,963	46,787
2013	93,394	17,795	67,770	217,929	12,805	18,873	30,354	50,193	35,663	49,130
2014	98,472	18,455	70,283	230,046	13,114	22,660	31,086	51,404	39,000	50,315
2015	99,979	18,919	72,905	235,574	13,715	22,459	31,924	52,757	40,062	51,123
2016	99,475	21,281	88,582	281,775	13,357	21,281	29,383	50,019	39,940	50,336

## ***IV.2. Affordability of alcohol in the period 1998-2016***

### ***IV.2.1. Price index by percentage of the minimum wage***

Figure 1 shows that for all four types of wine/spirit (French red wine, “Hanoi” Vodka, local produced red wine and homemade rice spirit), the percentage of wages required for purchasing 1 liter of alcohol tended to decrease from 1998 to 2016. Similarly, for 5 types of beer (Vietnamese draft beer, bottled Hanoi beer, bottled Saigon beer, bottled Heineken beer, canned Tiger beer and canned Heineken beer), the percentage of wage required for purchasing 1 liter of beer also tended to decrease from 1998 to 2016. However, the purchasing power increased over the period 1998-2016. Thus, in terms of real price, alcohol is now more affordable in Vietnam.

For wine/spirit products, drinkers spent the highest percentage of their wages to purchase a liter of French red wine, followed by “Hanoi” Vodka, local produced red wine, and homemade rice spirit during the period 1998-2016. In 1998, this percentage corresponded to 63.3%; 27.1%; 19.7% and 5.2% respectively. In 2016, this percentage dropped sharply by 3 times for all 4 types of wine/spirit, 23.3%; 8.2%; 7.3%; and 1.8% respectively.

For beer products, bottled and canned Heineken beer required the highest percentage of wages to purchase 1 liter, at 18.4% and 18.0% respectively (in 1998); the cheapest was Vietnamese draft beer, accounting for 4.7% (in 1998). In 2016, this percentage decreased by about 4 times in all products compared to 1998.

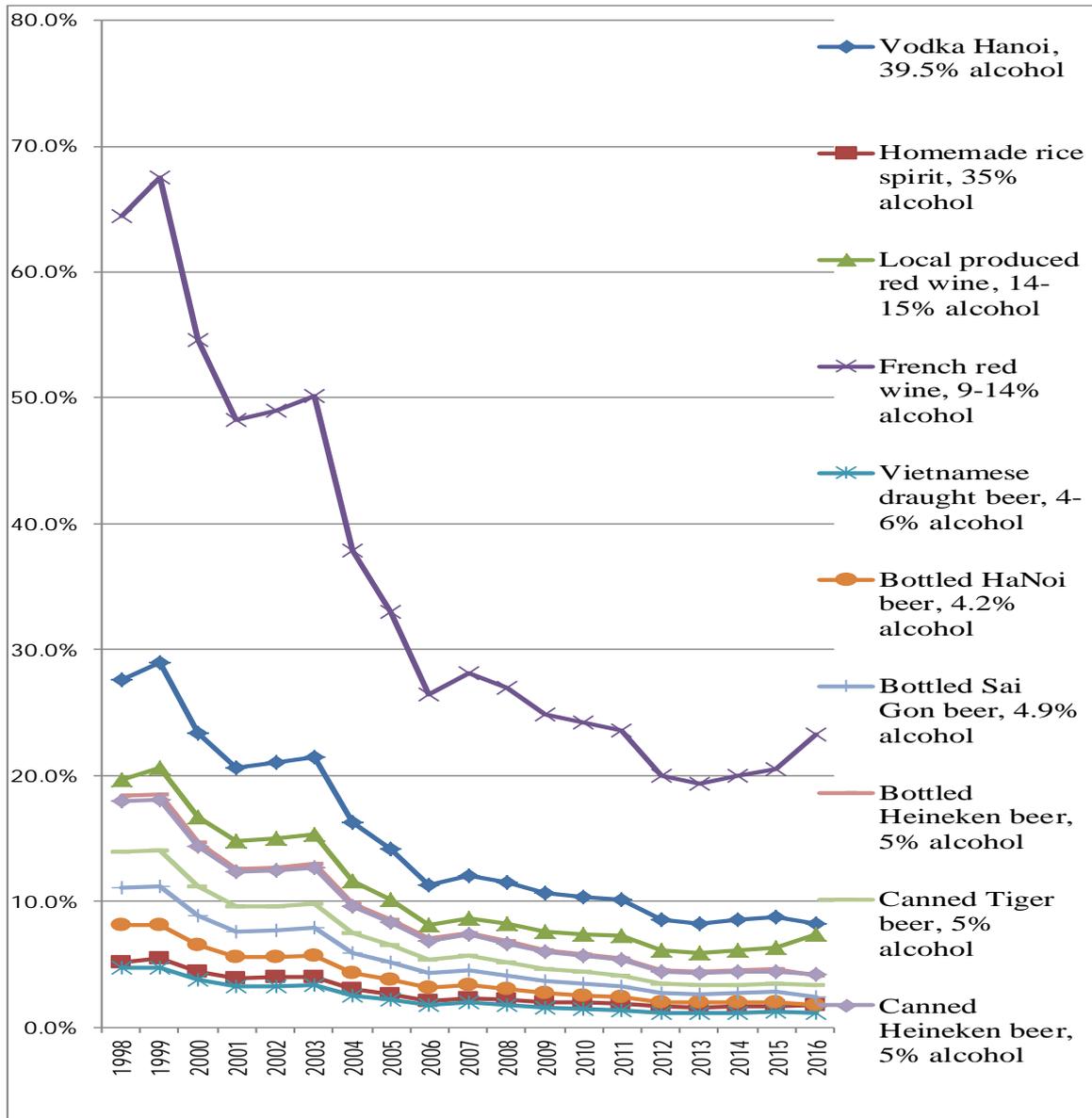


Figure 1: Price of alcohol products relative to percentage of the minimum wage (%)

#### IV.2.2. Price index by percentage of per capita GDP

According to Figure 2, for all four types of wine/spirit and 5 types of beer, the percentage of per capita GDP to purchase 10 liters of wine/spirit tended to decrease from 1998 to 2016. This highlights that with increasing purchasing power, both wine/spirit and beer became more affordable over the period 1998-2016. This means alcohol is becoming increasingly accessible in Vietnam.

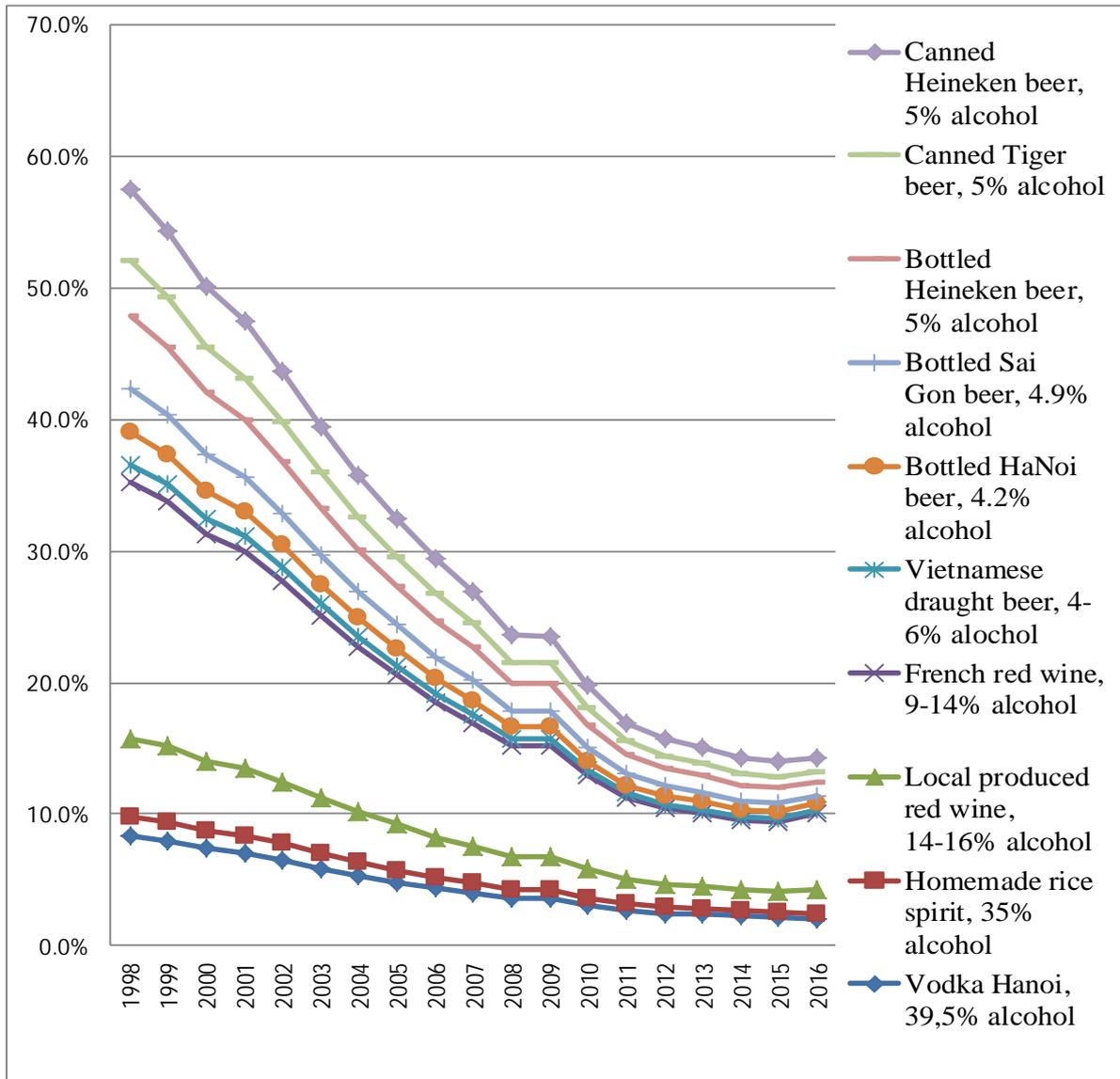


Figure 2: Price of alcohol products relative to percentage of per capita GDP (%)

## V. Conclusion and recommendations

The study indicates that although the average price of alcohol increased during the period 1998-2016, given the increase in income over that same period, alcohol actually became more affordable. This is shown by a very sharp decrease in the percentage of the Vietnamese minimum wage, and the percentage of per capita GDP/year that is required to purchase a liter of alcohol (the percentage of the minimum wage decreased by 3 times for wine and 4 times for beer) over the 20 year period. These findings are similar to the research conducted in European countries, and demonstrate that an 84% increase in alcohol affordability is due to increasing incomes<sup>xi</sup>.

Alcohol pricing is one of the most important measures to control levels of alcohol consumption<sup>xii</sup>. Tax policies are developed to influence the alcohol prices<sup>xiii</sup>. Recent studies on the effects of alcohol pricing have shown that an increase in alcohol price through a hike in excise taxes will reduce alcohol consumption and related consequences (e.g. traffic accidents, injuries and deaths from alcohol abuse, violence and crime) in all age groups and especially among heavy drinkers and young people<sup>xiv,xv,xvi,xvii</sup>. In addition, the increase in excise taxes on alcohol also contributes to improving health, increasing productivity, creating jobs and reducing the high costs associated with excessive alcohol use<sup>xviii</sup>. Increasing alcohol taxes also increase public revenue and benefits social policies<sup>xviii</sup>. Therefore, increasing the excise tax on alcohol products in order to increase their price is an effective solution proven in European and American countries<sup>xviii, xix,xx</sup>.

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## Appendix 2.2a

# ESTIMATION OF PRICE AND INCOME ELASTICITIES OF DEMAND FOR WINE AND BEER IN VIETNAM

**STUDY REPORT**

**“Estimation of Price and Income Elasticities of Demand for Wine  
and Beer in Vietnam”**

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***Ha Noi, 5/2017***

## TABLE OF CONTENTS

1. Introduction .....	1
2. Theoretical framework and studies to determine elasticity of demand for wine and beer .....	2
2.1. Consumption theory .....	2
2.2 Demand functions.....	3
2.3. Studies of price elasticity of demand for alcohol products in other countries .....	8
2.4. Studies of demand elasticities in Vietnam.....	9
3. Research objectives .....	11
4. Data and method .....	11
5. Results .....	15
6. Discussions .....	19

## LIST OF TABLES

Table 1: Price elasticities of alcohol demand in selected Asian countries .....	9
Table 2: VHLSS Summary Statistics .....	11
Table 3: Testing the spatial variation hypothesis.....	15
Table 4: Wine and Beer Unit Values Coefficients.....	16
Table 5: Beer and Wine Budget Shares .....	16
Table 6: Estimates of Price elasticity of Demand for Wine and Beer .....	17
Table 7: Estimates of the expenditure elasticity of demand .....	18

## **Abstract**

This study estimates the price and income elasticities of demand for beer and wine in Vietnam using a linear approximation of Almost Ideal Demand System (AIDS) and data from the Vietnam Household Living Standards Survey 2010, 2012 and 2014. We found that demand for beer and wine in Vietnam is price and income inelastic with the price elasticities ranging between -0.317 and -0.283 and the income elasticities between +0.156 and +0.401. The quality of wine and beer consumed increases with the size of the household budget and among urban households, but declines with the size of the household. Households with older and more educated household heads buy more expensive wine, but cheaper beer. The beer and the wine budget share declines as the total household expenditures increase, and with the years of schooling of the household head. Urban and ethnic minority households as well as households headed by male devote larger budget shares to wine. The result of the study can be used to predict the impact of tax policy on beer and wine consumption and on tax revenue in Vietnam.

## 1. Introduction

The use of alcohol beverages (beer and wine) in Vietnam increased significantly from 3.8 liters pure alcohol equivalent per person in the period of 2003 – 2005 to 6.6 liters in the 2008 – 2010 period (MOIT, 2009). In 2013, Vietnam consumed 3.0 billion of liters of beer and ranked as the first country in Southeast Asia in beer consumption (V.Quyen, 2014). It is projected that the consumption of beer will increase from 8.7 liters per capita in 2015 to 10 liters per capita in 2020 (WHO 2014).

Excessive beer and wine consumption is not only harmful to health, it also increases domestic violence and traffic accidents. Approximately 33.7% of family violence cases in Vietnam are caused by the use of alcohol (GSO, 2010), while 36.2% and 0.7% of traffic accidents involving men and women were related to alcohol, respectively (WHO, 2014). About 36% of motorcyclists and 66.8% of car drivers involved in the 18,412 traffic accidents from July 2009 to October 2010 had higher than allowed level of blood alcohol concentration. (WHO, VIHEMA, 2010)

The alcohol products should be treated differently from other consumer goods due to their serious negative health outcomes (Andrienko and Nemstov, 2005). To reduce the harmful effects of the use of alcohol products, it is important to implement measures to reduce their consumption (Edwards et al, 1994).

Evidence from many countries shows that tax is one of the most effective measures to control the consumption of alcohol and the associated harms (Anderson, Chisholm & Fhur, 2009; Babor, T., et al., 2010). According to the World Health Organisation, taxation of alcohol beverages is regarded as one of the three best policies to control their harmful effects (WHO, 2011a).

To assess the impact of a tax increase on alcohol consumption in Vietnam, it is important to estimate price elasticity of demand, which indicates the level of consumers' sensitivity to price changes.

This study estimates the price and income elasticities of demand for wine and beer in Vietnam using Vietnam Household Living Standards Surveys 2010, 2012 and 2014.

## 2. Theoretical framework and studies to determine elasticity of demand for wine and beer

### 2.1. Consumption theory

#### a) The demand function

The theory of consumption plays an important role in the development of demand functions and econometric methods used in estimating the demand for alcohol. The demand function allows us to assess consumers' response to changes in income and price of commodities to in order to maximize their utility (Hugh Gravelle & Ray Rees, 2004).

There are two approaches to derive the demand function. The first is to maximize utility subject to a budget constraint. This Marshallian demand function is homogeneous of degree zero in prices ( $p_i$ ) and income ( $x$ ) and generates uncompensated elasticity. This function is expressed as:

$$Q_i^* = D(p, x) = D_i(p_1, p_2, \dots, p_n, x) \quad \text{and} \quad (i = 1, 2, \dots, n) \quad (1)$$

The second approach considers the effect of expenditure change when a customer is compensated for change in prices in order to maintain the same utility ( $U$ ) level. This approach generates the Hicksian demand function with compensated elasticity. Hicksian demand function is also homogeneous of degree zero in prices and can be expressed as:

$$q_i^* = H_i(p, U) = H_i(p_1, p_2, \dots, p_n, U) \quad (\text{and } i = 1, 2, \dots, n) \quad (2)$$

There is a close relationship between Marshallian and Hicksian demand functions as they have important uniformities. Firstly, if we substitute the cost function (also known as the expenditure function) for income in the Marshallian demand function, we will get result for Hicksian demand function. In contrast, using the indirect utility function in the Hicksian demand function will result in the Marshallian demand function.

We can express those uniformities generally as below:

$$D(p, C(p, U)) \equiv H(p, U) \quad \text{and} \quad H(p, UI(p, x)) \equiv D(p, x) \quad (3)$$

Both these two functions of demand satisfy basic characteristics of demand, which are cummulativeness, uniformity, symmetry and can be inverted.

#### b) The elasticity of demand

Elasticity of demand measures the responsiveness of demand to changes in a factor that affects demand on condition that other factors remain unchanged. Economists frequently refer to elasticity of demand for own-price, cross-price and income.

*Own-price elasticity of demand* measures the sensitivity of quantity demanded for a good to a change in its own-price provided that other factors remain unchanged. The magnitude of elasticity reveals the percentage change in quantity demanded in response to a 1 percent change in price of the good. Own-price elasticity of demand is defined as:

$$e_j = \frac{\% \Delta x_j(p_1, p_2, y)}{\% \Delta p_j} \frac{p_j}{x_j} = \frac{\% \Delta \ln x_j}{\% \Delta \ln p_j}, \quad (4)$$

For most of the goods,  $\epsilon_j < 0$  (except for Giffen good,  $\epsilon_j > 0$ ). Demand for good j is price elastic in case  $|\epsilon_j| > 1$  and price inelastic in case  $0 < |\epsilon_j| < 1$ .

*Cross-price elasticity of demand* measures the price elasticity of demand for good j with respect to the price of good i. It is expressed as the percentage change in quantity demanded for good j in response to a 1 percent change in price of good i. It is denoted as  $\epsilon_{ji}$  and defined as follows:

$$e_{ji} = \frac{\% \Delta x_j(p_1, p_2, y)}{\% \Delta p_i} \frac{p_i}{x_j} = \frac{\% \Delta \ln x_j}{\% \Delta \ln p_i}, \quad (5)$$

Good i is called a complement of good j if  $\epsilon_{ji} < 0$ . Good i is a substitute of good j if  $\epsilon_{ji} > 0$ .

*Income elasticity of demand* measures the sensitivity of quantity demanded for a particular good to a change in consumer's income on condition that other factors remain unchanged. It reveals the percentage change in quantity demanded caused by a 1 percent change in income. Income elasticity of demand is calculated using the following formula:

$$h_j = \frac{\% \Delta x_j(p_1, p_2, y)}{\% \Delta y} \frac{y}{x_j} = \frac{\% \Delta \ln x_j}{\% \Delta \ln y} \quad (6)$$

If  $0 < h_j < 1$  then considered the good is a normal goods; if  $h_j > 1$  then the good is a luxury or superior commodity; if  $h_j < 0$  then the good is an inferior commodity.

## 2.2 Demand functions

### a) Single demand equation models

The original empirical research on elasticity of demand developed a linear demand function with a log-log functional form being one of the most common specifications.

This functional form is still popular, because it is relatively easy to estimate and interpret. If  $q_{it}$  is consumed quantity of good  $i$  at time  $t$ ,  $p_{jt}$  price of good  $j$  at time  $t$  and  $X_t$  expenditure/income at time  $t$ , the equation for single linear equation model can be written as:

$$\ln q_{it} = a_i + \sum_j \alpha_{ij} e_{ij} \ln p_{jt} + e_i \ln X_t + u_t \quad (7)$$

( $u_t$  can be defined as a residual which reflects the impact of uncontrolled factors)

The advantages of the single equation model are that estimated parameters can be considered as elasticity:  $e_{ij} = \partial \ln q_{it} / \partial \ln p_{jt}$  (own-price elasticity and cross-price elasticity of demand) and  $e_i = \partial \ln q_{it} / \partial \ln X_t$  (income elasticity of demand). Commodity  $j$  is hypothesized to have consumer relationship with  $i$ . Single demand equation is a homogeneous function of degree 0 in prices and income. However, the disadvantages of single demand equation are its arbitrary functional form and its constant elasticity (static model).

Economists believe that the reactions of consumers to price and income changes are different in the short term and long term. One needs to consider factors forming current consuming habits when constructing demand functions. In other words, the model should ensure dynamic nature of the relationship. Houthakker and Taylor's (1966) launched an improved model as follows:

$$\ln q_{it} = a_i + c_i \ln q_{it-1} + \sum_j \alpha_{ij} e_{ij} \ln p_{jt} + e_i \ln X_t + U_t \quad (8)$$

Dynamic model is reflected by including one-period lagged consumption variable,  $q_{it-1}$ , due to the belief that current consumption depends on consumption in previous period. Short-term elasticities are  $e_{ij}$  and  $e_i$ , and long-term elasticities are obtained by placing  $\ln q_i$  equal at all times ( $\ln q_{it} = \ln q_{it-1} = \dots = \ln q_{it-n}$ ). Then, long term elasticities are calculated from (8) as follow:

$$h_{ij} = e_{ij} (1 - c_i)^{-1} \quad \text{and} \quad h_i = e_i (1 - c_i)^{-1}$$

One-period lagged demand functional model can be developed into model of multi-periods lagged in following form:

$$\ln q_{it} = a_i + \sum_{k=1}^r c_{ik} \ln q_{it-k} + \sum_j \sum_{l=0}^s \alpha_{ijl} e_{ijl} \ln p_{jt-l} + \sum_{l=0}^s \alpha_{il} e_{il} \ln p_{t-l} + u_t \quad (9)$$

The number of lags  $r$  and  $s$  is an empirical matter. They are selected large enough to explain all active states in each study. The strength of model (9) is that all linear active structures are created as a special case of more general active structure models. Long-term elasticities are obtained by calculating the sum of the lags ( $l$ ). Therefore, long-term elasticities in (9) are:

$$h_{it} = \hat{a} l^* e_{ijl} (1 - \hat{a} kc_{ik})^{-1} \quad \text{and} \quad h_i = \hat{a} l^* e_{il} (1 - \hat{a} kc_{ik})^{-1} \quad (10)$$

The weakness of this model is that long-term elasticities – which we are most concerned with, must be calculated after estimation. Therefore, model (9) can be transformed into an Error Correction Model (ECM) as below:

$$(11) \quad \text{Dln} q_{it} = a_i + \hat{a} \sum_{k=1}^{r-1} C_{ik} \text{Dln} q_{it-k} + \hat{a} \sum_{j=0}^{s-1} e_{ijl} \ln p_{jt-l} + \hat{a} \sum_{l=0}^{s-1} E_{il} \ln X_{t-l} - \hat{a} \sum_{k=0}^{\infty} \text{Dln} q_{it} - \hat{a} h_j \ln p_{jt-s} - h_i \ln X_{t-s} + u_t$$

The weakness of this model is that it is not linear, which requires estimating complex non-linear equations.

In the rest of this section, we will focus on demand functional forms, which are aligned with the consumption theory. These functional forms have several advantages compared to the single equation model described above.

*b) Working-Leser demand functional model*

This model was originally proposed by Working and Leser (Working, 1943 and Leser, 1963). The general form of Working – Leser function can be expressed as:

$$w_i = a_i + b_i \ln x + u_i \quad (12)$$

Where  $i = 1, 2, \dots, n$  represents demand for item number  $i$ ;  $w_i$  represents the share of expenditure for item  $i$  from total expenditure and  $x$  is total expenditure of all items included in the model.

Two parameters  $\alpha$  and  $\beta$  are expressed as functions of prices. If  $\beta_i > 1$ , item  $i$  is luxury good, if  $\beta_i < 0$ , then item  $i$  is inferior good; if  $0 < \beta_i < 1$  then item  $i$  is a normal good. Common assumptions to ensure that the function represents uniformity in demands are:

$$\sum_{i=1}^n a_i = 1 \quad \text{and} \quad \sum_{i=1}^n b_i = 0$$

Working-Leser model is the starting point for the derivation of the well-known Almost Ideal Demand System (AIDS) model developed by Deaton and Muellbauer (1980a).

c) *Stones demand function model*

The Stone model (1954) starts with logarithmic demand function:

$$\ln q_i = a_i + A_i \ln x + \overset{\circ}{a} E_{ij} \ln p_j + U_i \quad (13)$$

In which  $A_i$  is expenditures (income) elasticity of demand and  $E_{ij}$  is own-price elasticity of demand if ( $i = j$ ) and cross-price elasticity of demand if ( $i \neq j$ ). This demand function uses Slutsky equation and a homogeneous constraint  $\overset{\circ}{a} E_{ij}^* = 0$  and transforms it to the following functional form:

$$\ln q_i = a_i + A_i \ln \frac{x}{P} + \overset{\circ}{a} E_{ij}^* \ln \frac{P_j}{P} + U_i \quad (14)$$

Where  $P$  is common price index and  $j$  is the set of complement and substitute goods “closely” related to good  $i$ . Equation (14) often adds a time trend variable and is used as starting point for almost all of consumer analysis by Stone.

d) *Translog Demand System*

Translog demand system was proposed by Christensen et al. (1975). Translog demand system was set up by applying Roy<sup>1</sup> Proporsition with a specifically quadratic, logarithmic indirect utility function combined with a condition that price be normalized by expenditures. This approach created Marshallian demand system, which is consistent with consumer theory. Quadratic logarithmic indirect utility function can be expressed as:

$$(15) \quad \ln U_i(p, x) = a_0 + \overset{\circ}{a} a_k \ln(p_k / x) + \frac{1}{2} \overset{\circ}{a} \overset{\circ}{a} g_{jk} \ln(\overset{\circ}{a} E_{ij}^* \ln(p_k / x) \ln(p_j / x)$$

With  $k, j = 1, 2, \dots, n$ . Applying Roy’s Identity in (15), we have following demand equation:

$$(16) \quad w_i = \frac{a_i + \overset{\circ}{a} g_{ik} \ln(p_k / x)}{\overset{\circ}{a} \left( a_m + \overset{\circ}{a} g_{jk} \ln(p_k / x) \right)}$$

---

<sup>1</sup> Roy clause represents the influence of price changes on the utility of consumers

where  $i = 1, 2, \dots, n$ . It is noted that the denominator of equation (16) is the total value of numerators which corresponds to the level of expenditure. This equation can be written as:

$$(17) \quad w_i = \frac{a_i + \sum_k \dot{a}_k g_{ik} \ln(p_k / x)}{a_M + \sum_k \dot{a}_k g_{Mk} \ln(p_k / x)}$$

where,  $a_M = \sum_{i=1}^M a_i$   $g_{Mk} = \sum_{i=1}^M g_{ik}$  and  $M = n$

The uniformity in the standard translog model should be ensured when using price normalized by expenditures. In the case of translog function, there are  $n(n+1)/2$  free parameters in the Slutsky matrix, which implies translog function has more than the necessary amount of parameters to qualify as a normalized quadratic and flexible functional form.

Price elasticities of demand (also called Marshallian elasticity) in translog model are:

$$(18) \quad E_{ij} = -d_{ij} + \frac{g_{ij} / w_i - \sum_j \dot{a}_j g_{ij}}{-1 + \sum_k \dot{a}_k g_{Mk} \ln(p_k / x)}$$

And expenditure (income) elasticity of demand is defined as:

$$(19) \quad A_i = 1 + \frac{-\sum_j \dot{a}_j g_{ij} / w_i + \sum_i \dot{a}_i \sum_j \dot{a}_j g_{ij}}{-1 + \sum_k \dot{a}_k g_{Mk} \ln(p_k / x)}$$

where  $d_{ij}$  is Kronecker delta, equals to 1 in case  $i = j$  and equals to 0 if  $i \neq j$ . To calculate elasticity of demand in Hicksian demand function, the Slutsky equation as follows:  $E_{ij}^* = E_{ij} + w_j A_i$ . ( $E_{ij}^*$ : Hicksian elasticity;  $E_{ij}$ : Marshallian elasticity and  $w_j$  is the share of expenditure for good  $j$  from total expenditure).

#### e) *Almost Ideal Demand System*

Empirical researchers analyse the demand systematically to overcome the limitations of single demand equation models. The most popular and most widely applied demand functional form since the early 1980s has been the AIDS model, which was developed by Deaton and Muellbauer (1980a) on the basis of Working – Leser demand function. The advantages of this demand functional system are its extensiveness and its ability to demonstrate basic characteristics of consumption, which is utility maximization.

Like other functional demand systems developed before, AIDS was formed in the condition of budget limits, whereby demand for each type of commodity is a function of prices ( $p_j$ ,  $P$ ) and income ( $x$ ) and written as follows:

$$w_i = a_i + \sum_j g_{ij} \ln p_j + b_i \ln\left(\frac{x}{P}\right) \quad (20)$$

Where,

$$\ln P = a_0 + \sum_i a_i \ln p_i + \frac{1}{2} \sum_i \sum_j g_{ij} \ln p_i \ln p_j \quad (21)$$

AIDS is linear except for the translog function of price index ( $\ln P$ ). However, this problem has been solved by Deaton and Muellbauer (1980a, 1980b) by using the Stone price index. For example:  $\ln P = \sum_i w_i \ln p_i$  to create linear system.

Deaton and Muellbauer imposed the following constraints to theoretically ensure stability for AIDS:

Cumulativeness:  $\sum_{i=1}^n a_i = 1$ ,  $\sum_{i=1}^n g_{ij} = 0$ ,  $\sum_{i=1}^n b_i = 0$ ,

Symmetry  $g_{ij} = g_{ji}$ , and uniformity:  $\sum_j g_{ij} = 0$

By providing an overview of econometric models for analysing demand, we conclude that there is a variety of functional demand forms. There are no criteria for choosing any of these different functional forms and the choice of appropriate functional demand form is driven by the structure of the data (Frank Asche et al, 2005).

### 2.3. Studies of price elasticity of demand for alcohol products in other countries

There are numerous studies estimating price elasticities of alcohol demand. Gallet (2007) conducted a meta-analysis of 132 international studies to assess the average price and income elasticity of alcohol demand. The results for the price elasticity meta-regression predict the price elasticity of beer -0.83, wine -1.11 and spirits-1.09. Other important findings in Gallet (2007) were:

- The result of price elasticity of demand for beer and other alcohol depends on many factors including: choice of demand functions, choice of number of variables affecting demand, type of data used and the estimation method.
- Initially, studies primarily used traditional linear demand function, semi-log or log-log demand functional forms. Lately, researchers have developed demand functional models that are more compatible with the consumption theory. The use of nonlinear

demand functions (AIDS, semi-log) tends to generate smaller elasticities compared to linear demand functions.

- Estimation method that is most frequently applied is the ordinary least squares (OLS). Several other estimation methods such as 2-stage least squares (2SLS) and 3-stage least squares (3SLS) method are used less frequently. Compared to OLS, 2SLS and 3SLS methods results in larger price elasticity of demand in absolute terms.
- Data used for estimating price elasticity and income elasticity of demand varies. Researchers primarily use time-series data or cross-sectional data, with cross-sectional data being more common. Gallet (2007) did not find that there was a difference in price elasticity estimate when using either time-series or cross-section data.

On the other hand, Bundit et al. (2013) summarized results of 12 studies estimating alcohol demand in developing and less developed countries. They reported average price elasticity for wine – 0.64 (95% CI: -0.80 to -0.48); beer -0.5 (95% CI: -0.78 to -0.21); and other alcohol beverages -0.79 (95% CI: -1.09 to -0.49). Below are results of price elasticity of demand for alcohol in several Asian middle-income countries reported in Bundit et al. (2013).

**Table 1: Price elasticities of alcohol demand in selected Asian countries**

No.	Author and research year	Country	Price elasticity (95% CI)
1	Yu & Alber (2010)	China	- 1.53 (-2.56, -0.48)
2	Set vanathan et al., (2005)	Philippines	0.02 (-0.26, -0.29)
3	Poapongsakom et al., (2007)	Thailand	-0.9 (-1.54, -0.27)
4	Jonh (2005)	India	-1.03 (-1.11, -0.10)
5	Set vanathan et al., (2005)	Taiwan	-0.13 (-0.63, -0.37)

Source: Bundit S., et al (2013)

#### **2.4. Studies of demand elasticities in Vietnam**

To our knowledge, there are no alcohol demand studies in Vietnam. However, demand studies for other commodities exist.

Vu Hoang Linh (2009) used Vietnam Household Living Standard Survey (VHLSS) 2006 data to estimate food demand functions using Linear Approximate AIDS (LAAIDS) and SUR (Seemingly Unrelated Regression). The study found that food consumption in Vietnam is affected by income, price as well as socioeconomic and geographic factors. All food has positive expenditure elasticities and negative own-price elasticities. In particular, rice has mean expenditure elasticity of 0.36 and mean own-price elasticity of -0.80. Thus, an increase in the price in rice by one percent will reduce rice consumption by 0.8 percent, on average. On the other hand, an increase in the income by 1 percent leads to an increase in rice demand by 0.36 percent. The study also found that food consumption differs by urban/rural location, regions and income groups.

Le Quang Canh (2008) estimated price and income elasticity of demand for 3 group of food (rice food, non-rice food and meat/fish) using Vietnam household living standards survey (VHLSS 2004). The author used LAAIDS model with Stone price index and OLS estimation method. The study suggests that rice food and meat/fish are normal goods, while non-rice food is luxury. The price elasticities of demand for rice food, non-rice food and meat/fish are -0.334; -0.451 and -0.066, respectively. An increase in income by 10% leads to an increase in consumption of these three groups of food by 7.61%, 12.57% and 2.45%, respectively. Household characteristics such as age, gender, and education do not appear to affect food consumption significantly, while urban/rural location is important.

Eozenou and Fishburn (2007) used Vietnam Living Standards Survey (VLSS 1998) to estimate price elasticity of demand for cigarettes in Vietnam. They applied AIDS and OLS estimation method and estimated price elasticity of cigarette demand to center around -0.53, which is in line with previous empirical studies for developing countries.

Laxminarayan and Deolalikar (2004) used data from two rounds of VLSS (1993 and 1998) and found evidence of substitution among different types of tobacco products in response to relative prices changes. This suggests that higher cigarette prices may not necessarily encourage quitting and may only divert cigarette smokers to rustic tobacco, which is potentially as harmful as cigarettes. The authors stressed the need for comprehensive tobacco-control strategies that are not restricted to cigarettes alone.

### 3. Research objectives

This study estimates price and income elasticity of demand for wine and beer including:

- Estimating own- price elasticity of demand for beer and wine.
- Estimating income elasticity of demand for beer and wine.

The result of the study can be used as input parameters for estimating the impact of tax policy on consumption of alcohol in Vietnam, as well as on the change in government revenue after a tax increase.

### 4. Data and method

We used data from the nationally representative Vietnam Household Living Standards Survey (VHLSS) for 2010, 2012 and 2014. Each wave includes data on household income, expenditure and other household characteristics for 9,399 households in 3,133 clusters. In this study we focused on the quantity and the value of beer and wine bought or exchanged in the previous month.

Table 1 reports summary statistics for the variables used in the study. About 50% and 20% of households consumed wine and beer, their share of the budget allocated to these goods reached 4.5 % and 6.5 %, and the reported average unit value, a proxy for price, was 17,400 VND and 19,700 VND, respectively.

**Table 2: VHLSS Summary Statistics**

	Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
		2010		2012		2014		2010-2014	
Average age of head hh	Age	48.3	14.2	49.7	14.2	50.7	14.1	49.6	14.2
Sex of head hh (1-Male, 0-Female)	Sex	0.8	0.4	0.8	0.4	0.7	0.4	0.7	0.4
Average HH size	Size	3.9	1.6	3.9	1.6	3.8	1.6	3.9	1.6
HH with positive wine expenditure	D_v7	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5
HH with positive beer expenditure	D_v8	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4
Average wine expenditure	v7	38.4	56.4	46.7	61.5	51.1	48.8	45.2	56.3
Average beer expenditure	v8	98.7	111.9	117.4	108.6	140.5	133.9	118.1	119.6
Average unit value wine expenditure	unit_vq7	14.2	31.1	18.2	34.7	20.1	15.2	17.4	28.8

Average unit value beer expenditure	unit_vq8	16.1	10.2	19.9	9.7	23.6	12.0	19.7	11.1
Average HH expenditure	expend	1,054.9	769.7	1,447.7	1,002.3	1,508.6	1,037.6	1,337.0	965.2
Share of total hh expenditure dedicated to wine	w_v7	0.049	0.062	0.042	0.048	0.044	0.053	0.045	0.055
Share of total hh expenditure dedicated to beer	w_v8	0.068	0.062	0.060	0.057	0.067	0.056	0.065	0.058
Urban/rural (1 – urban, 0 - rural)	Urban	0.28	0.45	0.29	0.45	0.3	0.46	0.29	0.45
Ethnicity of HH head (1- ethnic minority; 0-otherwise)	Ethnic	0.17	0.38	0.17	0.38	0.17	0.37	0.17	0.37
Year of schooling of HH head	schooling	7.58	4.4	7.6	4.4	7.74	4.41	7.64	4.41

Source: Calculated from VHLSS

Given that we only have cross-section household data without prices and that the same alcohol tax is applied across Vietnam, we applied the Almost Ideal Demand System (AIDS) model (Deaton and Muellbauer, 1980a) and a unit value equation (Prais and Houthakker, 1955; Deaton (1980a)) that allows us to estimate the demand for a product  $j$  as a function of its own price, the general price level ( $p_j, P$ ) and income ( $x$ ) with an identifying assumption that the prices vary at the cluster level. Our description of the method borrows heavily from Chelwa (2015).

$$w_i = a_i + \mathring{a}_j g_{ij} \ln p_j + b_i \ln\left(\frac{x}{P}\right) \quad (22)$$

Where,

$$\ln P = a_0 + \mathring{a}_i a_i \ln p_i + \frac{1}{2} \mathring{a}_i \mathring{a}_j g_{ij} \ln p_i \ln p_j \quad (23)$$

subject to the following constraints:

$$\mathring{a}_{i=1}^n a_i = 1, \quad \mathring{a}_{i=1}^n g_{ij} = 0, \quad \mathring{a}_{i=1}^n b_i = 0, \quad \mathring{a}_j g_{ij} = 0$$

The “unit values”, a proxy for price is calculated as:

$$v_{ic} = x_{ic}/q_{ic} \quad (24)$$

Where  $v_{ic}$ ,  $x_{ic}$  and  $q_{ic}$  are respectively the unit value, expenditure and quantity of wine/beer by household  $i$  living in commune  $c$ . However, unit values are not the same thing as price: they hide quality heterogeneity and they are subject to measurement error.

To address this weakness, we first estimated Analysis of variance (Anova) to divide the total variation in unit values into “within cluster variation” and “between cluster variation”. A large F-statistic allowed us to conclude that unit values (prices) vary across geographical areas. Then, we estimated “within cluster” regressions:

$$\ln v_{ic} = \lambda + \beta \ln x_{ic} + \gamma Z_{ic} + \psi \ln \pi_c + e_{ic} \quad (25)$$

$$\text{and } w_{ic} = \alpha + \varepsilon \ln x_{ic} + \delta Z_{ic} + \theta \ln \pi_c + (fe_c + u_{ic}) \quad (26)$$

Where  $w_{ic}$  is the share of wine/beer expenditure in total household expenditure for household  $i$  in cluster  $c$  and  $\ln v_{ic}$  is the log of the unit value, derived according to equation (24) for household  $i$  in cluster  $c$ ,  $\ln x_{ic}$  is the log of total household monthly expenditure,  $Z_{ic}$  is a vector of household characteristics (household size, gender of household head, age of household head, years of schooling of the household head, urban/rural status, ethnicity of the household head),  $fe_c$  is a cluster fixed effect, and  $u_{ic}$  and  $e_{ic}$  are error terms.  $\ln \pi_c$  are the unobserved prices and consequently, equations (25) and (26) are estimated without them.

The third step involves stripping the household level demand and unit values of the effects of household expenditure and household characteristics and then averaging across clusters:

$$\hat{y}^1_c = \frac{1}{nc} \sum_{i=1}^{nc} (\ln v_{ic} - \hat{\beta} \ln x_{ic} - \hat{\gamma} Z_{ic}) \quad (27)$$

$$\text{and } \hat{y}^2_c = \frac{1}{nc} \sum_{i=1}^{nc} (w_{ic} - \hat{\varepsilon} \ln x_{ic} - \hat{\delta} Z_{ic}) \quad (28)$$

Where  $nc$  is number of households in cluster  $c$ ,  $\hat{y}^1_c$  and  $\hat{y}^2_c$  are the estimates of, respectively, cluster average unit value and cluster average demand after removing the effects of household expenditure and household characteristic.

The next step involves regressing cluster level demand,  $\hat{y}^2_c$ , on cluster level unit values,  $\hat{y}^1_c$ . The coefficient on  $\hat{y}^1_c$  in such a regression can be obtained by dividing the covariance between  $\hat{y}^2_c$  and  $\hat{y}^1_c$  by the variance of  $\hat{y}^1_c$ :

$$\hat{\phi} = \frac{\text{Cov}(\hat{y}^2_c, \hat{y}^1_c) - \frac{\sigma^{12}}{n_{size}}}{\text{Var}(\hat{y}^1_c) - \frac{\sigma^{11}}{n_{size}}} \quad (29)$$

where  $n_{\text{size}}$  is the number of households in a cluster,  $\widehat{\sigma}^{12}$  is the estimate of the covariance of the error terms in equations (25) and (26);  $\widehat{\sigma}^{11}$  is the variance of the error term in equation (25).

The final step applies quality correction formulas in obtaining the estimate of the price elasticity of demand,  $\widehat{\varepsilon}_p$ :

$$\widehat{\varepsilon}_p = (\widehat{\theta}/w) - \widehat{\Psi} \quad (30)$$

Where  $w$  is the average share of total household expenditure dedicated to wine/beer in the sample, and  $\widehat{\Psi}$  and  $\widehat{\theta}$  are the estimates of the coefficients on the unobserved price terms in equations (25) and (26), respectively.  $\widehat{\Psi}$  and  $\widehat{\theta}$  are recovered as follows:

$$\widehat{\Psi} = 1 - \frac{\widehat{\beta}(w-\widehat{\theta})}{\widehat{\varepsilon}+w} \quad (31)$$

$$\text{and} \quad \widehat{\theta} = \frac{\widehat{\phi}}{1+(w-\widehat{\phi})\widehat{\xi}} \quad (32)$$

$$\text{with} \quad \widehat{\xi} = \frac{\widehat{\beta}}{\widehat{\varepsilon}+w(1-\widehat{\beta})} \quad (33)$$

where  $\widehat{\beta}$  is the estimate of the coefficient on total household expenditure in equation (4), the within cluster unit value equation, and  $\widehat{\varepsilon}$  is the coefficient on total household expenditure in equation (5), the within cluster demand equation.

The expenditure elasticities of demand  $\widehat{\varepsilon}_e$  is calculated according to Deaton (1990):

$$\widehat{\varepsilon}_e = 1 + \left(\frac{\widehat{\varepsilon}}{w}\right) - \widehat{\beta} \quad (34)$$

We estimate elasticities separately for each VHLSS wave as well for the pooled sample.

The standard errors for the elasticity estimates were obtained by bootstrapping when we run the cluster-level regressions 1000 times resampling the data from an approximating distribution with replacement.

### Testing hypotheses

***Hypothesis 1 (H1):** Expenditures elasticities of demand for wine and beer are expected to be positive.*

According to the theory of consumer behavior, in case of normal goods or luxury goods, if the household's income increases, the demand for these goods also increases,

and income elasticities of demand are positive. In case of inferior goods, if the household's income increases, the demand for these commodities decreases, and income elasticities of demand are negative. Beer and other alcohol products are regarded as normal goods so income elasticities of demand are expected to be positive.

***Hypothesis 2 (H2):** Own-price elasticities of demand for beer and wine are expected to be negative.*

According to theory of demand, if price of normal goods increase then demand for them decreases, other things being equal. Therefore, price elasticities of demand is negative. Beer and wine are normal goods, so the relationship between demand for these products and their price is expected to be negative.

## 5. Results

Recall from Deaton's method, the main identifying assumption behind the method is that prices vary across geographical space. The validity of this assumption can be tested using ANOVA (Analysis of Variance) techniques. We report the results of the ANOVA in Table 3

**Table 3: Testing the spatial variation hypothesis**

	Wine				Beer			
	F-statistic	p value	R-squared	n	F-statistic	p value	R-squared	n
2010	5.44	0.00	0.87	4547	3.57	0.00	0.87	1952
2012	5.20	0.00	0.85	4510	3.60	0.00	0.88	1760
2014	8.96	0.00	0.92	4019	3.16	0.00	0.87	1742
<b>Pooled</b>	6.10	0.00	0.64	13076	2.74	0.00	0.63	5454

The R squared indicates that at least 85% and 87% of the unit values variation for wine and for beer within a wave is attributable to between clusters variation. The F statistics and the associated p value allow us to reject the null hypothesis of no spatial variation in 2010, 2012, 2014 and pooled data.

The results of the unit value regression (equation 25) are reported in Table 4. Since households with higher expenditure report higher unit values, the quality plays a role in determining the price. The expenditure elasticities of quality based on individual waves range between 0.06 and 0.07 for wine and between 0.22 and 0.32 for beer. This means that the reported unit values of wine and beer rise by 0.6% - 0.7% and by 2.2% - 3.2% for every 10% increase in household expenditure, respectively.

**Table 4: Wine and Beer Unit Values Coefficients**

VARIABLES	Wine				Beer			
	2010	2012	2014	Pooled	2010	2012	2014	Pooled
	lnunit_v7	lnunit_v7	lnunit_v7	lnunit_v7	lnunit_v8	lnunit_v8	lnunit_v8	lnunit_v8
Lnx	0.061*** (0.009)	0.073*** (0.010)	0.068*** (0.011)	0.138*** (0.006)	0.316*** (0.021)	0.239*** (0.021)	0.216*** (0.021)	0.343*** (0.012)
Sex	-0.025 (0.016)	-0.016 (0.016)	0.004 (0.018)	-0.002 (0.010)	-0.019 (0.027)	-0.002 (0.027)	0.006 (0.026)	0.005 (0.016)
Lnage	0.024 (0.019)	0.112*** (0.021)	0.079*** (0.024)	0.108*** (0.013)	-0.042 (0.038)	-0.060 (0.040)	-0.061 (0.040)	-0.031 (0.024)
Lnschool	0.111*** (0.009)	0.158*** (0.010)	0.165*** (0.011)	0.134*** (0.006)	-0.007 (0.023)	-0.010 (0.022)	-0.012 (0.020)	-0.029** (0.013)
Lnsize	-0.030** (0.015)	0.064*** (0.016)	-0.026 (0.017)	0.093*** (0.010)	0.194*** (0.032)	-0.183*** (0.031)	0.139*** (0.031)	0.224*** (0.019)
Urban	0.118*** (0.013)	0.112*** (0.014)	0.139*** (0.015)	0.097*** (0.009)	0.051** (0.023)	0.114*** (0.023)	0.124*** (0.022)	0.072*** (0.014)
Ethnic	-0.030** (0.014)	-0.027* (0.015)	0.056*** (0.017)	0.009 (0.009)	0.081** (0.040)	0.049 (0.044)	0.029 (0.048)	0.057** (0.026)
Constant	1.869*** (0.097)	1.630*** (0.109)	1.808*** (0.123)	1.211*** (0.065)	0.809*** (0.200)	1.543*** (0.222)	1.811*** (0.223)	0.762*** (0.124)
Observations	4,241	4,199	3,758	12,198	1,918	1,717	1,705	5,340
R-squared	0.111	0.136	0.151	0.149	0.155	0.119	0.107	0.178

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Households with older household heads and household head with more schooling report higher unit value for wine but smaller unit value for beer (Table 4). The impact of household size is negative, meaning that larger households report lower unit value for both wine and beer. Households living in urban areas tend to have higher unit values for both alcohol products while the ethnic minorities buy cheaper wine.

Results of regressing wine and beer budget shares on household expenditure and other household characteristics with cluster fixed effects (equation 26) are presented in Table 5.

**Table 5: Beer and Wine Budget Shares**

VARIABLES	Wine				Beer			
	2010	2012	2014	Pooled	2010	2012	2014	Pooled
	w_v7	w_v7	w_v7	w_v7	w_v8	w_v8	w_v8	w_v8

lnx	-0.037*** (0.004)	-0.026*** (0.002)	-0.038*** (0.004)	-0.032*** (0.002)	-0.013*** (0.005)	-0.023*** (0.006)	-0.018*** (0.004)	-0.017*** (0.003)
sex	0.001 (0.003)	0.004** (0.002)	0.005*** (0.002)	0.004*** (0.001)	0.004 (0.004)	0.003 (0.003)	0.002 (0.003)	0.003* (0.002)
lnage	-0.003 (0.003)	-0.000 (0.003)	0.005 (0.004)	0.001 (0.002)	-0.010 (0.006)	-0.006 (0.005)	-0.007 (0.006)	-0.007** (0.004)
lnschool	-0.002 (0.001)	-0.005*** (0.001)	-0.001 (0.002)	-0.003*** (0.001)	-0.006* (0.003)	-0.013*** (0.003)	-0.012*** (0.003)	-0.011*** (0.002)
lnsize	0.004 (0.003)	-0.003 (0.003)	0.009* (0.004)	0.002 (0.002)	-0.022*** (0.006)	-0.012** (0.005)	-0.016*** (0.005)	-0.018*** (0.003)
Urban	0.004* (0.002)	0.004*** (0.002)	0.006*** (0.002)	0.004*** (0.001)	0.001 (0.004)	0.008 (0.005)	-0.003 (0.003)	0.002 (0.003)
Ethnic	0.020*** (0.003)	0.019*** (0.002)	0.019*** (0.002)	0.020*** (0.002)	0.006 (0.006)	0.008 (0.007)	-0.009 (0.006)	0.003 (0.004)
Constant	0.301*** (0.027)	0.236*** (0.018)	0.274*** (0.026)	0.258*** (0.014)	0.236*** (0.045)	0.297*** (0.052)	0.280*** (0.036)	0.259*** (0.025)
Observations	4,241	4,199	3,758	12,198	1,918	1,717	1,705	5,340
R-squared	0.247	0.235	0.267	0.244	0.047	0.086	0.086	0.066

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The results show that there is a negative and statistically significant relationship between household expenditure and the share of the household budget allocated to wine and beer: when household expenditure rise, the budget shares dedicated to wine and beer tend to fall. More years of schooling among the household heads is related to a smaller budget share on both wine and beer. Households with a male HH head, urban and ethnic minority households devote larger budget shares to wine.

The price elasticity estimates ( $\hat{\epsilon}_p$ ) for 2010, 2012, 2014 and the pooled sample along with bootstrapped standard errors are presented in Table 6.

**Table 6: Estimates of Price elasticity of Demand for Wine and Beer**

	Observed Coef.	Bootstrap Std. Err.	z	P>z	Normal-based [95% Conf. Interval]	
<b>Wine</b>						
2010	-0.237	0.085	-2.800	0.005	-0.403	-0.071
2012	-0.491	0.029	-16.950	0.000	-0.548	-0.434
2014	-0.359	1.409	-0.260	0.799	-3.122	2.403
Pooled	-0.317	0.030	-10.560	0.000	-0.376	-0.258

<b>Beer</b>						
2010	-0.251	0.025	-10.140	0.000	-0.300	-0.203
2012	-0.305	0.032	-9.500	0.000	-0.368	-0.242
2014	-0.346	0.029	-11.850	0.000	-0.404	-0.289
Pooled	-0.283	0.014	-20.120	0.000	-0.311	-0.256

*Source: Calculated from VHLSS*

All estimates are statistically significant at the 1% level except for 2014 for wine demand. The price elasticity of wine demand ranges from -0.237 to -0.491 with the pooled estimate centering on -0.317. This means that the demand for wine in Vietnam is expected to decline by 3.17% for every 10% rise in wine prices. The price elasticity of beer demand ranges from -0.251 to -0.346 with the pooled estimate centering on -0.283. This means that the demand for beer is expected to decline by 2.83% for every 10% rise in beer prices. These are conditional price elasticities measuring price responsiveness among households whose members continue to consume wine and beer after a price increase.

The estimates of the expenditure elasticities ( $\hat{\epsilon}_e$ ) for 2010, 2012, 2014 in Table 7 show that wine and beer are normal goods in Vietnam. That is, wine and beer demand increases with an increase in household expenditure (income).

**Table 7: Estimates of the expenditure elasticity of demand**

	Observed Coef.	Bootstrap Std. Err.	z	P>z	Normal-based [95% Conf. Interval]	
<b>Wine</b>						
2010	0.122	0.065	1.890	0.059	-0.005	0.249
2012	0.339	0.040	8.550	0.000	0.261	0.416
2014	0.097	0.080	1.210	0.225	-0.060	0.255
Pooled	0.156	0.034	4.630	0.000	0.090	0.222
<b>Beer</b>						
2010	0.484	0.060	8.000	0.000	0.365	0.602
2012	0.406	0.101	4.000	0.000	0.207	0.604
2014	0.503	0.053	9.420	0.000	0.398	0.607
Pooled	0.401	0.036	11.110	0.000	0.330	0.472

*Source: Calculated from VHLSS*

As in Table 6, all estimates are statistically significant at the 1% level except for the 2014 wine equation. For the pooled data, the expenditure elasticities are 0.156 and 0.401 for

wine and beer, respectively, meaning that their consumption of those products goes up as household expenditure/income increases. A 10% increase in expenditure (income) will lead to 1.6% and 4.0% increase in the demand for wine and beer, respectively.

## **6. Discussions**

We found that price elasticities of demand for beer and wine are negative while their income elasticities are positive meaning that these products are normal goods in Vietnam. The elasticities' magnitudes are lower compared to the average price elasticities reported by Gallet (2007), but in line with estimates from other Asian countries presented in Bundit et al. (2013).

The household budget size and living in urban area have a positive impact on the quality of wine and beer consumed. The size of household reduces the unit price, meaning that larger households buy lower quality beer and wine.

The share of households' expenditures dedicated to wine and beer declines as the total expenditures increase and when the HH head is more educated. Households with a male head, households living in urban areas and ethnic minority households tend to devote larger budget share to wine. The interpretation of these results is complicated by the large variety of wine prices in Vietnam where low-priced wine is considered a cheap alcoholic drink. Our results show that ethnic minorities prefer cheap wine, while those living in urban areas buy more expensive wine.

We conclude that the demand for wine and beer in Vietnam is responsive to price: 10% increase in price of wine and beer will result in 3.2% and 2.8% decline in the demand for wine and beer, respectively. This is good news for policy makers who want to use alcohol tax policy to curb the alcohol consumption in Vietnam. However, the tax policy needs to take into account the positive impact of expenditure/income on alcohol consumption – a 10% increase in income will increase the demand for wine and beer by 1.6% and 4.0%, respectively. This means that the government should consider changes in the overall affordability of alcohol products when designing its alcohol tax policy.

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## Appendix 2.2c

### ESTIMATION OF PRICE AND INCOME ELASTICITIES OF DEMAND FOR ALCOHOL AND BEER IN VIETNAM

## Price and Income Elasticities of Wine and Beer Demand in Vietnam

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SUBSTANCE:	alcohol
METHOD:	Not Applicable
FIELD OF STUDY:	economics
Keywords:	Price Elasticity, Income Elasticity, Beer and Wine, Vietnam

# Price and Income Elasticities of Wine and Beer Demand in Vietnam

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### Abstract

This study estimates the price and income elasticities of demand for beer and wine in Vietnam using a linear approximation of Almost Ideal Demand System (AIDS) and data from the Vietnam Household Living Standards Survey 2010, 2012 and 2014. We found that demand for beer and wine in Vietnam is price and income inelastic with the price elasticities ranging between -0.317 and -0.283 and the income elasticities between +0.156 and +0.401. The quality of wine and beer consumed increases with the size of the household budget and among urban households, but declines with the size of the household. Households with older and more educated household heads buy more expensive wine while the ethnic minorities buy cheaper wine. The beer and the wine budget share declines as the total household expenditures increase, and with the years of schooling of the household head. Urban and ethnic minority households as well as households headed by male devote larger budget shares to wine. The result of the study can be used to predict the impact of tax policy on beer and wine consumption and on tax revenue in Vietnam.

## 1. Introduction

The use of alcohol in Vietnam measured in pure alcohol equivalent per person increased significantly from 3.8 liters in 2003-2005 to 6.6 liters in 2008-2010 (1). In 2013, Vietnam consumed 3.0 billion liters of beer and ranked as number one in Southeast Asia in beer consumption (2).

Excessive beer and wine consumption is not only harmful to health, it also increases domestic violence and traffic accidents. Approximately 33.7% of family violence cases in Vietnam are caused by the use of alcohol (3), while 36.2% and 0.7% of traffic accidents involving men and women were related to alcohol, respectively (4). About 36% of motorcyclists and 66.8% of car drivers involved in the 18,412 traffic accidents from July 2009 to October 2010 had higher than allowed level of blood alcohol concentration (5).

To reduce the harmful effects of the use of alcohol, it is important to implement measures to reduce their consumption (6). Evidence from many countries demonstrates that tax increases resulting in higher prices are one of the most effective measures to control the consumption of alcohol and the associated harms (7, 8). Gallet (2007) assessed the size of the price and income effects on alcohol demand by conducting a meta-analysis of 132 international studies and concluded that the price elasticity of beer and wine were about -0.83 and -1.11, respectively while the income elasticity of beer and wine were about +0.2 and +0.71, respectively (9). He concluded that the estimated responsiveness to price depends on the choice of demand functions, the model, the estimation method and the type of data used. He pointed out that nonlinear demand functions tend to generate smaller elasticities compared to linear demand functions. Bundit et al. (2013) summarized results of 12 studies estimating the demand for alcohol, including studies conducted in China, India, the Philippines, Taiwan and Thailand. The price elasticities of total alcohol ranged from -0.02 in the Philippines to -1.53 in China (10).

To assess the impact of tax policy on alcohol consumption in Vietnam, it is important to estimate price and income elasticities of alcohol demand, which indicates the level of consumers' sensitivity to price and income changes. This study is the first to estimate these elasticities for beer and wine in Vietnam using Vietnam Household Living Standards Surveys 2010, 2012 and 2014.

## 2. Data and methods

The description of the method given here borrows heavily from Chelwa (2015) (11). We used data from the nationally representative Vietnam Household Living Standards Survey (VHLSS) for 2010, 2012 and 2014. Each wave includes data on household income, expenditure and other household characteristics for 9,399 households in 3,133 clusters. In this study we focused on the quantity and the value of beer and wine bought or exchanged in the previous month.

Table 1 reports summary statistics for the variables used in the study. For the period 2010-2014, about 50% and 20% of households consumed wine and beer, their share of the budget allocated to these goods reached 4.5 % and 6.5 %, and the reported average unit value, a proxy for price, was 17,4 thousand VND and 19,7 thousand VND, respectively.

(Table 1 about here)

Given that we only have cross-section household data without prices and that the same alcohol tax is applied across Vietnam, we applied the Almost Ideal Demand System (AIDS) model (12) and a unit value equation (12, 13) that allows us to estimate the demand for a product  $j$  as a function of its own price, the general price level ( $p_j, P$ ) and income ( $x$ ) with an identifying assumption that the prices vary at the cluster level:

$$w_i = \alpha_i + \sum_j \gamma_{ij} \ln p_j + \beta_i \ln\left(\frac{x}{P}\right) \quad (1)$$

Where,

$$\ln P = \alpha_0 + \sum_i \alpha_i \ln p_i + \frac{1}{2} \sum_i \sum_j \gamma_{ij} \ln p_i \ln p_j \quad (2)$$

subject to the following constraints:

$$\sum_{i=1}^n \alpha_i = 1, \quad \sum_{i=1}^n \gamma_{ij} = 0, \quad \sum_{i=1}^n \beta_i = 0, \quad \sum_j \gamma_{ij} = 0$$

The “unit values”, a proxy for price is calculated as:

$$v_{ic} = x_{ic}/q_{ic} \quad (3)$$

Where  $v_{ic}$ ,  $x_{ic}$  and  $q_{ic}$  are respectively the unit value, expenditure and quantity of wine/beer by household  $i$  living in commune  $c$ . However, unit values are not the same thing as price: they hide quality heterogeneity and they are subject to measurement error.

To address this weakness, we first estimated Analysis of variance (Anova) to divide the total variation in unit values into “within cluster variation” and “between cluster variation”. A large F-statistic allowed us to conclude that unit values (prices) vary across geographical areas. Then, we estimated “within cluster” regressions:

$$\ln v_{ic} = \lambda + \beta \ln x_{ic} + \gamma Z_{ic} + \psi \ln \pi_c + e_{ic} \quad (4) \text{ and}$$

$$w_{ic} = \alpha + \varepsilon \ln x_{ic} + \delta Z_{ic} + \theta \ln \pi_c + (fe_c + u_{ic}) \quad (5)$$

Where  $w_{ic}$  is the share of wine/beer expenditure in total household expenditure for household  $i$  in cluster  $c$  and  $\ln v_{ic}$  is the log of the unit value, derived according to equation (3) for household  $i$  in cluster  $c$ ,  $\ln x_{ic}$  is the log of total household monthly expenditure,  $Z_{ic}$  is a vector of household characteristics (household size, gender of household head, age of household head, years of schooling of the household head, employment status of the household head, urban/rural status, ethnicity of the household head),  $fe_c$  is a cluster fixed effect, and  $u_{ic}$  and  $e_{ic}$  are error terms.  $\ln \pi_c$  are the unobserved prices and consequently, equations (4) and (5) are estimated without them.

The third step involves stripping the household level demand and unit values of the effects of household expenditure and household characteristics and then averaging across clusters:

$$\hat{v}_c^1 = \frac{1}{nc} \sum_{i=1}^{nc} (\ln v_{ic} - \hat{\beta} \ln x_{ic} - \hat{\gamma} Z_{ic}) \quad (6)$$

and 
$$\hat{w}_c^2 = \frac{1}{nc} \sum_{i=1}^{nc} (w_{ic} - \hat{\varepsilon} \ln x_{ic} - \hat{\delta} Z_{ic}) \quad (7)$$

Where  $nc$  is number of households in cluster  $c$ ,  $\hat{v}_c^1$  and  $\hat{w}_c^2$  are the estimates of, respectively, cluster average unit value and cluster average demand after removing the effects of household expenditure and household characteristic.

The next step involves regressing cluster level demand,  $\hat{w}_c^2$ , on cluster level unit values,  $\hat{v}_c^1$ . The coefficient on  $\hat{v}_c^1$  in such a regression can be obtained by dividing the covariance between  $\hat{w}_c^2$  and  $\hat{v}_c^1$  by the variance of  $\hat{v}_c^1$ :

$$\hat{\phi} = \frac{\text{Cov}(\hat{y}_i^2, \hat{y}_i^1) - \frac{\sigma^{12}}{n_{\text{size}}}}{\text{Var}(\hat{y}_i^1) - \frac{\sigma^{11}}{n_{\text{size}}}} \quad (8)$$

where  $n_{\text{size}}$  is the number of households in a cluster,  $\sigma^{12}$  is the estimate of the covariance of the error terms in equations (4) and (5);  $\sigma^{11}$  is the variance of the error term in equation (4).

The final step applies quality correction formulas in obtaining the estimate of the price elasticity of demand,  $\epsilon_p$ :

$$\hat{\epsilon}_p = (\hat{\theta}/w) - \hat{\psi} \quad (9)$$

Where  $w$  is the average share of total household expenditure dedicated to wine/beer in the sample, and  $\hat{\psi}$  and  $\hat{\theta}$  are the estimates of the coefficients on the unobserved price terms in equations (4) and (5), respectively.  $\hat{\psi}$  and  $\hat{\theta}$  are recovered as follows:

$$\hat{\psi} = 1 - \frac{\hat{\beta}(w - \hat{\theta})}{\hat{\epsilon} + w} \quad (10) \text{ and}$$

$$\hat{\theta} = \frac{\hat{\phi}}{1 + (w - \hat{\phi})\hat{\epsilon}} \quad (11) \text{ with}$$

$$\hat{\epsilon} = \frac{\hat{\beta}}{\hat{\epsilon} + w(1 - \hat{\beta})} \quad (12)$$

where  $\hat{\beta}$  is the estimate of the coefficient on total household expenditure in equation (4), the within cluster unit value equation, and  $\hat{\epsilon}$  is the coefficient on total household expenditure in equation (5), the within cluster demand equation.

The expenditure elasticities of demand  $\epsilon_e$  is calculated according to Deaton (1990) (14):

$$\epsilon_e = 1 + \left(\frac{\hat{\epsilon}}{w}\right) - \hat{\beta} \quad (13)$$

We estimate elasticities separately for each VHLSS wave as well for the pooled sample.

The standard errors for the elasticity estimates were obtained by bootstrapping when we run the cluster-level regressions 1000 times resampling the data from an approximating distribution with replacement.

### 3. Results

The validity of the assumption that prices vary across clusters are tested in Table 2.

(Table 2 about here)

The R squared indicates that at least 85% and 87% of the unit values variation for wine and for beer within a wave is attributable to between clusters variation. The F statistics and the associated p value allow us to reject the null hypothesis of no spatial variation in 2010, 2012, 2014 and pooled data.

The results of the unit value regression (equation 4) are reported in Table 3. Since households with higher expenditure report higher unit values, the quality plays a role in determining the price. The expenditure elasticities of quality based on individual waves range between 0.06 and 0.07 for wine and between 0.22 and 0.32 for beer. This means that the reported unit values of wine and beer rise by 0.6% - 0.7% and by 2.2% - 3.2% for every 10% increase in household expenditure, respectively.

(Table 3 about here)

Households with older household heads and household head with more schooling report higher unit value for wine (Table 3). The impact of household size is negative, meaning that larger households report lower unit value for both wine and beer. Households living in urban areas tend to have higher unit values for both alcohol products while the ethnic minorities buy cheaper wine

Results of regressing wine and beer budget shares on household expenditure and other household characteristics with cluster fixed effects (equation 5) are presented in Table 4.

(Table 4 about here)

The results show that there is a negative and statistically significant relationship between household expenditure and the share of the household budget allocated to wine and beer: when household expenditure rise, the budget shares dedicated to wine and beer tend to fall. More years of schooling among the household heads is related to a smaller budget

share on both wine and beer. Households with a male HH head, urban and ethnic minority households devote larger budget shares to wine.

The price elasticity estimates ( $\epsilon_p$ ) for 2010, 2012, 2014 and the pooled sample along with bootstrapped standard errors are presented in Table 5.

(Table 5 about here)

All estimates are statistically significant at the 1% level except for 2014 for wine demand. The price elasticity of wine demand ranges from -0.237 to -0.491 with the pooled estimate centering on -0.317. This means that the demand for wine in Vietnam is expected to decline by 3.17% for every 10% rise in wine prices. The price elasticity of beer demand ranges from -0.251 to -0.346 with the pooled estimate centering on -0.283. This means that the demand for beer is expected to decline by 2.83% for every 10% rise in beer prices. These are conditional price elasticities measuring price responsiveness among households whose members continue to consume wine and beer after a price increase.

The estimates of the expenditure elasticities ( $\epsilon_y$ ) for 2010, 2012, 2014 in Table 6 show that wine and beer are normal goods in Vietnam. That is, wine and beer demand increases with an increase in household expenditure (income).

(Table 6 about here)

As in Table 5, all estimates are statistically significant at the 1% level except for the 2014 wine equation. For the pooled data, the expenditure elasticities are 0.156 and 0.401 for wine and beer, respectively, meaning that their consumption of those products goes up as household expenditure/income increases. A 10% increase in expenditure (income) will lead to 1.6% and 4.0% increase in the demand for wine and beer, respectively.

#### 4. Discussion

We found that price elasticities of demand for beer and wine are negative while their income elasticities are positive meaning that these products are normal goods in Vietnam.

The elasticities' magnitudes are lower compared to the average price elasticities reported by (9), but in line with estimates from other Asian countries presented in (10).

The household budget size and living in urban area have a positive impact on the quality of wine and beer consumed. The size of household reduces the unit price, meaning that larger households buy lower quality beer and wine.

The share of households' expenditures dedicated to wine and beer declines as the total expenditures increase and when the HH head is more educated. Households with a male head, households living in urban areas and ethnic minority households tend to devote larger budget share to wine. The interpretation of these results is complicated by the large variety of wine prices in Vietnam where low-priced wine is considered a cheap alcoholic drink. Our results show that ethnic minorities prefer cheap wine, while those living in urban areas and those with more education buy more expensive wine.

We conclude that the demand for wine and beer in Vietnam is responsive to price: 10% increase in price of wine and beer will result in 3.2% and 2.8% decline in the demand for wine and beer, respectively. This is good news for policy makers who want to use alcohol tax policy to curb the alcohol consumption in Vietnam. However, the tax policy needs to take into account the positive impact of expenditure/income on alcohol consumption – a 10% increase in income will increase the demand for wine and beer by 1.6% and 4.0%, respectively. This means that the government should consider changes in the overall affordability of alcohol products when designing its alcohol tax policy.

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## Tables

Table 1: VHLSS Summary Statistics

	Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
		2010		2012		2014		2010-2014	
Average age of head hh	Age	48.3	14.2	49.7	14.2	50.7	14.1	49.6	14.2
Sex of head hh (1-Male, 0-Female)	Sex	0.8	0.4	0.8	0.4	0.7	0.4	0.7	0.4
Average HH size	Size	3.9	1.6	3.9	1.6	3.8	1.6	3.9	1.6
HH with positive wine expenditure	D_v7	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5
HH with positive beer expenditure	D_v8	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4
Average wine expenditure	v7	38.4	56.4	46.7	61.5	51.1	48.8	45.2	56.3
Average beer expenditure	v8	98.7	111.9	117.4	108.6	140.5	133.9	118.1	119.6
Average unit value wine expenditure	unit_vq7	14.2	31.1	18.2	34.7	20.1	15.2	17.4	28.8
Average unit value beer expenditure	unit_vq8	16.1	10.2	19.9	9.7	23.6	12.0	19.7	11.1
Average HH expenditure	expend	1,054.9	769.7	1,447.7	1,002.3	1,508.6	1,037.6	1,337.0	965.2
Share of total hh expenditure dedicated to wine	w_v7	0.049	0.062	0.042	0.048	0.044	0.053	0.045	0.055
Share of total hh expenditure dedicated to beer	w_v8	0.068	0.062	0.060	0.057	0.067	0.056	0.065	0.058

Source: Calculated from VHLSS

Table 2: ANOVA

	Wine				Beer			
	F-statistic	p value	R-squared	n	F-statistic	p value	R-squared	N
2010	5.44	0.00	0.87	4547	3.57	0.00	0.87	1952
2012	5.20	0.00	0.85	4510	3.60	0.00	0.88	1760
2014	8.96	0.00	0.92	4019	3.16	0.00	0.87	1742
Pooled	6.10	0.00	0.64	13076	2.74	0.00	0.63	5454

Source: Calculated from VHLSS

**Table 3: Wine and Beer Unit Values Coefficients**

VARIABLES	Wine				Beer			
	2010 lnunit v7	2012 lnunit v7	2014 lnunit v7	Pooled lnunit v7	2010 lnunit v8	2012 lnunit v8	2014 lnunit v8	Pooled lnunit v8
Ln <sub>x</sub>	0.061*** (0.009)	0.073*** (0.010)	0.068*** (0.011)	0.138*** (0.006)	0.316*** (0.021)	0.239*** (0.021)	0.216*** (0.021)	0.343*** (0.012)
Sex	-0.025 (0.016)	-0.016 (0.016)	0.004 (0.018)	-0.002 (0.010)	-0.019 (0.027)	-0.002 (0.027)	0.006 (0.026)	0.005 (0.016)
Ln <sub>age</sub>	0.024 (0.019)	0.112*** (0.021)	0.079*** (0.024)	0.108*** (0.013)	-0.042 (0.038)	-0.060 (0.040)	-0.061 (0.040)	-0.031 (0.024)
Ln <sub>school</sub>	0.111*** (0.009)	0.158*** (0.010)	0.165*** (0.011)	0.134*** (0.006)	-0.007 (0.023)	-0.010 (0.022)	-0.012 (0.020)	-0.029** (0.013)
Ln <sub>size</sub>	-0.030** (0.015)	-0.064*** (0.016)	-0.026 (0.017)	-0.093*** (0.010)	-0.194*** (0.032)	-0.183*** (0.031)	-0.139*** (0.031)	-0.224*** (0.019)
T <sub>tnt</sub>	0.118*** (0.013)	0.112*** (0.014)	0.139*** (0.015)	0.097*** (0.009)	0.051** (0.023)	0.114*** (0.023)	0.124*** (0.022)	0.072*** (0.014)
D <sub>toc</sub>	-0.030** (0.014)	-0.027* (0.015)	-0.056*** (0.017)	0.009 (0.009)	0.081** (0.040)	0.049 (0.044)	0.029 (0.048)	0.057** (0.026)
Constant	1.869*** (0.097)	1.630*** (0.109)	1.808*** (0.123)	1.211*** (0.065)	0.809*** (0.200)	1.543*** (0.222)	1.811*** (0.223)	0.762*** (0.124)
Observations	4,241	4,199	3,758	12,198	1,918	1,717	1,705	5,340
R-squared	0.111	0.136	0.151	0.149	0.155	0.119	0.107	0.178

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 4: Beer and Wine Budget Shares**

VARIABLES	Wine				Beer			
	2010 w_v7	2012 w_v7	2014 w_v7	Pooled w_v7	2010 w_v8	2012 w_v8	2014 w_v8	Pooled w_v8
ln <sub>x</sub>	-0.037*** (0.004)	-0.026*** (0.002)	-0.038*** (0.004)	-0.032*** (0.002)	-0.013*** (0.005)	-0.023*** (0.006)	-0.018*** (0.004)	-0.017*** (0.003)
sex	0.001 (0.003)	0.004** (0.002)	0.005*** (0.002)	0.004*** (0.001)	0.004 (0.004)	0.003 (0.003)	0.002 (0.003)	0.003* (0.002)
ln <sub>age</sub>	-0.003 (0.003)	-0.000 (0.003)	0.005 (0.004)	0.001 (0.002)	-0.010 (0.006)	-0.006 (0.005)	-0.007 (0.006)	-0.007** (0.004)

Inschool	-0.002 (0.001)	-0.005*** (0.001)	-0.001 (0.002)	-0.003*** (0.001)	-0.006* (0.003)	-0.013*** (0.003)	-0.012*** (0.003)	-0.011*** (0.002)
lnsize	0.004 (0.003)	-0.003 (0.003)	0.009* (0.004)	0.002 (0.002)	-0.022*** (0.006)	-0.012** (0.005)	-0.016*** (0.005)	-0.018*** (0.003)
ttnt	0.004* (0.002)	0.004*** (0.002)	0.006*** (0.002)	0.004*** (0.001)	0.001 (0.004)	0.008 (0.005)	-0.003 (0.003)	0.002 (0.003)
dtoc	0.020*** (0.003)	0.019*** (0.002)	0.019*** (0.002)	0.020*** (0.002)	0.006 (0.006)	0.008 (0.007)	-0.009 (0.006)	0.003 (0.004)
Constant	0.301*** (0.027)	0.236*** (0.018)	0.274*** (0.026)	0.258*** (0.014)	0.236*** (0.045)	0.297*** (0.052)	0.280*** (0.036)	0.259*** (0.025)
Observations	4,241	4,199	3,758	12,198	1,918	1,717	1,705	5,340
R-squared	0.247	0.235	0.267	0.244	0.047	0.086	0.086	0.066

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5: Estimates of Price elasticity of Demand for Wine and Beer**

	Observed Coef.	Bootstrap Std. Err.	z	P>z	Normal-based [95% Conf. Interval]	
<b>Wine</b>						
2010	-0.237	0.085	-2.800	0.005	-0.403	-0.071
2012	-0.491	0.029	-16.950	0.000	-0.548	-0.434
2014	-0.359	1.409	-0.260	0.799	-3.122	2.403
Pooled	-0.317	0.030	-10.560	0.000	-0.376	-0.258
<b>Beer</b>						
2010	-0.251	0.025	-10.140	0.000	-0.300	-0.203
2012	-0.305	0.032	-9.500	0.000	-0.368	-0.242
2014	-0.346	0.029	-11.850	0.000	-0.404	-0.289
Pooled	-0.283	0.014	-20.120	0.000	-0.311	-0.256

Source: Calculated from VHLSS

**Table 6. Estimates of the expenditure elasticity of demand**

	Observed Coef.	Bootstrap Std. Err.	z	P>z	Normal-based [95% Conf. Interval]	
<b>Wine</b>						
2010	0.122	0.065	1.890	0.059	-0.005	0.249
2012	0.339	0.040	8.550	0.000	0.261	0.416
2014	0.097	0.080	1.210	0.225	-0.060	0.255

Pooled	0.156	0.034	4.630	0.000	0.090	0.222
<b>Beer</b>						
2010	0.484	0.060	8.000	0.000	0.365	0.602
2012	0.406	0.101	4.000	0.000	0.207	0.604
2014	0.503	0.053	9.420	0.000	0.398	0.607
Pooled	0.401	0.036	11.110	0.000	0.330	0.472

*Source: Calculated from VHLSS*

For Review Only

## Appendix 2.3

### IMPACT OF ALCOHOL TAX

# Report on modelling the impact of alcohol tax increase in Vietnam

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*The study was conducted in the framework of project “Facilitating Alcohol Control  
Law Development in Vietnam through Evidence” which was funded with the aid of a  
grant from the International Development Research Centre, Ottawa, Canada*

*May, 2017*

## Table of Contents

1. Background .....	3
2. Methods.....	3
2.1. Input data.....	3
2.2. Modelling the impact of tax change .....	4
3. Results.....	7
3.1. Impact of tax change on retail price .....	7
3.2. Impact of tax change on sale .....	8
3.3. Impact of tax change on revenue .....	9
4. Conclusion.....	10
5. Recommendations .....	10
6. References .....	11

## 1. Background

International evidence (Elder, Lawrence et al. 2010) shows that increasing tax on beer and alcohol products will reduce consumption and increase government tax revenue. The increased tax revenue then can be used to fund social development programs including promoting public health.

The Law on Amendments to some articles of the excise tax law in 2014 stipulated that the ad valorem tax rate on alcohol with a volume of 20% and higher is 55% (applicable from 1<sup>st</sup> January, 2016 to 31<sup>st</sup> December, 2016), 60% (applicable from the 1<sup>st</sup> January, 2017 to 31<sup>st</sup> December, 2017) and 65% (from 1<sup>st</sup> January, 2018). The excise tax rate on alcohol with volume under 20% is 30% (applicable from 1<sup>st</sup> January, 2016 to the 31<sup>st</sup> December, 2017), and 35% (applicable from the 1<sup>st</sup> January, 2018). The excise tax rate on beer is 55% (applicable from 1<sup>st</sup> January, 2016 to 31<sup>st</sup> December, 2017), 60% (applicable from 1<sup>st</sup> January, 2016 to 31<sup>st</sup> December, 2017) and 65% (from 1<sup>st</sup> January, 2018).

The question is what impact will the taxation changes stipulated in the Amendment Law 2014 have on consumption, government tax revenue. And how should the excise tax on beer and alcohol products be reformed in future tax law. These questions are valuable to policy makers in the process of developing new policies on tax and price. In order to answer these questions, a tax simulation model was built to assess the impact of the current tax laws and future tax plans.

## 2. Methods

Below is a description of the tax simulation model that was developed for this study.

### 2.1. Input data

There were four types of input data used in the model: data on sale, data on prices, data on elasticities and data on macroeconomic situations.

Firstly, with sale, the data were collected by the Ministry of Finance annually from the Ministry of Industry and Trade's reports. In the model, we use sale data for the most recent years: in 2015 when there were no tax change and in 2016 when there was the first change in the tax rate according to the Amendment Law 2014. The sale data from 2015 and 2016 is used as baseline data. Sale data were only available in 3 categories: beer, alcohol with volume less than 20%, alcohol with volume equal and higher than 20%. Unfortunately, sale data were not available in more details, such as by brands.

Secondly, the data on prices were collected by the General Statistics Office. By mandate, the General Statistics Office collects retail prices of beer and alcohol products monthly for CPI statistics. But for CPI, they only collect the prices for several of the most popular brands.

Under the contract with HealthBridge Vietnam, the General Statistics Office provided price data which were collected on four occasions (January, June, September, and December) each year in 2015 and 2016 across all 61 provinces in Viet Nam. These data allow precise calculation of average retail prices during those two years.

Thirdly, we use the data on elasticities to simulate the change in consumption in response to changes in prices and income. The price and income elasticity were estimated in a recent research by Nguyen Thi Thu Hien and Pham Ngoc Toan in 2016 (to be published). This study used the Vietnam Household Living Standard Survey conducted in 2010, 2012, and 2014. See Table 1.

Fourthly, for macroeconomics conditions, we used data on inflation and income per capita growth. These data were from reports and forecasts produced by the General Statistics Office and the IMF.

Table 1. Summary of market and macro assumptions

<i>MARKET AND MACRO ASSUMPTIONS</i>						
	2015	2016	2017	2018	2019	2020
<b>Price elasticity</b>						
Beer	-0.317	-0.317	-0.317	-0.317	-0.317	-0.317
Alcohol (<20%)	-0.283	-0.283	-0.283	-0.283	-0.283	-0.283
Alcohol (>=20%)	-0.283	-0.283	-0.283	-0.283	-0.283	-0.283
<b>Income elasticity</b>						
Beer	0.156	0.156	0.156	0.156	0.156	0.156
Alcohol (<20%)	0.401	0.401	0.401	0.401	0.401	0.401
Alcohol (>=20%)	0.401	0.401	0.401	0.401	0.401	0.401
CPI	0.6%	4.7%	3.7%	3.9%	4.0%	4.0%
GDP/Capita	5.6%	5.0%	5.1%	5.1%	5.1%	5.1%

## 2.2. Modelling the impact of tax change

In order to assess the impact of tax change, we used several steps in the model:

- Step 1: Modelling the structure of retail price
- Step 2: Modelling the change in retail price
- Step 3: Modelling the impact of change in retail price on consumption
- Step 4: Modelling the impact on tax revenue

### **Step 1: Modelling the structure of retail price**

The formula to model the structure of retail price is as follow:

$$\text{Retail price} = \text{Excise taxable price} + \text{Excise tax} + \text{VAT} + \text{Retail Margin}$$

As sale data were only available in 3 categories (beer, alcohol  $\leq 20\%$ , alcohol  $> 20\%$ ), the model uses the average retail price for each product category. Therefore, in the model, we simulate for 3 product categories. Because data on the market share by brand was not available, the average prices were not weighted.

Retail margin was assumed equal to 25%, based on recent studies conducted by the Ministry of Finance on other products (e.g. cigarettes).

Value Added Tax (VAT) is constant at 10% in accordance with the current Law on VAT. The excise tax schedule is taken from the 2014 Amendment Law on Excise Tax (for the period from 2015 to 2019). From 2019 to 2025, the tax schedule is based on different scenarios.

### **Step 2: Modelling the change in retail price**

To simulate the change in retail price, we take into account two factors. The first factor is the change in the tax base or the excise taxable price. In the model, we assume that the excise taxable price change is adjusted annually according to inflation.

The second factor is the change in tax rate. As VAT is constant, the change in tax rate comes from the change in the excise tax. As noted above, these changes are and will be stipulated in the current and future excise tax laws.

The retail margin is assumed to be constant at 25%. We assumed that there is no price transfer in the distribution networks.

### **Step 3: Modelling the impact of change in retail price to change in consumption**

To simulate the impact of change in retail price on consumption, we take into account two effects: price effect and income effect.

#### Price effect:

From the simulation in retail prices, changes in retail price were calculated for each year. If retail price (in real terms) increases, consumption will decrease.

The formula is:

$$\text{Change in consumption} = (\text{real price increase}) \times (\text{price elasticity of demand})$$

As price and sale were modelled for 3 product categories, this formula was also used for each of the 3 categories. The price elasticity of demand for beer is -0.317, meaning that a 10% increase in real retail price will lead to a 3.17% reduction in consumption. Similarly, the price elasticity for alcohol (both categories) is -0.283, meaning that a 10% increase in real retail price will lead to 2.83% reduction in consumption.

#### Income effect:

For a developing country like Vietnam, income per capita grows rather significantly every year. Table 1 above shows that income per capital grows approximately 5% each year. Income growth will lead to increased consumption.

The formula to calculate this effect is:

$$\text{Change in consumption} = (\text{real income growth}) \times (\text{income elasticity of demand})$$

The income elasticity for beer is 0.156, meaning that if income increases by 10%, consumption will increase by approximately 1.56%. The income elasticity of alcohol (both categories) is 0.401, meaning that if income increase by 10%, consumption will increase by approximately 4.01%.

#### Total effect:

After calculating the effects of change in income and price, the total effect of price change on consumption was calculated as:

$$\text{Total effect on consumption} = \text{price effect} + \text{income effect}$$

Then sale of each 3 product categories were calculated as:

$$\text{Sale in the current year} = (\text{sale in the previous year}) + (\text{price effect}) + (\text{income effect})$$

#### **Step 4: Modelling the impact on tax revenue**

Three kinds of data were used to model the impact on tax revenue. The first one is data on sales as projected in step 3.

The second data is the excise tax per unit of product sold.

$$\text{Excise tax} = \text{taxable price} \times \text{excise tax rate}$$

The total excise tax revenue is then calculated as

$$\text{Excise tax revenue} = \text{sale} \times (\text{excise tax rate} \times \text{taxable price})$$

The third data is the VAT tax per unit of product sold

$$\text{VAT tax} = 10\% \times (\text{excise taxable price} + \text{excise tax})$$

The VAT tax revenue is

$$\text{VAT tax revenue} = \text{sale} \times \text{VAT tax}$$

Finally, the total tax revenue is calculated as:

$$\text{Tax revenue} = \text{Excise tax revenue} + \text{VAT tax revenue}$$

### 3. Results

Before discussing the results, we summarise the current tax system for beer and alcohol products in Vietnam in Table 2.

Table 2. Summary of the current tax schedule

Alcohol tax system						
	2015	2016	2017	2018	2019	2020
<b>Excise</b>						
Beer	50%	55%	60%	65%	65%	65%
Alcohol (<20%)	25%	30%	30%	35%	35%	35%
Alcohol (>=20%)	50%	55%	60%	65%	65%	65%
VAT	10%	10%	10%	10%	10%	10%

#### 3.1. Impact of tax changes on retail price

##### Actual change in 2016

Actual data collected by GSO is used to assess the impact of the 2016 increase in excise tax. From the actual data, we can see that the impact of the 2016 tax change is rather mixed. The nominal retail price of alcohol with a volume less than 20% increased by 21.5%, the nominal retail price of alcohol with a volume equal or higher than 20% increased by 3.6%, while the nominal retail price of beer reduced by 3.6%.

After adjusting for inflation, the impact on retail price is even less. Only the real retail price for alcohol with a volume equal or less than 20% increased by 18%. The real retail price for beer and alcohol with a volume higher than 20% actually decreased. The decrease in average beer prices is significant, with prices decreasing by 9%.

##### Projected change in the period from 2017 to 2020

For the period 2017 to 2020, prices are simulated using the assumption that:

- The excise taxable price will increase according to inflation.
- Alcohol firms will fully incorporate the change in tax into retail prices.

In 2017 and 2018 when the excise tax rate increased by 5 percentage point, results show that the nominal price of beer and alcohol increased by around 7.1 to 7.9%. The one

exception being that the nominal price of alcohol (<20%) only increased by 3.6%, which is equal to the inflation rate for 2017. After adjusting for inflation, the change in real price is only 3.4% to 4.2%. If we compare this change to income growth, we can see that the real price increase induced by a 5 percentage point tax increase is still lower than income growth. In other words, beer and alcohol products are still becoming more affordable, relative to income.

In 2019 and 2020 when there are no tax changes planned, the nominal retail price will increase only 4% or equal to inflation. After adjusted for inflation, there will be no real price increase. Therefore, in those years, beer and alcohol products will become even more affordable when compared with 2017 and 2018.

Table 3. Change in retail price

<b>Average retail price change</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Excise</b>						
<b>Beer</b>		-3.6%	7.0%	7.1%	4.0%	4.0%
<b>Alcohol (&lt;20%)</b>		21.5%	3.6%	7.9%	4.0%	4.0%
<b>Alcohol (&gt;=20%)</b>		3.6%	7.0%	7.1%	4.0%	4.0%
<b>Average real retail price change (inflation adjusted)</b>						
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Excise</b>						
<b>Beer</b>		-8.7%	3.5%	3.4%	0.0%	0.0%
<b>Alcohol (&lt;20%)</b>		17.5%	0.0%	4.2%	0.0%	0.0%
<b>Alcohol (&gt;=20%)</b>		-1.2%	3.5%	3.4%	0.0%	0.0%

### 3.2. Impact of tax change on sale

Following are summary of the impact on total sale.

In general, sales will still increase over the five year period from 2016 to 2020. This shows that the tax increase in the current tax schedule is not enough to keep pace with inflation and income growth. This is consistent with earlier findings that the change in tax and price is still lower than income growth and products are still becoming increasingly affordable.

When the excise tax increases by 5 percentage point in 2017 and 2018, sale for beer will be reduced slightly by 0.3% per year. Sale for alcohol (both categories) will still increase by approximately 1% per year. In 2019 and 2020 when there is no planned tax increase, sale for beer will again return to an increase trend of 0.8% per year. Sale for alcohol products will return to an increase trend of 2% annually. For the whole period from 2016 to 2020, sale of beer and alcohol will have a net positive increase.

The difference in impact of tax increases on beer and alcohol consumption is due to the difference in price and income elasticity. As beer has lower income elasticity of demand and higher price elasticity of demand, the impact of tax and price increase on beer consumption is higher than on alcohol consumption.

Table 4. Change in consumption and sale

Total Sale (1000l)						
	2015	2016	2017	2018	2019	2020
<b>Excise</b>						
Beer	3,525,166	3,649,894	3,638,835	3,628,872	3,657,743	3,686,843
Alcohol (<20%)	3,008	2,882	2,941	2,966	3,027	3,089
Alcohol (>=20%)	63,374	64,079	64,761	65,467	66,806	68,172
<b>Total</b>	<b>3,591,547</b>	<b>3,716,855</b>	<b>3,706,537</b>	<b>3,697,305</b>	<b>3,727,576</b>	<b>3,758,105</b>
Total Sale (% change)						
	2015	2016	2017	2018	2019	2020
<b>Excise</b>						
Beer		3.5%	-0.3%	-0.3%	0.8%	0.8%
Alcohol (<20%)		-4.2%	2.0%	0.9%	2.0%	2.0%
Alcohol (>=20%)		1.1%	1.1%	1.1%	2.0%	2.0%
<b>Total</b>		<b>3.5%</b>	<b>-0.3%</b>	<b>-0.2%</b>	<b>0.8%</b>	<b>0.8%</b>

### 3.3. Impact of tax change on revenue

We can see from the summary in Table 5 below that tax revenue will increase every year with or without changes in tax. This is due to two factors:

- Inflation leads to change in the tax base and therefore the tax collection per unit of product sold
- Income growth leads to an increase in consumption and sale.

However, an increase in the tax rate will lead to a higher increase in tax revenue. In 2017 and 2018 when the tax rate increases, tax revenue increases by 11% to 18%. In 2019 and 2020 when there will be no tax rate increase, tax revenue will increase by 5% to 6%, lower than the increase in 2017 or 2018. In theory, tax increases will reduce consumption and sale. However, tax rate increases also increase the tax per product sold, and at this tax range, the net effect on tax revenue is still positive.

Comparing between products, alcohol has a higher increase in tax revenue than beer due to:

- o Lower price elasticity: when tax increases, the reduction in sale is small
- o Higher income elasticity: income growth kept beer consumption high.

Table 5. Change in Tax Revenue

Total Tax Revenue (bil VND)						
	2015	2016	2017	2018	2019	2020
<b>Excise</b>						
Beer	41,103	43,057	47,964	53,295	55,868	58,565
Alcohol (<=20%)	99	128	135	160	169	180
Alcohol (>20%)	1,169	1,285	1,451	1,634	1,734	1,840
<b>Total</b>	<b>42,371</b>	<b>44,469</b>	<b>49,550</b>	<b>55,088</b>	<b>57,771</b>	<b>60,585</b>
Total Tax Revenue (% change)						
	2015	2016	2017	2018	2019	2020
<b>Excise</b>						
Beer		4.8%	11.4%	11.1%	4.8%	4.8%
Alcohol (<=20%)		28.3%	5.8%	18.2%	6.1%	6.1%
Alcohol (>20%)		9.9%	12.9%	12.6%	6.1%	6.1%
<b>Total</b>		<b>5.0%</b>	<b>11.4%</b>	<b>11.2%</b>	<b>4.9%</b>	<b>4.9%</b>

#### 4. Conclusion

On the impact on price, a five percentage point increase in the excise tax rate will lead to a 3% to 4% increase in the real retail price. That figure assumes firms transfer all tax increases into the retail price. Actual data in 2016 showed that firms can absorb much of the tax increases to maximize sale and profit and real retail price of beers reduced significantly. Overall for the period from 2016 to 2020, real retail price increases will be less than inflation and income growth, with both beer and alcohol becoming more affordable relative to income.

On the impact on consumption, the tax increase in the current law can have some impact reducing sales, but 5% is not enough to compensate for the increase in consumption due to income growth. Consumption still grows annually for alcohol products. Consumption is only slightly reduced for beer during the year of the tax increase, and then returns to the increasing trend. The same tax increase has less impact on alcohol consumption than on beer because alcohol has higher income elasticity of demand and lower price elasticity of demand.

Tax revenue is increasing every year, even without an increase in tax rates because income growth and inflation keep the nominal tax collection increasing. However, a higher tax rate will lead to a higher nominal tax revenue and significant increase in real tax revenue.

#### 5. Recommendations

In order to have real impact on the consumption of beer and alcohol products, future tax plans should include the following characteristics:

Firstly, tax increases should be higher. Specifically, the tax rate should be much higher than 5 percentage point for each increase.

Secondly, the tax rate should be increased more frequently, ideally every year to account for changes in inflation and income growth.

Thirdly, changes in the tax rate should be at least higher than inflation and income growth to make sure that beer and alcohol products are not becoming more affordable. For improvements in public health, the tax rate should increase at an even higher level to reduce the affordability.

Fourthly, as alcohol products are less elastic by price and more elastic by income, to reduce the consumption on alcohol, the tax rate increase should be higher than the tax rate on beer products.

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## Appendix 4.1a

# EFFECTS OF ALCOHOL CONSUMPTION ON POVERTY AND ASSOCIATED FACTORS OF ALCOHOLIC DRINKING HOUSEHOLDS IN VIETNAM

**Project: Facilitating Alcohol Control Law Development in Vietnam through Evidence**

**Component 4: Research on Effects of Alcohol Consumption on Poverty and Associated Factors of Alcoholic Drinking Households in Vietnam**

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## Contents

Introduction .....	3
Methods.....	4
Data sources and variables .....	4
Method for estimating the impoverishment consequence of drinking alcoholic beverages.....	6
Method for examining household characteristics associated with drinking habit, alcoholic consumption and spending.....	6
Results and discussion .....	8
Descriptive analyses of household characteristics, and consumption and expenditure patterns.....	8
Households directly impoverished by drinking habit .....	10
Comparison of essential spending per capita between drinking and non-drinking households by economic quintile .....	11
Shares of alcoholic drinks in non-food spending per capita in drinking households .....	13
Opportunity cost of alcoholic spending in terms of needed commodities in households who live below the poverty line.....	13
Household characteristics associated with regular drinking habit, alcoholic consumption and spending .....	15
Probability of being a regular drinking household.....	17
Alcoholic consumption and spending .....	18
Limitations .....	19
Conclusion.....	20
Appendix .....	22
Reference.....	24

## Introduction

Alcohol abuse and poverty are considered going hand-in-hand. Excessive alcohol consumption generates a wide range of negative health, economic and social effects and outcomes. The most common consequences include burden of disease, injuries and accidents, risky sexual behavior, crime, violence, reduced family budget, and loss of labor productivity. Studying impacts of alcohol consumption on the family budget seems to be narrow compared to its overall impact on development but it is worth doing in a poor country like Vietnam. Given the resource constraints, alcohol consumption introduces an opportunity cost: other desired goods or services must be foregone because of alcohol spending. This does not only affect family well-being in the present by reducing basic goods which should have been consumed by household members but also compromises future of the next generation by lowering human capital investment in children.

Although there has been a substantial amount of prior research on health and social consequences of alcohol abuse, there have been only several studies on how much spending on alcohol counts in household expenditure, and the relationship between alcohol spending and household spending on other goods. A research from the United Kingdom shows that households in this country spend 7.5% of their total expenditure on alcoholic drink. The top percentiles of drinking households devote 27% of their spending on these beverages (Atkinson et al 1990). The share of alcohol expenses is even higher in low and middle income countries. The amount spent on alcoholic drinks varies from 3% to 45% of household expenditure in India, and poor families on Sri Lanka spent 30-50% of their budget on alcohol and tobacco (Assunta 2001). Analysis on spending on alcoholic beverages in Vietnam conducted by Kim et al. (2012) does not provide a brighter picture. The prevalence of alcohol drinking in the surveyed district was 35%, and the median consumption was 7.9 standard drinks. 35% of the drinkers had excessive drinking in the previous month. The median expenditure for alcohol consumption was

estimated to be 2.7% of total household expenditure, 4.6% of food spending and 1.8% of household income. According to the authors, although better-off families spent more on alcohol, their alcohol spending made a lower share in their food and total spending than that in lower-income groups. The shares of alcohol in total expenditure across different income quintiles were not statistically different. Although the study provides a preliminary image of alcohol spending as a share in household expenditure, the research results were based on a small survey of 1,153 people in a rural district of Vietnam, thus are limited in statistical power and cannot be extrapolated to the national level since drinking habit differs across regions of Vietnam. The question on how much alcohol spending constitutes in total household expenditure in Vietnam has not been answered.

This paper will be the first one to examine alcoholic beverages expenditure in Vietnam using a national representative household survey. The main objectives of the paper are to provide descriptive empirical information about the share of alcoholic beverages in household spending and its heterogeneous relationship with other essential expenses across economic quintile, to investigate its direct impact on poverty, to calculate opportunity cost of alcoholic drinks in terms of households' needed commodities, and to examine household observable characteristics associated with regular drinking.

## **Methods**

### ***Data sources and variables***

The data we use come from the Vietnam Household Living Standard Survey (VHLSS) 2010 conducted by the General Statistics Office of Vietnam. This is the 8<sup>th</sup> wave in an ongoing longitudinal survey intended to measure household living standards in the country. The survey sample of approximately 9400 households (37,000 non-institutionalized individuals) was chosen through multi-stage sampling and is representative at national, regional, urban, rural and

provincial levels. It contains individual information about demographic characteristics, education, health, employment, and household income and expenditure based on respondents' twelve-month recall. A sample weight variable created based on different sampling probabilities is used in the analysis, allowing us to produce estimates for the whole population in the country.

Because we are interested in the impact of spending on alcoholic drinks on the spending on essential goods and services such as food, healthcare and education, we calculate these spending and percentages of them in total household expenditure. Alcohol drink and food expenses are estimated from Section 5 Expenditure; and spending on healthcare and education are obtained from Section 3 Healthcare and Section 2 Education of the survey. Household characteristics such as household head's age, gender, marital status and ethnicity, residence area, household size, the number of children aged 6-11, the proportion of male members aged 16 and above, and the number of student-aged children (6-18) in the family are drawn from Section 1 Household Demographic Characteristics.

We classify households as non-regular and regular drinking households. Non-regular drinking households are defined as those who may or may not spend on alcohol or beer on festive occasions but do not have recurrent expenditure on these items. Regular drinking households are those who have recurrent alcohol or beer expenditure. Household drink spending includes spending on alcohol or beer products on both festive occasions and daily life. We will refer them drinking and non-drinking households from now on.

As a developing country with 70% of population living in rural areas (World Bank 2014) and widespread home production, household income takes negative values in many cases which is possible when livestock or aqua-products raised by households die, thus do not reflect the true living standards. We therefore will use expenditure data as a proxy for household living standards.

### ***Method for estimating the impoverishment consequence of drinking alcoholic beverages***

We argue that because alcoholic drinking does not contribute in improving household living standard, including alcoholic spending in the total expenditure makes households mistakenly look better-off. To estimate the true living standard, alcoholic spending is deducted from the household expenditure. The number of households dropped to below the poverty threshold as a result of the deduction were those have been impoverished by alcohol drinking. The official poverty line constructed by the Vietnam Ministry of Labor – Invalids and Social Affairs (MOLISA) is used for the analysis. Households were defined as “poor” by the MOLISA when their expenditure per capita was less than 4,800,000 VND (or 288 USD) per year if they live in rural areas and 6,000,000 VND (or 360 USD) if they live in urban areas (World Bank 2013).

### ***Method for examining household characteristics associated with drinking habit, alcoholic consumption and spending***

The household characteristics examined in the model include gender, age, ethnicity, marital status and education level of household heads, the number of male members aged 16 or over, urban/rural residence area, region, and expenditure quintile. Odd ratios with the default 95% confidence interval (CI) are reported. The regression model is specified as follows:

$$Y_i = \beta_0 + \beta_1 Male_i + \beta_2 Urban_i + \beta_3 Kinh_i + \beta_4 \overline{Marital}_i + \beta_5 \overline{Age}_i + \beta_6 \overline{Educ}_i + \beta_7 \overline{Quintile}_i + \beta_8 \overline{Region}_i + \beta_9 \overline{Malember}_i$$

Logit regression is used to investigate association between household characteristics with the likelihood of regular drinking habit. The outcome variables are dummy variable which takes value 1 if the household is regular drinking and takes value 0 if the household is not.  $Male_i$  and  $Kinh_i$  are indicators whether the household head is male and Kinh ethnic,

respectively.  $\overline{Marital}_i$ ,  $\overline{Age}_i$ ,  $\overline{Educ}_i$  are vectors of dummy variables for different marital status, age categories and education levels of the household head.  $\overline{Quintile}_i$ ,  $\overline{Region}_i$ , and  $\overline{Malemember}_i$  are vectors of dummy variables to indicate economic quintile, region of residence and the number of male members in the household.

In the models used to study household characteristics associated with alcoholic consumption and spending, dependent variables are log of the number of liters of alcohol and beer annually consumed by the households and log of the amount of money annually spent on alcohol and beer by households. Independent variables are the same as in the previous model.

Our check of data distribution shows that both alcoholic consumption and spending do not follow normal distribution (see Appendix Figure 1a. Histogram of alcoholic consumption and Figure 1b. Histogram of alcoholic spending) but are strongly skewed to the right. With the variances are 89 and 2,000 times greater than the means in the consumption and spending data, respectively (see Appendix Table 1a Summary statistics of alcoholic consumption, and Table 1b Summary statistics of alcoholic spending), the two variables tend to follow gamma distribution, OLS regression is thus inappropriate. To deal with gamma distribution of the data, we use Generalized Linear Model (GLM) with the log link function option to estimate these models.

All statistical analyses are undertaken using STATA 11 and sampling weights are used to adjust for the sampling design.

## Results and discussion

### *Descriptive analyses of household characteristics, and consumption and expenditure patterns*

The descriptive statistics indicate that 57.72 percent of Vietnamese households consume alcoholic beverages regularly (see Table 1). Drinking households tend to live in rural areas, in the North or Central of the country, and have higher proportion of male members in the family. Almost 68 percent of families with regular drinkers are located at Red River Delta, North Mountainous Region, or North Central and Central Coast while this figure is only 47 percent for non-drinking ones. 39 percent of the members in drinking households are male compared to 32 percent in non-drinking households.

Household heads in drinking households are more likely to be male, at middle ages, and belong to minority ethnicity. Heads in drinking households tend to have higher education. Specifically, they are 11 percent less likely to have primary education or less, more likely to have secondary level and are similar in having college or above degrees. The statistics also show that richer families are more likely to contain at least a regular drinker. Only 14 percent of drinking households are at the poorest quintile while 28 percent of non-drinking households are at the poorest quintile. Economic quintiles 2, 3, 4, and 5 account for higher proportions in drinking than non-drinking ones. Even conditional on regular drinking, there is positive correlation between either consumption or spending with household's economic condition and educational level. The monotonic relationship between the consumption and spending with income and education was found. The richer and more educated the household, the more alcoholic beverages they buy and spend on (see Table 2). These findings contrast with what have been found in developed countries, where the relationship between income and drinking

problem has reversed. Among numerous variables influencing the demand for alcohol, income and education

Tables 1: Characteristics of the overall sample, drinking and non-drinking households

	Drinking households	Non-drinking households	Overall
N	5,537	3,863	9,400
# of households (weighted)	12,891,845	9,442,217	22,334,062
Male household head (%)	84.75	59.28	73.98
Proportion of male aged 16+ in the household (%)	39.17	32.57	36.38
Residency			
Rural (%)	74.56	62.63	69.51
Urban (%)	25.44	37.37	30.49
Ethnicity of household head			
Kinh (%)	83.18	90.37	86.22
Other (%)	16.82	9.63	13.78
Age			
15-24 (%)	1.49	2.35	1.85
25-44 (%)	42.32	36.91	40.03
45-64 (%)	46.20	40.11	43.63
65+ (%)	10.00	20.62	14.49
Education of household head			
Primary or less (%)	41.74	52.30	46.13
Lower secondary (%)	34.02	25.13	30.32
Higher secondary (%)	16.55	14.64	15.76
College or above (%)	7.70	7.93	7.79
Household expenditure			
Poor (%)	14.09	28.08	20.01
Rather poor (%)	21.02	18.61	20.00
Average (%)	21.25	18.29	20.00
Better-off (%)	21.64	17.78	20.01
Rich (%)	21.99	17.24	19.98
Region			
Red River Delta (%)	28.99	18.99	24.77
Northern Mountainous Region (%)	16.17	7.55	12.52
North Central and Central Coast (%)	22.71	20.45	21.76
Central Highlands (%)	6.25	4.28	5.42
South East Region (%)	10.40	25.39	16.74
Mekong River Delta (%)	15.47	23.34	18.80

Source: Author calculation from VHLSS 2010.

have opposite impacts. As a normal good, alcohol consumption rises when income rises. However, education increases people's knowledge about the harmfulness of the product and reduces its consumption. The effect of education is dominant in industrialized countries and therefore the richer and the more educated less likely to consume unhealthy products including alcohol (AlcoholRehab 2015, Cerda et al 2010, Hu and Stowe 2013). The fact that those with higher income and education level drink more in Vietnam reflects that the knowledge on the harm of alcohol is dominated by the income effect and need to be enhanced.

Table 2: Annual alcoholic consumption and spending conditional on regular drinking

	Consumption (liter)	Spending (1,000 VND)	Total household expenditure (1,000 VND)
Household expenditure			
Poor	38	452	17,234
Rather poor	51	634	27,721
Average	66	859	38,390
Better-off	86	1,222	53,702
Rich	113	2,315	104,541
Household head's education			
Primary or less	67	949	41,525
Lower secondary	74	1,075	47,559
Higher secondary	81	1,363	61,971
College or above	100	2,465	108,918

Source: Author calculation from VHLSS 2010.

### ***Households directly impoverished by drinking habit***

After subtracting alcoholic spending from total household expenditure, the number of households who live below the poverty line increases from 2,029,372 to 2,119,940. 90,568 non-poor households have been dropped to poverty because their remaining expenditure after alcoholic spending being deducted could not buy sufficient basic goods and services for their

lives. Thus drinking impoverishes additional 90,568 households, or raise the number of households living below the poverty line, by 4.5 percent.

Table 3: Number of households impoverished by drinking

	Incl. drink spending	Excl. drink spending	Difference
Number of households below the poverty line (4,800,000 VND in rural and 6,000,000 VND in urban area)	2,029,372	2,119,940	90,568
Total number of households	22,334,062		

Source: Author calculation from the VHLSS 2010.

***Comparison of essential spending per capita between drinking and non-drinking households by economic quintile***

Table 4 presents households' food and healthcare spending per capita, and education spending per student-aged children. In each good/service category, the first column indicates the amount of money spent by the drinking, the second lets us know the amount spent by the non-drinking, and the third column shows the difference between non-drinking and drinking households as percentages of the expenses in drinking households.

Table 4: Essential spendings in drinking and non-drinking households

	Food spending per capita			Healthcare spending per capita			Education spending per student -aged children		
	Drinking (1,000 VND)	Non-drinking (1,000 VND)	Food spending of drinking households as percentage of non-drinking households' (%)	Drinking (1,000 VND)	Non-drinking (1,000 VND)	Healthcare spending of drinking households as percentage of non-drinking households' (%)	Drinking (1,000 VND)	Non-drinking (1,000 VND)	Education spending of drinking households as percentage of non-drinking households (%)
Poor	4,097	5,031	81.4	300	625	48.0	371	616	60.2
Rather poor	4,973	6,020	82.6	402	673	59.7	916	1,159	79.0
Average	6,203	6,946	98.3	503	973	51.7	1,590	2,109	75.4
Better-off	7,570	8,511	88.9	785	1,117	70.3	2,838	3,396	83.6
Rich	12,557	12,407	101.2	1,432	2,090	68.5	6,928	10,566	65.6

Source: Author calculation from the VHLSS 2010.

The results show that essential spendings are statistically higher in non-drinking than drinking households, except for food spending per capita in the rich group. Members from poorer households are invested considerably less in nutrition, healthcare services and education than richer households. Food spending per capita in drinking households at economic quintiles 1 - 4 is equivalent to 81-89% of that in non-drinking households. Healthcare spending per capita in the drinking group is 30-52% lower than that in the non-drinking one. The average Investment in children's schooling at drinking families accounts for only 60-83% of the amount spent on their counterparts' schooling in non-drinking families. Moreover, the difference is largest in the lowest income group. Within the same income group, poor drinking households spend only **81%** of what poor non-drinking households spend on food. But healthcare and education expenses between the two groups at the poorest quintile are strikingly different. Education spending of the drinking group is 60% of that of the non-drinking, and this figure in healthcare is 48%.

The food spending is the least varied among different spending categories because food is the most basic good. However, other critical items, specifically healthcare and education, are cut by 40 to 52% in poor drinking households. Healthcare spending can be seen as human capital investment that helps improve productivity of all generations present in the family, and spending on education is investing to improve productivity of children. This result indicates that households with regular alcoholic spending significantly sacrifice investment in both healthcare and education. Drinkers forgo long-term benefits of increased investment of other family members. Children in poor drinking households are invested less in both health and education. They will arrive at the doorstep of adulthood with double disadvantages, poor health status and less education, and will have lower productivity than their counterparts from non-drinking families.

### ***Shares of alcoholic drinks in non-food spending per capita in drinking households***

As in other developing countries, food represents a large share in family expenditure. Families allocate from approximately 51% to 66% of total expenditure on food. The share of food spending is very high in Vietnam compared to those in developed countries, where this proportion is 10% in European countries and 6% in the United States (Battistoni 2012). The left over for Vietnamese household members' activities account for only from roughly 34% to 49% of their budget.

Table 5: Shares of alcoholic expenses in non-food spending among drinking households

	Share of food spending per capita in total expenditure per capita (%)	Share of non-food spending per capita in total expenditure per capita (%)	Alcoholic spending as percentage of non-food spending per capita (%)
Quint 1	65.74	34.26	21.17
Quint 2	62.47	37.53	21.22
Quint 3	60.19	39.81	20.94
Quint 4	56.97	43.03	21.37
Quint 5	51.40	48.60	19.50

Source: Author calculation from the VHLSS 2010.

Of course the rest of the money should be used to purchase other commodities which are greatly needed such as health care, education, utilities, durable goods, etc. Yet among the non-food items, the poor as well as the other drinking families choose to spend consistently about one fifth of their non-food budget on alcoholic beverages. As a result, the budget for the necessary non-food commodities is even more limited in drinking families.

### ***Opportunity cost of alcoholic spending in terms of needed commodities in households who live below the poverty line***

With the mean alcoholic spending of 733,058 VND per household, the aggregate amount allocated in alcoholic beverages by all Vietnamese households reaches more than 16,372 billion VND, equivalent to 982,369 USD. This amount of money can be used to buy

approximately 1,770,000 tons of rice at 2010 price, enough to feed nearly 21 million people in a year.

Because households living below the poverty line are those do not have enough minimum resources necessary for long-term survival, they are in most need of nutrition for children and means of transport for adults. I will focus on quantifying milk and motorbikes as examples of necessary commodities which have been forgone in drinking households who live below the poverty line.

Table 6: Annual milk consumption and motorbike ownership in below-poverty-line drinking households

Alcoholic spending/household(1,000 VND)	Alcoholic consumption/household (liter)	Milk/child (liter)	Percentage of households owning motorbike (%)
440,637	38.12	0.23	53

Source: Author calculation from the VHLSS 2010.

There are 1,106,588 drinking households living below the poverty threshold and 836,041 children aged 6-11 live in there. Our calculation indicates that on average, these families spend around 440,000 VND on drinking each year, purchase more than 38 liters of alcoholic beverages for drinkers and 230 mil. of milk for a child per year (see Table 6). Put it in another way, while drinkers in these families consume one glass of alcohol or beer every two and a half day, children consume less than one glass of milk per year, using 236 mil as a standard glass. The long-term benefit of children in these families have been sacrificed in favor of the harmful and addictive drinks.

How much milk could be purchased with the alcoholic spending? The answer is that if all drink expenses in these households are used to buy milk for children, each child will have one glass of milk every three days instead of one glass of milk per year. With better health, the

children can progress better at school, and accumulate more both health and knowledge when they enter the labor force at their young adulthood.

To the Vietnamese, motorbikes serve not only as transportation, but as a means to earn income. 76% of households not living below the poverty line own at least one motorbike. However, only 53% of household living below the poverty have motorbikes, or 520,096 do not have any motorbike. The total drink expenses by those poor families can actually buy them approximately 65,000 motorbikes at the average price that other poor families bought this vehicle, reducing the number of households without motorbikes by 12.5%.

***Household characteristics associated with regular drinking habit, alcoholic consumption and spending***

Table 7 present findings from the regressions of drinking patterns on household characteristics. Observable household characteristics examined in the models are listed in Column 1. Column 2 reports findings in odd ratio format from the logit model that identifies determinants of the likelihood that a household has at least one regular drinker. Column 3 and 4 show factors that affect alcoholic consumption and spending, respectively.

Table 7: Household characteristics associated with regular drinking habit, alcoholic consumption and alcoholic spending

	Prob(drink)=1 (OR)	Log(alcoholic consumption in liter)	Log(alcoholic spending in VND)
1	2	3	4
Gender of household head			
Male	1.573*** (0.123)	0.227*** (0.0520)	0.145* (0.0608)
Marital status of household head			
Single	0.647* (0.139)	-0.191 (0.253)	-0.240 (0.245)
Widowed	0.872	-0.100	-0.170

	(0.0976)	(0.0848)	(0.0910)
Divorced	0.738	-0.0162	-0.101
	(0.167)	(0.167)	(0.157)
Separated	0.594	-0.403	-0.437*
	(0.229)	(0.220)	(0.211)
<hr/>			
Place of residence			
Urban	0.555***	-0.196***	-0.0697
	(0.0359)	(0.0457)	(0.0457)
<hr/>			
Ethnicity of household head			
Kinh	0.644***	-0.278***	-0.237***
	(0.0590)	(0.0510)	(0.0495)
<hr/>			
Number of male members in the households			
One	12.69***	1.529***	1.366***
	(2.681)	(0.141)	(0.148)
Two	17.11***	1.554***	1.346***
	(3.757)	(0.147)	(0.152)
Three and over	17.97***	1.538***	1.319***
	(4.234)	(0.152)	(0.156)
<hr/>			
Age of household head			
25-44	0.802	0.102	0.253
	(0.188)	(0.203)	(0.172)
45-64	0.778	0.0550	0.194
	(0.183)	(0.202)	(0.171)
65+	0.554*	-0.0551	0.171
	(0.136)	(0.207)	(0.177)
<hr/>			
Education of household head			
Lower secondary	1.145*	0.0984*	0.123**
	(0.0758)	(0.0468)	(0.0472)
Higher secondary	1.097	0.0405	0.115
	(0.0907)	(0.0603)	(0.0633)
College and above	1.118	0.0843	0.355***
	(0.129)	(0.0812)	(0.0958)
<hr/>			
Household expenditure			
Rather poor	1.753***	0.581***	0.603***
	(0.149)	(0.0568)	(0.0570)
Average	1.796***	0.932***	0.972***
	(0.161)	(0.0668)	(0.0650)
Better-off	1.997***	1.216***	1.295***
	(0.184)	(0.0599)	(0.0589)
Rich	2.671***	1.671***	1.988***
	(0.283)	(0.0701)	(0.0718)
<hr/>			
Region			

Northern Mountainous Region	1.163 (0.115)	0.0703 (0.0466)	0.00617 (0.0468)
North Central and Central Coast	0.695*** (0.0537)	0.0104 (0.0442)	0.0291 (0.0442)
Central Highlands	0.829 (0.0978)	0.0925 (0.0559)	0.0396 (0.0572)
South East Region	0.286*** (0.0273)	-0.446*** (0.0673)	-0.104 (0.0701)
Mekong River Delta	0.397*** (0.0321)	-0.201*** (0.0511)	-0.302*** (0.0523)
Constant	0.165*** (0.0516)	1.421*** (0.221)	3.990*** (0.199)
N	8758	8758	8758

Standard errors in parentheses\*\*\* p<0.01"; \*\* p<0.05; \* p<0.1

### *Probability of being a regular drinking household*

Regression result from the first model indicates that the probability of drinking does not differ across households with different marital status, single household head tend to less have drinking households by 45%. Having regular drinkers in the house is not also affected by age of household heads. Only households with heads at 65 year-old and over are less likely to consume alcoholic beverages than the other groups. Interestingly, education does not affect much the choice of drinking in the household. Household with heads who have lower secondary degrees have slightly higher probability to drink than heads of other education levels. This contrasts findings from developed countries, where higher educated people are less likely to consume excessive alcoholic beverages (Deaton 2003, Johnson et al 2010). This reflects several symbolic values assigned to drinking by the Vietnamese and people in some developing countries. First, drinking together demonstrates solidarity and serves as a means of communication. Second, consuming more quantity of or more expensive beverages serves to manifest wealth. The fact that higher-educated and richer people, who are supposed to be more knowledgeable than the average Vietnamese, are not less likely to consume alcoholic

beverages shows that the traditional norms still dominate their behavior. This suggests that health education on harms of alcoholic drinks has not been conducted sufficiently or effectively.

Gender has strong effect on whether a household is drinking or not. Households with male household heads are 57% more likely to drink regularly. Moreover, compared to households with no male members aged 16 and above, those with one male have 12% higher likelihood to be drinking. This difference in families with two or more male members is around 17%.

Living in urban areas and having Kinh ethnic household head reduce the possibility of being a drinking household by 45% and 36%, respectively. Income has strong and increasingly monotonic effect on the probability of drinking. The likelihood of drinking rises significantly with each level of income.

#### *Alcoholic consumption and spending*

Similar to the logit model result, marital status and age of household heads do not have influence on the quantity consumed and the amount of money spent by the household. Urban households drink approximately 20% less than those live in rural areas but spend the same amount on alcohol and beer. This signals that urban households purchase more expensive beverages. This trend is repeated when we look at household head's ethnicity. Kinh people buy 28% less alcoholic drinks but spend only 24% less than other ethnic households.

Gender, again, is a strong predictor of drinking households. Households with male household heads drink 22.7% more and spend 14.5% more on alcoholic drinks. Having one or more male family members increases the alcoholic drinks consumed by the household by 1.5 times and the alcoholic expenditure by 1.3 times.

The relationship between drinking and education is interesting. Households whose heads have primary education or less is the reference group. Households whose heads with higher secondary and college and above education consume the same amount of alcoholic beverages as the base group per year, but those with heads having lower secondary degrees drink 9% more. Those with lower secondary education also spend 12.3% more on drinking. Surprisingly, households whose heads having college or above degrees pay the highest amount, 35.5% more, on drinking.

The consumption and expenditure increase when household incomes increase, yet expenditure rise faster than consumption in the two richest groups.

When the results show that the increase in spending is higher than the increase in consumption in certain groups, they suggest that those groups drink more expensive beverages. This phenomenon is observed in households living in urban places, in the two highest income groups, those whose heads are Kinh ethnic, and those whose heads have college and above education.

### ***Limitations***

This study uses a nationally representative survey to quantify alcoholic beverages consumption and expenditure in Vietnam and examines indirect and negative effects of drinking on family wellbeing through crowding out budgets, which is important in a developing country as Vietnam but usually ignored in the literature on the harm of alcohol abuse. Besides this contribution, the research has some limitations. First, all expenditure and consumption are self-reported data. The fact that people tend to understate their alcoholic spending is widely known (Stockwell 2004, Livingston and Callinan 2015, Boniface 2014). Therefore the alcoholic spending and its share in household expenditure is likely to be under-estimated. Our findings can serve as a lower bound of the actual opportunity cost and negative effects of alcoholic

drinks in Vietnam. Second, we are unable to provide conclusion on causal effect of alcoholic spending and other household spendings because the data are cross-sectional. And third, household is the unit of analysis in the survey, thus it is impossible to separate effects of alcohol drinking on non-drinking household members instead of on the whole family.

## **Conclusion**

More than half of Vietnamese household drink regularly. The evidence presented above shows that regular alcoholic drinking imposes a huge opportunity cost both in short term and long term on Vietnamese households, and effects on the poor are the most serious.

Regular drinking families in Vietnam tend to live in rural areas, have male household head, and have higher income. They consume more alcoholic beverages when having at least one male household member and have higher income. In developed countries, drinking problem is associated with lower-educated and lower-income people because counter-advertising campaigns provided knowledge and changed behavior in those with high education and income first. Contrary to that, high-educated households have similar possibility to become drinking households and richer households spend more on alcoholic drinks, reflecting low awareness on alcohol harm and the need of counter-advertising in the country.

Drinking families of all economic quintiles spend about one fifth of their non-food budget on alcoholic beverages. Food spending in drinking households is significantly lower than in non-drinking households of the same economic quintile. The discrepancies in medical and education expenditure between the two groups are strikingly large. Moreover, in poor drinking families, long-term benefit of children are forgone in favor of drinkers. While children have less than one glass of milk per year, drinking members consume one glass of alcohol or beer every two and a half day.

The research findings suggests several pathways of the influence of regular alcoholic spending. First, drinking expenditure reduces well-being of the whole family as drinking occurs at the expense of other desired goods and services. More than 90,000 households living above the poverty line were dropped to below it because the family budget for beneficial commodities was sacrificed for the harmful and addictive goods. Second, it reduces nutrition and healthcare which would have been consumed by household adult members and crowded out the budget which could have been used to buy motorbike, a critical means of transport and earnings. Both of these make drinking households less productive and perform worse in the labor market. Third, children living with regular drinkers are invested less in both health and education. They will arrive at the doorstep of adulthood with double disadvantages, poor health status and less education, and thus will have lower productivity and worse labor market outcomes than their counterparts from non-drinking families. This is a vicious circle of poverty in which excessive drinking is a channel of intergenerational transmission of poverty. Preventing excessive drinking, therefore, will magnify effects of poverty eradication programs in the country.

## Appendix

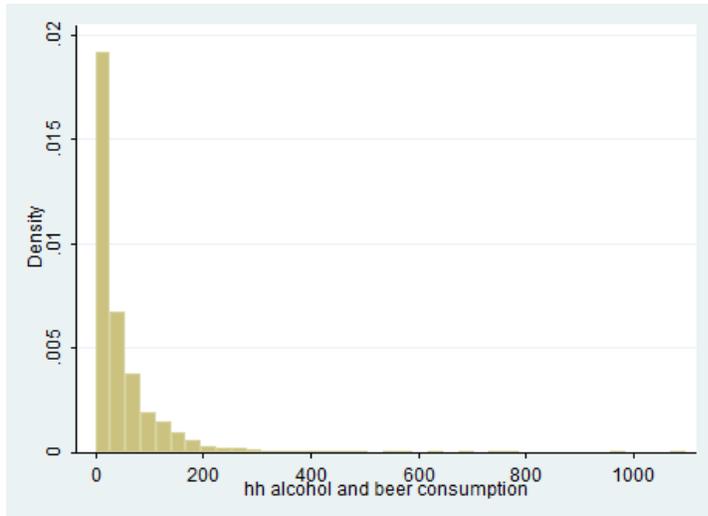


Figure 1a. Histogram of alcoholic consumption (litter)

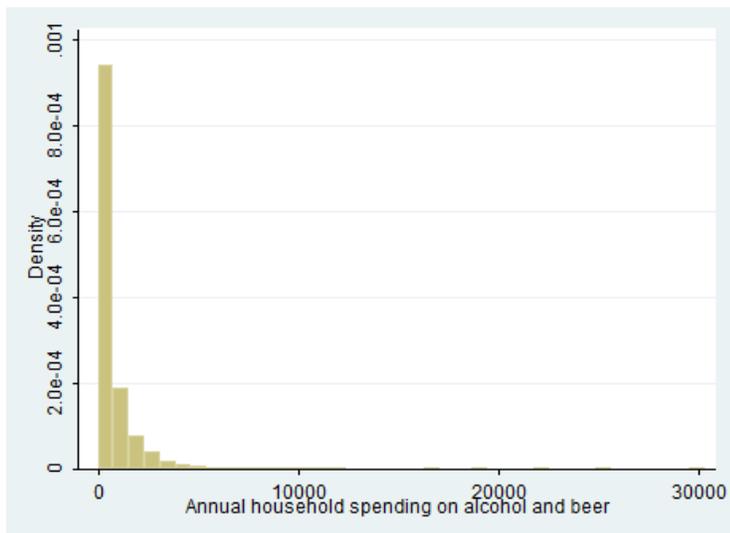


Figure 1b. Histogram of alcoholic spending (VND)

Table 1a. Summary statistics of alcoholic consumption (litter)

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs.	9398
25%	5	0	Sum of Wgt.	9398
50%	25		Mean	46.12307
		Largest	Std. Dev.	64.23428
75%	63	750		
90%	123	773	Variance	4126.043
95%	960	970	Skewness	3.71841
99%	297	1097	Kurtosis	30.37099

Table 1b. Summary statistics of alcoholic expenditure (VND)

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs.	9398
25%	80	0	Sum of Wgt.	9398
50%	350		Mean	703.345
		Largest	Std. Dev.	1189.879
75%	830	24970		
90%	1816	25200	Variance	1415812
95%	2630	25500	Skewness	7.808531
99%	4888	30320	Kurtosis	130.3158

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## Appendix 4.1b

# IMPOVERISHMENT EFFECT OF REGULAR ALCOHOL CONSUMPTION IN DEVELOPING COUNTRIES: THE CASE OF VIETNAM

## Impoverishment Effect of Regular Alcohol Consumption in Developing Countries: the Case of Vietnam

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Complete List of Authors:	Nguyen, Minh; University of Illinois at Chicago, Department of Economics Pham, Hoang Anh; HealthBridge Foundation of Canada, Vietnam Office Le, Thu; HealthBridge Foundation of Canada, Vietnam Office,
SUBSTANCE:	alcohol
METHOD:	surveys
FIELD OF STUDY:	economics
Keywords:	alcohol, drinking, Vietnam, household expenditure, healthcare spending, education spending, developing countries

## **Impoverishment Effect of Regular Alcohol Consumption in Developing Countries: the Case of Vietnam**

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## **Impoverishment Effect of Regular Alcohol Consumption in Developing Countries: the Case of Vietnam**

### **Background and Aims**

This paper aimed to understand the effects of alcohol consumption on family wellbeing through crowding out budgets for other needed commodities and identify household characteristics associated with being a drinking household in a developing country context.

### **Method**

Including alcoholic spending in the total household expenditure makes household living look higher than they actually are. To estimate the impoverishment effect of drinking, we estimated the number of households whose living standards have fallen below the poverty line after their alcohol expenditure was deducted from total household expenditure. We identified household characteristics associated with whether there was at least a drinker in the household using logit regression. To determine household factors that are associated with the amount of alcoholic beverages consumed and drinking expenditure, we employed Generalized Linear Model with gamma distribution and log-link option.

### **Results**

Drinking raised the number of households living below the poverty line by 7.5%. The amounts spent on food, healthcare, and education in drinking households were significant lower than those in non-drinking households. The crowding out effects on essential spending were largest in the poorest quintile. Poor drinking households spent 40% and 52% less on healthcare and education, respectively, than poor non-drinking ones. Drinking was found to be positively correlated with having a male household head and the number of male members in the family. Households with higher educational levels consumed higher quantity of and more expensive alcohol.

### **Conclusion**

Drinking expenditure reduced well-being of the whole family as drinking occurred at the expense of other desired goods and services. Drinkers did not only impoverish their current families but also the next generation's. Lower investment in healthcare and education in drinking households implies that children living with regular drinkers will enter the labor market with double disadvantages, poor health and less education. The fact that the higher-educated and wealthier were more likely to excessively consume alcohol reflects low awareness of alcohol harm and the need of counter-advertising in the country.

Key words: Alcohol, drinking, Vietnam, household expenditure, health spending, education spending developing countries

## Introduction

Alcohol abuse and poverty are considered to go hand-in-hand. Excessive alcohol consumption generates a wide range of negative health, economic and social effects and outcomes. The most common consequences include burden of disease, injuries and accidents, risky sexual behavior, crime, violence, reduced family budget, and loss of labor productivity. Studying the impact of alcohol consumption on the family budget seems to be narrow compared to its overall impact on development but it is worth doing in a poor country like Vietnam. Given the resource constraints, alcohol consumption introduces an opportunity cost: other desired goods or services must be foregone because of alcohol spending. This does not only affect family well-being in the present by reducing basic goods which should have been consumed by household members but also compromises the future of the next generation by lowering human capital investment in children.

Although there has been a substantial amount of prior research on health and social consequences of alcohol abuse, there have been only several studies on how much spending on alcohol counts in household expenditure, and the relationship between alcohol spending and household spending on other goods. A study from the United Kingdom showed that households in this country spent 7.5% of their total expenditure on alcoholic drink. The top percentiles of drinking households devoted 27% of their spending on these beverages (1). The share of alcohol expenses was even higher in low and middle income countries. The amount spent on alcoholic drinks varied from 3% to 45% of household expenditure in India, and poor families in Sri Lanka spent 30-50% of their budget on alcohol and tobacco (2). Analysis on consumption of alcoholic beverages in Vietnam conducted by Kim et al. (2013) did not provide a brighter picture (3). The prevalence of alcohol drinking in the surveyed district was 35%, and the median consumption was 7.9 standard drinks. 35% of the drinkers had excessive drinking in the previous month. The median expenditure for alcohol consumption was estimated to be 2.7% of total household expenditure, 4.6% of food spending and 1.8% of household income. According to the authors, although

better-off families spent more on alcohol, their alcohol spending made a lower share in their food and total spending than that in lower-income groups. Although the study provided a preliminary image of alcohol spending as a share in household expenditure, the research results were based on a small survey of 1,153 people in a rural district of Vietnam, thus were limited in statistical power and could not be extrapolated to the national level since drinking habits differed across regions of Vietnam. The question on how much alcohol spending constitutes in total household expenditure in Vietnam had not been answered by this study.

This article is the first to examine alcohol expenditure in Vietnam using a national representative household survey and will contribute to the thin body of literature that focuses on effects of alcohol consumption on household living standards. The main objectives of the paper are to examine the heterogeneous relationship between alcoholic spending with other essential expenses across economic quintiles, to investigate its direct impact on poverty, to calculate the opportunity cost of alcoholic drinks in terms of households' needed commodities, and to determine household observable characteristics associated with regular drinking.

## **METHODS**

### **Data sources**

*Vietnam Household Living Standard Survey (VHLSS) 2010*

Data for this study comes from the Vietnam Household Living Standard Survey (VHLSS) 2010, a cross-sectional household survey of a representative sample of the population conducted by the General Statistics Office of Vietnam. The survey has been used for many development studies and its design has been reported in detail elsewhere (4). In brief, the survey sample of approximately 9,400 households (37,000 non-institutionalized individuals) was chosen through multi-stage sampling and was representative at national, regional, urban, rural and provincial levels. It contains individual information

about demographic characteristics, education, health, employment, and household income and expenditure based on respondents' twelve-month recall. A sample weight variable created based on different sampling probabilities was used in the analysis, allowing us to produce estimates for the whole population in the country. Socio-demographic characteristics of drinking, non-drinking, and overall households are presented in Table 1. Approximately 58% of the households had regular spending on alcoholic beverages.

[Table 1 is here]

## Measures

### *Regular drinking behavior*

We classified households as non-regular and regular drinking households. Non-regular drinking households were defined as those who might consume alcohol or beer on festive occasions but did not have recurrent expenditures on these items. Regular drinking households were those who had recurrent alcohol or beer expenditures. Household drink expenditure included spending on alcohol or beer products on both festive occasions and daily life and was computed based on "Section 5. Expenditures" of the survey.

### *Essential and total household spending*

Because we are interested in the impact of alcoholic spending on essential expenditures, such as food, healthcare and education, we calculated these amounts and their shares in total household expenditure. Food expenses were drawn from "Section 5. Expenditure", and spending on healthcare and education were obtained from "Section 3. Healthcare" and "Section 2. Education".

As a developing country with 70% of population living in rural areas (5) and widespread home production, household income was poorly reported. A large share of households reported to have negative

income. Rural households' income fluctuated substantially due to their dependence on weather and market conditions. They tended to anticipate that and smooth their consumption to accommodate with sudden changes in their income. Therefore, expenditure data reflects living standards more accurately and were used as a proxy for household living standards in this study.

### *Household characteristics*

Household characteristics examined in the association with drinking habits consisted of: 1) age of household head: continuous variable; 2) household head's gender; 3) head's marital status: single, married, divorce, separate, and widowed; 4) head's education: primary school or less, secondary school, high school, college or above; 5) head's ethnicity: major or minor ethnicity; 6) the proportion of male members aged 16 and above: continuous variable; and 7) economic quintiles: categorical variable based on percentiles of total household expenditure. Besides, we controlled other covariates that may have influenced drinking behavior through economic and cultural conditions, such as 1) residence area: whether the family lived in an urban or rural area; and 2) key economic regions: Southeast, Red River Delta, Mekong River Delta, Northeast, Northwest, North Central Coast, South Central Coast, and Central Highlands. This information was obtained from "Section 1. Household Demographic Characteristics".

### *Analysis*

#### *Estimating the impoverishment impact of drinking alcoholic beverages*

Since alcohol consumption does not improve household wellbeing, including alcoholic spending in the total expenditure makes household living standard look higher than they actually are. To estimate the true living standard, alcoholic spending was deducted from household expenditure. The number of households that dropped below the poverty threshold as a result of the deduction were those who had been impoverished by drinking. The official poverty line constructed by the Vietnam Ministry of Labor – Invalids and Social Affairs (MOLISA) in 2010 was used for the analysis. Households were defined as "poor" when their expenditure per capita was less than 4,800,000 Vietnamese dong (VND) (or 275 US\$)

per year when they lived in rural areas and 6,000,000 VND (or 338 US\$) when they lived in urban areas (6) .

*Examining household characteristics associated with drinking habits, alcoholic consumption and spending*

To investigate the association between household characteristics and drinking behavior, we estimate the following equation:

$$\begin{aligned} Outcome_i = & \beta_0 + \beta_1 Male_i + \beta_2 Urban_i + \beta_3 Kinh_i + \beta_4 Marital_i + \beta_5 Age_i + \beta_6 Educ_i + \beta_7 Quintile_i \\ & + \beta_8 Region_i + \beta_9 Malemember_i \end{aligned} \quad (1)$$

The household characteristics include gender, age, ethnicity, marital status, educational level of households, the number of male members aged 16 and above in the family, and expenditure quintile. The models also control for urban/rural area and region of residence.

These characteristics were examined in the association with three outcomes: whether the household was a drinking one (Model 1); how many alcoholic beverages the household consumed in the last 12 months (Model 2); and how much they spent on those beverages in the last 12 months (Model 3). Logit regression was used to estimate the association with the first outcome, which took value 1 if the household had positive regular spending on alcoholic beverages and value 0 otherwise.

As is typical with consumption and spending data, the sample included many households with zero consumption and spending on alcohol. The data of both alcoholic consumption and spending are strongly skewed to the right (see Appendix “Figure 1a. Histogram of Alcoholic Consumption” and “Figure 1b. Histogram of Alcoholic Spending”). Because the variances are much greater than the means in the consumption and spending data (see Appendix Table 1a Summary statistics of alcoholic consumption, and Table 1b Summary statistics of alcoholic spending), the two variables tend to follow

gamma distribution and OLS regression is thus inappropriate. We therefore used Generalized Linear Model (GLM) with gamma distribution and log-link function to estimate Models 2 and 3.

All statistical analyses were conducted using STATA 11. Sampling weights were used to adjust for the sampling design. We reported weighted estimates and exact two-sided p-values in the results, and the threshold for statistical significance was set at  $P < 0.05$ .

## RESULTS

### *Households directly impoverished by drinking habits*

After subtracting alcoholic spending from total household expenditure, the number of households who lived below the poverty line increased from 1,106,588 to 1,189,286 (Table 2). 82,695 non-poor households dropped to poverty because their remaining expenditure after excluding alcoholic spending was not sufficient to buy basic goods and services. Thus drinking impoverished an additional 82,698 households, or raised the number of households living below the poverty line by approximately 7.5%.

[Table 2 is here]

### *Comparison of essential spending per capita between drinking and non-drinking households by economic quintile*

Table 3 presents households' per capita spending on food, healthcare and education expenses per student-aged children. Columns (1), (4) and (7) of the table indicate the amount of money spent on each commodity by drinking households, columns (2), (5) and (8) let us know the amount spent by the non-drinking, and columns (3), (6) and (9) show the expenditures of the drinking as percentages of the non-drinking's.

[Table 3 is here]

As shown in Table 3, essential spendings were statistically higher in non-drinking than in drinking households, except for food spending per capita in the rich group. Food spending per capita in drinking households at economic quintiles 1 - 4 was equivalent to 82-89% of that in non-drinking households. The drinking group spent 30-51% less than the non-drinking on health care. Also, their average investment in children's schooling accounted for only 60-84% of that in non-drinking families.

Notably, the difference was largest in the poorest quintile. Among the poorest twenty percent of the population, drinking households spent 82% of what non-drinking households spent on food. Healthcare and education expenses between the two groups were strikingly differential. Education spending of the drinking group was 60% of that of the non-drinking, and this figure in healthcare was 48% (Table 3).

#### ***Shares of alcoholic drinks in non-food spending per capita in drinking households***

While families allocated 10% and 6% of total expenditure on food in European countries and the United States (7), this share was 54%-67% in Vietnam. The left over for Vietnamese household members' activities accounted for only 33%-46% of their budget (Table 4).

.[Table 4 is here]

#### ***Opportunity cost of alcoholic spending in terms of needed commodities in households who live below the poverty line***

With the mean alcoholic spending of 733,058 VND per household, the aggregate amount allocated in alcoholic beverages by all Vietnamese households reached more than 16,372 billion VND, equivalent to US \$982.4 million, in 2010. This amount of money could be used to buy approximately 1,770,000 tons of rice, enough to feed nearly 21 million people, about one fourth of the population, in a year.

Because households living below the poverty line did not have enough minimum resources necessary for long-term survival, they were in most need of nutrition for children and means of transport for adults. We therefore focused on quantifying milk and motorbikes as examples of necessary commodities which had been forgone in drinking households who lived below the poverty line.

[Table 5 is here]

There were 1,106,588 drinking households living below the poverty threshold and 836,041 children aged 6-11 lived in there. Our calculation indicated that on average, these families spent approximately 440,000 VND on drinking each year, purchasing more than 38 liters of alcoholic beverages for drinkers, while buying 230 milliliter of milk for a child per year (see Table 5).

How much milk could be purchased with the alcoholic spending? The answer is that if all drink expenditures in these households were used to buy milk for children, each child would have one glass of milk every three days instead of one glass of milk per year (Authors' calculation from VHLSS 2010).

To the Vietnamese, motorbikes serve not only as transportation, but as a means to earn income. 76% of households not living below the poverty line owned at least one motorbike. However, only 53% of household living below the poverty line had motorbikes, or 520,096 did not have any motorbike. The total drink expenses by those poor families could buy them approximately 65,000 motorbikes at the average price that other poor families bought the vehicle, reducing the number of households without motorbikes by 12.5%.

### ***Household characteristics associated with regular drinking habit, alcoholic consumption and spending***

Table 6 presents the results of multiple regression analyses of household drinking patterns. Estimates from Model 1, which investigated the association between household factors and the likelihood of having at least a regular drinker, are reported in Columns 1-2. Columns 3-6 and 4-8 provide estimates

from Model 2 and 3, which studied determinants of the volume of alcoholic consumption and households' alcoholic spending.

#### *Probability of being a regular drinking household*

Gender had a strong link with whether a household was drinking. Households with male heads were about twice more likely to drink regularly. Moreover, whenever the number of male members aged 16 or above in the family increased by one, the odds ratio (OR) of having at least a drinker in the family rose by 47.5%.

[Table 6 is here]

Given that households whose heads had primary education or less was used as the reference group, drinking was positively correlated with higher education (OR ranges from 1.104 to 1.136) even though the association was not statistically significant.

Living in urban areas and having Kinh ethnic heads reduced the possibility of being a drinking household by 42% and 36%, respectively. Living standard had a strong and increasingly monotonic effect on the probability of drinking. The likelihood of drinking rose significantly, from 1.94 to 2.91, with each household expenditure quintile.

#### *Alcohol consumption and expenditure*

Similar to findings from the logit model, gender was strongly positively correlated with drinking volume and spending. Having a male head was associated with 53.9% higher volume of alcoholic consumption and 39.7% higher spending ( $p=0.000$ ). When the number of male members aged 16 or above rose by one, alcoholic consumption and expenditure went up by 17.7% and 12.7% respectively ( $p=0.000$ ).

Major ethnicity of household heads was associated with 23.6% lower consumption and 20.3% less spending on alcoholic beverages. Although urban households drank approximately 18% less than those living in rural areas ( $p=0.000$ ), their spending was not statistically different ( $p=0.101$ ), which indicated that urban households purchased more expensive beverages.

Higher education was positively correlated with both the volume consumed and spending. The volume of drinking was 12.6% ( $p=0.010$ ), 6.8% ( $p=0.237$ ) and 17.9% ( $p=0.025$ ) higher in households whose heads had lower secondary, higher secondary, and college and above education than the reference group. Noticeably, the positive association between spending and education was both larger in magnitude and more statistically significant. Specifically, these three education categories spent 14.8% ( $p=0.003$ ), 14.1% ( $p=0.031$ ), and 52.0% ( $p=0.000$ ) more on drinking than the reference group.

We also found a positive and statistically significant association between households' living standard with the volume purchased and spending. The results show that the volume of consumption by households at quintiles 2-5 were 86.3%-438.7% higher than the poorest quintile ( $p=0.000$ ). Likewise, they spent 90.6%-644.8% more than the poorest quintile on drinking.

Notably, the phenomenon that the rate of increase in the volume consumed was less than the rate of increase in spending was observed in households with higher living standards or with higher education. It indicated that these groups not only consumed more, but also purchased more expensive beverages than their counterparts.

## **DISCUSSION**

This study used a nationally representative survey to examine indirect and negative effects of drinking on family wellbeing through crowding out budgets. This research question is important in developing countries but often ignored in the literature on the harm of alcohol abuse. Our results indicate that regular alcoholic drinking imposed a huge opportunity cost both in the short term and long term on

Vietnamese households, and effects on the poor were the most serious. The research findings suggest several pathways of the influence of regular alcoholic spending.

First, drinking expenditure reduced well-being of the whole family as drinking occurred at the expense of other desired goods and services. Although food spending as the most basic item was the least varied among different commodity spendings, the amount spent on food in drinking households was significantly lower than that in non-drinking households of the same economic quintile. Moreover, in poor drinking families, long-term benefit for children seemed to be forgone in favor of drinkers. While children in these families had less than one glass of milk per year, drinking members consumed one glass of alcohol or beer every two and a half days. According to our estimates, if all alcoholic spending in the households were used to buy milk for children, each child would have one glass of milk every three days instead of one glass of milk per year. With better nutrition, children could be healthier, progress better at school, and accumulate higher stock of health and knowledge.

Second, spending on alcoholic beverages crowded out the budget which could have been used to buy non-food commodities for the family. As a developing country, Vietnamese households devoted a half to two thirds of their budget on food. Of course the rest of the money should be used to purchase other commodities which were greatly needed such as healthcare, education, means of transportation, etc. Yet among the non-food items, the two poorest quintiles chose to spend 6.5-8.7% of their non-food budget on alcoholic beverages. As a result, the budget for the necessary non-food commodities was even more limited in drinking families.

Healthcare spending can be seen as human capital investment that helps improve productivity of all generations present in the family, and spending on education is an investment to improve children's potential productivity. Our study suggests that households with regular drinkers had significantly lower healthcare and education spendings. The discrepancies in medical and education expenditure between the two groups were strikingly large. Specifically, healthcare and education were 40% and 52% lower in poor

drinking households than in poor non-drinking ones. Investing less in health, education and effective means of transportation made drinking family members less productive and worse performing in the labor market than their counterparts in non-drinking households.

Third, children living with regular drinkers were invested less in both health and education. They would arrive at the doorstep of adulthood with double disadvantages, poor health status and less education, and thus would have lower productivity and worse labor market outcomes than their counterparts from non-drinking families.

The study on determinants of drinking patterns reveals some interesting facts. Households with higher educational levels consumed higher quantity of and more expensive alcoholic beverages. This contrasts findings from developed countries, where higher educated people were less likely to consume excessive alcoholic beverages (8, 9). This reflects several symbolic values assigned to drinking by Vietnamese people. First, drinking together demonstrates solidarity and serves as a means of communication. Second, consuming higher quantity of or more expensive beverages serves to demonstrate wealth. The fact that higher-educated and wealthier people, who were supposed to be more knowledgeable than the average Vietnamese, were more likely to consume alcoholic beverages shows that the traditional norms still dominated their behavior, and reflects low awareness on alcohol harm and the need of counter-advertising in the country. Because of the remarkable, positive association between drinking and gender factor found in the regression results, effects of public health education could be enhanced by social empowerment for women.

The research has some limitations we would like to acknowledge. First, all expenditures and consumption are self-reported data. The fact that people tend to understate their alcoholic spending is widely known (10-12). Therefore the alcoholic spending and its share in household expenditure were likely to be under-estimated. Our findings can serve as a lower bound of the actual opportunity cost and negative effects of alcoholic drinks in Vietnam. Second, we were unable to provide a conclusion on the

causal effect of alcoholic spending and other household spendings because the data is cross-sectional. And third, household is the unit of analysis in the survey, thus it is impossible to separate effects of alcohol drinking on non-drinking household members instead of on the whole family.

In summary, regular alcohol use has been shown to impose not only a financial burden but also an opportunity cost on drinking households, not only on the current but also the next generation. Long-term benefits of family members in these families were sacrificed in favor of the harmful and addictive drinks. Adults and children in drinking households, especially those living under the poverty threshold, were less invested in nutrition, healthcare and education. This is a vicious circle of poverty in which alcoholic spending is a channel of the intergenerational transmission of poverty. Preventing regular drinking, therefore, will magnify the effects of poverty eradication programs in the country.

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Table 1: Socio-demographic characteristics of studied households

	<i>Drinking households</i>			<i>Non-drinking households</i>		
	<i>Weighted</i>		<i>Unweighted</i>	<i>Weighted</i>		<i>Unweighted</i>
	<i>Percent (CI 95%)</i>	<i>Number of house- holds (thou- sand)</i>	<i>Number of house-holds</i>	<i>Percent (CI 95%)</i>	<i>Number of house-holds (thou-sand)</i>	<i>Number of house-holds</i>
Overall	100.0	12,891	5,536	100.0	9,442	3,862
Male household head	84.8 (84.7-84.8)	10,926	4,742	59.3 (59.3-59.3)	5,597	2,330
Proportion of male aged 16+ in the household (%)	39.2 (39.2-39.2)	5,050		32.6 (32.6-32.6)	3,075	
Residency						
Rural	74.6 (74.5-74.6)	9,612	1,330	62.6 (62.6-62.7)	5,914	2,545
Urban	25.4 (25.4-25.5)	3,280	4,206	37.4 (37.3-37.4)	3,529	1,317
Ethnicity of household head						
Kinh	83.2 (83.2-83.2)	10,723	4,306	90.4 (90.4-90.4)	8,533	3,415
Other	16.8 (16.8-16.8)	2,168	120	9.6 (9.6-9.7)	909	447
Age (years)						
15-24	1.5 (1.5-1.5)	192	89	2.4 (2.3-2.4)	222	79
25-44	42.3 (42.3-42.4)	5,456	2,441	36.9 (36.9-36.9)	3,485	1,463
45-64	46.2 (46.2-46.2)	5,956	2,468	40.1 (40.1-40.1)	3,787	1,540
65+	10.0 (10.0-10.0)	1,289	539	20.6 (20.6-20.7)	1,947	781
Education of household head						
Primary or less	41.7 (41.7-41.8)	5,381	2,320	52.3 (52.3-52.3)	4,938	1,921
Lower secondary	34.0 (34.0-34.0)	4,386	1,729	25.1 (25.1-25.3)	2,373	886
Higher secondary	16.6 (16.5-16.6)	2,134	813	14.6 (14.6-14.7)	1,382	495
College or above	7.7 (7.7-7.7)	993	341	7.9 (7.9-8.0)	749	254
Household expenditure quintile						
Quintile 1 (poorest)	14.1 (14.1-14.1)	1,816	851	28.1 (28.1-28.1)	2,651	1,130
Quintile 2	21.0 (21.0-21.0)	2,710	1,208	18.6 (18.6-18.6)	1,757	753
Quintile 3	21.3 (21.2-21.3)	2,740	1,214	18.3 (18.3-18.3)	1,727	709
Quintile 4	21.6 (21.6-21.7)	2,790	1,190	17.8 (17.8-17.8)	1,679	685
Quintile 5 (wealthiest)	22.0 (22.0-22.0)	2,835	1,071	17.2 (17.2-17.3)	1,628	584
Region						
Red River delta	29.0 (29.0-29.0)	3,737	1,337	19.0 (19.0-19.0)	1,793	655
Northern mountainous	16.2 (16.2-16.2)	2,085	1,248	7.6 (7.5-7.6)	713	417
North Central and Central Coast	22.7 (22.7-22.7)	2,928	1,184	20.5 (20.4-20.5)	1,931	881
Central Highlands	6.3 (6.2-6.3)	806	441	4.3 (4.3-4.3)	404	210
South East region	10.4 (10.4-10.4)	1,341	425	25.4 (25.4-25.4)	2,397	697
Mekong River delta	15.5 (15.5-15.5)	1,994	901	23.3 (23.3-23.4)	2,204	1,002

Source: Authors' calculation from VHLSS 2010.

Table 2: Number of households impoverished by drinking

<i>When drinking expense was included</i>		<i>When drinking expense was excluded</i>	
<i>Number of households living below the poverty line</i>	<i>CI 95%</i>	<i>Number of households living below the poverty line</i>	<i>CI 95%</i>
1,106,588	(1,104,617 - 1,108,559)	1,189,286	(1,187,248 - 1,191,321)

Source: Authors' calculation from the VHLSS 2010.

Table 3: Essential spendings in drinking and non-drinking households

	<i>Per capital spending on food (US\$)</i>			<i>Per capital spending on healthcare (US\$)</i>			<i>Spending on education per student-aged children (\$US)</i>		
	<i>Drinking households</i>	<i>Non-drinking households</i>	<i>Ratio (%)</i>	<i>Drinking households</i>	<i>Non-drinking households</i>	<i>Ratio (%)</i>	<i>Drinking households</i>	<i>Non-drinking households</i>	<i>Ratio (%)</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Quintile 1 (poorest)	231 (231-231)	283 (283-284)	0.82	17 (17-17)	35 (35-35)	0.49	21 (21-21)	35 (35-35)	0.60
Quintile 2	280 (280-280)	339 (339-340)	0.83	23 (23-23)	38 (38-38)	0.61	52 (52-52)	65 (65-65)	0.80
Quintile 3	350 (349-350)	391 (391-392)	0.90	28 (28-28)	55 (55-55)	0.51	90 (89-90)	119 (118-119)	0.76
Quintile 4	427 (426-427)	480 (479-480)	0.89	44 (44-44)	63 (63-63)	0.70	160 (160-160)	191 (191-192)	0.84
Quintile 5 (wealthiest)	708 (707-708)	699 (699-700)	1.01	81 (80-81)	118 (117-118)	0.69	390 (389-392)	595 (592-599)	0.66

Source: Authors' calculation from the VHLSS 2010. 95% CI in parentheses.

Table 4: Shares of alcoholic expenditures in non-food spending among drinking households

	<i>Share of non-food spending in total household expenditure</i>		<i>Share of alcoholic spending in household non-food expenditure</i>	
	<i>Percentage</i>	<i>CI 95%</i>	<i>Percentage</i>	<i>CI 95%</i>
Quintile 1 (poorest)	33.2	33.2-33.3	8.7	8.7-8.7
Quintile 2	37.0	37.0-37.0	6.5	6.5-6.5
Quintile 3	39.5	39.5-39.5	6.0	6.0-6.0
Quintile 4	42.5	42.5-42.6	5.7	5.6-5.7
Quintile 5 (wealthiest)	46.2	46.2-46.2	5.2	5.2-5.2

Source: Authors' calculation from the VHLSS 2010.

Table 5: Annual milk consumption and motorbike ownership in below-poverty-line drinking households

	Mean	CI 95%
Alcoholic spending/household (US\$)	25	(25-25)
Alcoholic consumption/household (liter)	38.12	(38.07-38.17)
Milk consumption/household (liter)	0.21	(0.21-0.21)
Household owning motorbike(s) (%)	53.1	(53.0-53.1)

Source: Authors' calculation from the VHLSS 2010.

For Review Only

Table 6: Household characteristics associated with regular drinking habits, alcoholic consumption and spending

	Model 1		Model 2			Model 3		
	OR (SE)	p-value	Coefficient (SE)	p-value	Percent change (%)	Coefficient (SE)	p-value	Percent change (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender of household head (ref = Female)								
Male	1.973 (0.149)	<b>0.000**</b>	0.431 (0.054)	<b>0.000**</b>	53.9	0.334 (0.061)	<b>0.000**</b>	39.7
Marital status of household head (ref = Married)								
Single	0.416 (0.081)	<b>0.000**</b>	-0.629 (0.188)	<b>0.001**</b>	-46.7	-0.603 (0.189)	<b>0.001**</b>	-45.3
Widowed	0.713 (0.075)	<b>0.001**</b>	-0.188 (0.081)	<b>0.019*</b>	-17.1	-0.255 (0.089)	<b>0.004**</b>	-22.5
Divorced	0.518 (0.106)	<b>0.001**</b>	-0.216 (0.159)	0.174	-19.4	-0.288 (0.152)	0.058	-25.0
Separated	0.494 (0.165)	<b>0.035*</b>	-0.548 (0.227)	<b>0.016*</b>	-42.2	-0.565 (-0.217)	<b>0.009**</b>	-43.2
Place of residence (ref = Rural)								
Urban	0.580 (0.037)	<b>0.000**</b>	-0.198 (0.044)	<b>0.000**</b>	-18.0	-0.073 (-0.045)	0.101	-7.0
Ethnicity of household head (ref = Minor ethnic)								
Major ethnic	0.640 (0.058)	<b>0.000**</b>	-0.269 (0.055)	<b>0.000**</b>	-23.6	-0.227 (0.052)	<b>0.000**</b>	-20.3
Number of male members aged 16+ in the household								
	1.475 (0.064)	<b>0.000**</b>	0.163 (0.026)	<b>0.000**</b>	17.7	0.120 (0.026)	<b>0.000**</b>	12.7
Age of household head (ref = 15-24)								
25-44	0.760 (0.174)	0.232	-0.101 (0.219)	0.644	-9.6	-0.108 (0.183)	0.555	11.4
45-64	0.712 (0.164)	0.139	-0.182 (0.219)	0.405	-16.6	0.016 (0.182)	0.931	1.6
65 and above	0.516 (0.124)	<b>0.006**</b>	-0.273 (0.225)	0.223	-23.9	0.007 (0.190)	0.971	0.7
Education of household head (ref = Primary or less)								
Lower secondary	1.136 (0.074)	0.051	0.119 (0.046)	<b>0.010*</b>	12.6	0.138 (0.047)	<b>0.003**</b>	14.8
Higher secondary	1.104 (0.091)	0.228	0.066 (0.056)	0.237	6.8	0.132 (0.061)	<b>0.031*</b>	14.1
College and above	1.125 (0.129)	0.303	0.165 (0.074)	<b>0.025*</b>	17.9	0.419 (0.092)	<b>0.000**</b>	52.0

Household expenditure quintile (ref= Quintile 1)								
Quintile 2	1.934 (0.157)	<b>0.000**</b>	0.622 (0.057)	<b>0.000**</b>	86.3	0.645 (0.057)	<b>0.000**</b>	90.6
Quintile 3	1.997 (0.173)	<b>0.000**</b>	0.935 (0.061)	<b>0.000**</b>	154.7	0.979 (0.060)	<b>0.000**</b>	166.2
Quintile 4	2.219 (0.200)	<b>0.000**</b>	1.254 (0.060)	<b>0.000**</b>	250.4	1.339 (0.060)	<b>0.000**</b>	281.5
Quintile 5	2.914 (0.306)	<b>0.000**</b>	1.684 (0.070)	<b>0.000**</b>	438.7	2.008 (0.072)	<b>0.000**</b>	644.8
Region (ref= Red River delta)								
Northern Mountainous Region	1.150 (0.109)	0.139	0.076 (0.048)	0.113	7.9	0.005 (0.049)	0.918	0.5
North Central and Central Coast	0.694 (0.052)	<b>0.000**</b>	0.006 (0.044)	0.887	0.6	0.018 (0.045)	0.697	1.8
Central Highlands	0.823 (0.096)	0.095	0.109 (0.057)	0.055	11.5	0.038 (0.056)	0.500	3.9
South East Region	0.297 (0.028)	<b>0.000**</b>	-0.399 (0.067)	<b>0.000**</b>	-32.9	-0.068 (0.071)	0.338	-6.6
Mekong River Delta	0.412 (0.033)	<b>0.000**</b>	-0.144 (0.052)	<b>0.006**</b>	-13.4	-0.258 (0.054)	<b>0.000**</b>	-22.7
Constant			2.684 (0.228)	<b>0.000**</b>		2.221 (0.196)	<b>0.000**</b>	
Mean of dependent variable	46.3			48 litter			44 \$US	
N	8,758			8,758			8,758	

Note: Estimates from Model 1 in column (1) were expressed in odds ratio. Untransformed estimates of Model 2 and 3 from GLM regression with a log-link function and gamma distribution were reported in Columns (3) and (6), respectively. Transformed estimates from Model 2 and 3 expressed in percent change of the mean of dependent variables were in Columns (4) and (7). Robust standard errors in parentheses; \*\* p<0.01; \* p<0.05 (significant results shown in bold type).

## Appendix

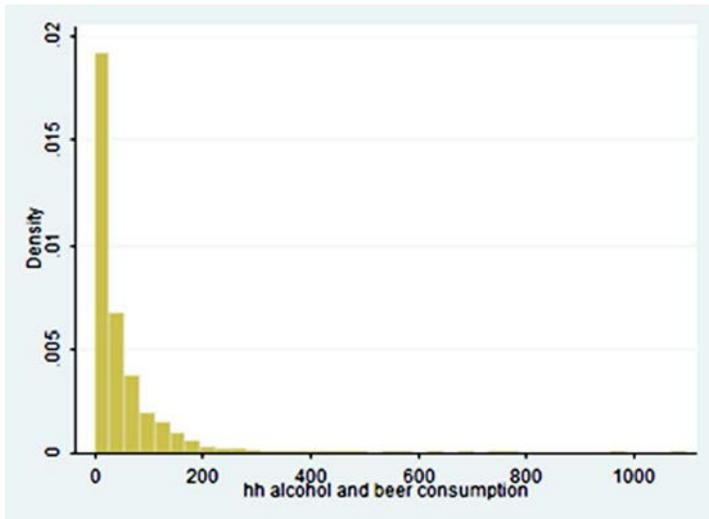


Figure 1a. Histogram of alcoholic consumption (litter)

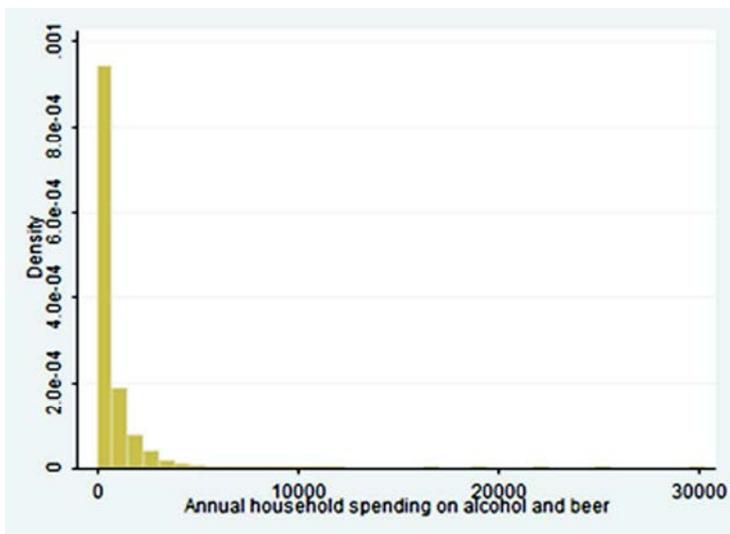


Figure 1b. Histogram of alcoholic expenditure (VND)

Table 1a. Summary statistics of alcoholic consumption (litter)

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs.	9398
25%	5	0	Sum of Wgt.	9398
50%	25		Mean	46.12307
		Largest	Std. Dev.	64.23428
75%	63	750		
90%	123	773	Variance	4126.043
95%	960	970	Skewness	3.71841
99%	297	1097	Kurtosis	30.37099

Table 1b. Summary statistics of alcoholic expenditure (VND)

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs.	9398
25%	80	0	Sum of Wgt.	9398
50%	350		Mean	703.345
		Largest	Std. Dev.	1189.879
75%	830	24970		
90%	1816	25200	Variance	1415812
95%	2630	25500	Skewness	7.808531
99%	4888	30320	Kurtosis	130.3158