



Estimating Unrecorded International Trade of Alcohol and Forgone Revenue in Bangladesh

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Authors' contributions

This work was carried out in collaboration among all authors. Author SMHK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors EB and TIK managed the analyses of the study and contributed to prepare the first and the final draft of the manuscript. Author SA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

This study attempted to estimate the value of unrecorded liquor trade in Bangladesh. In addition, tried to estimate the revenue government lost through unrecorded liquor trade. Globally, a significant share of liquor trade takes place through informal or illegal channels and remain unrecorded. In Bangladesh, average annual per capita alcohol consumption reached 0.9 liters in 2016. About 3.5% of the male and 1% of the female adult Bangladeshi population regularly intake alcoholic beverages. Estimated demand for liquor in Bangladesh was nearly 2.5 million liters in 2016, whereas, legally permitted level of consumption was only 0.10 million liters. As both production and import of liquor is highly regulated, trade through informal channels meet the excess demand in Bangladesh. In this paper, using official data from the Department of Narcotics Control (DNC), Bangladesh, we estimate the market value of unrecorded liquor production and trade. We find that the estimated annual value of unrecorded consumption of liquor from domestic

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production is nearly between USD 11 million and USD 28 million; while, unrecorded trade of liquor is nearly between USD 120 million and USD 190 million. Hence, the government is losing potential revenue equivalent to about USD 0.9 million to USD 2.2 million at production stage and USD 9.5 million to USD 15.2 million at import stage.

Keywords: Liquor; unrecorded trade; alcohol; forgone revenue.

1. INTRODUCTION

Per capita alcohol consumption varies significantly across the world under different criteria e.g. income, religion and economic openness etc. The average annual global consumption of alcohol is 6.4 liters per person older than 15 years [1]. In general, alcohol is a luxury good, and its consumption increases with higher income. For instance, on average annual per capita alcohol consumption is 9.7 liters in high income countries, while the corresponding numbers for middle, lower-middle, low-income countries are 5.8 liters, 4.7 liters and 3.5 liters respectively [1]. In addition, religion is a significant factor in determining the volume of alcohol consumption; primarily due to ban or strict regulation on alcohol consumption in Muslim-majority countries. On average in European countries' per capita alcohol consumption is 15 liters per year; while in Muslim-majority countries, it is only 2.2 liters per year [1]. Even within the Muslim majority countries', there are differences in volume of alcohol consumption. Countries that endorsed Islam as their state religion have an annual per capita alcohol consumption of 0.8 liters while it is 4.1 liters for secular but Muslim-majority countries. Corresponding episodes of drinking alcohol were roughly 4.2 and 13.5 per month in 2010 within the abovementioned country classification [1]. Economic openness or country's integration to global value chain is also an important factor that influence the volume of alcohol consumption. Among Muslim majority countries, the annual per capita alcohol consumption is significantly higher in countries with vibrant tourism sector such as Maldives, Indonesia, United Arab Emirates etc. However, this reported data only represents consumption of legal volume of alcohol. In contrast, many argue that the volume of unrecorded consumption of alcohol and its trade is substantial in numbers – specially in countries such as Bangladesh where there is ban or strict regulation on alcohol consumption.

Consumption of alcohol is broadly illegal in Bangladesh unless an individual is classified

under following criteria: (i) Muslim citizens who have received permission from one of the civil surgeons (or equivalent or higher ranked medical professional) on medical ground; (ii) indigenous people residing in Chittagong hill tracks, (iii) other specific groups such as sewage cleaners, morgue workers, coolie (day laborer) in a tea estate, boot makers etc., (vi) non-Muslim citizen with permit, (vii) international tourists, businessmen or professionals in a licensed bar. Therefore, production, import, sales and consumption of alcohol are strongly regulated in Bangladesh as more than 90% of total population are Muslim. Department of Narcotics Control (DNC), a specialized agency under the Ministry of Home Affairs (MoHA) of the Government of Bangladesh (GoB), which is also responsible for ensuring control of drug abuse in Bangladesh by issuing license that provides permission to the person to consume up to seven units equivalent to 1.14 liters of foreign spirit or up to three units of wine in a month. However, anecdotal information suggests a significantly higher consumption of alcohol is prevalent in Bangladesh. The unrecorded consumption of liquor through unrecorded (illegal) production or trade or both is intensifying problems for Bangladesh economy e.g. increasing insecurity in the border management, illicit financial flow, tax evasion as regards mis-invoicing, social unrest etc.

The objective of the study is to review secondary literatures and relevant government documents to understand the current extent of unrecorded liquor trade in Bangladesh, its potential revenue impact and put forward a coping strategy to limit the magnitude of unrecorded liquor trade.

2. LITERATURE REVIEW

Globally, liquor is one of the most commercially valuable but sensitive items to be traded informally [2]. Irrespective of relationship between or among partner countries, the standard national accounting framework only records legal trade in the form of export and import. Popularly known as 'formal trade' – the term refers to the value of flow of goods and services across air-borne, land or sea borders as

reported by the official sources of statistics. On the contrary, the term 'unrecorded trade' arguably includes illegal, unreported or underreported trade [3,4]. Unrecorded cross-border trade is particularly high of the commodities for which trade, domestic production, sales and consumption are either restricted or highly regulated.

Strong regulations on consumption of alcohol originate from three reasons including (a) potential health risks; (b) religious purview/sensitiveness; and, (c) anticipated risks from increased law violating activities at a drunk state [5,6]. Smuggling is the most common means of cross-border liquor flows followed by its illicit flow of transaction. Although reliable estimates are rare, according to a rough estimate, at least two-thirds of alcohol consumption in the Indian subcontinent is unrecorded; hence, as its trade. The corresponding numbers of unrecorded consumption (implicitly its production and therefore, trade) of alcohol in Africa and Eastern Europe and Latin America are respectively nearly half and one-third of its total consumption [7]. In addition, branded alcoholic beverages, that control more than two-thirds of global market share, only account for 38% of recorded alcohol consumption [7]. According to WHO, nearly 30% of world's per capita alcohol consumption was unrecorded in 2005. These abovementioned figures of unrecorded consumption of alcohol are somewhat indicating towards substantial undocumented global trade of alcohol.

According to WHO data, per capita consumption of alcohol shows that historically people from developed countries consume significantly higher alcohol than people from developing countries. It is quite expected considering the income gap and incidences of poverty between the developed and developing countries [8]. It is important to highlight that WHO data only talks about recorded consumption of alcohol whereas in developing countries alcohol are mostly produced, sold and traded illegally and a large proportion of that remain undocumented. Therefore, it is surely an underestimated figure to cite. However, this data alternatively underscores the extent of unrecorded liquor trade that is taking place in the developing countries.

The magnitude of locally produced unrecorded alcohol trade and its consumption in eastern and south-eastern Asia or in Africa a century ago would be hard to infer. In developing countries of eastern and southern Asia, the rate of

consumption of alcohol has increased since 1960s and grew rapidly until recent past. In similar period, Latin America and Africa have experienced high growth of alcohol consumption before it came down in 1980s and 90s. Such increase in consumption took place partly because of the shift in economic frontier alongside a semi-replacement of locally produced beverages with industrial beverages [9]. To meet excessive demand at that period, unrecorded alcohol trade was also in rise. In addition, patterns of urbanization, increasing participation of women in labor force, high intensity of mass promotion of alcoholic beverages, increasing integration of developing countries with the global value chain, improvement of communication media etc. were also favorable to this sharp increase in alcohol consumption [8]. Due to all practical reasons, measuring unrecorded trade is inherently difficult [10]. However, several researchers have attempted to estimate/infer the value of illegal or unrecorded trade by using the mirror data - that is matching import and export data reported under bi-lateral trade flows [11,12].

Despite such methodological framework, the value of alcohol trade is usually difficult to estimate as such raw data often remain missing on both export and import account. However, it is often claimed that in recent years, consumption of industrial beverage is on rise in Africa (including sub-Saharan countries) and South Asia. Although, the Muslim-dominant countries from abovementioned regions have protective legislation and regulations as regards alcohol consumption— an underground trade of alcohol is quite thriving.

Unrecorded cross-border trade is often featured with incidences of tax evasion, mispricing of traded goods or trading of illegal goods. In general, unrecorded cross-border trade can have any of the following characteristics (a) passing border points, (b) concealment of goods, (c) under or over-reporting in terms of volume and value, (d) false classification of harmonized codes etc. Often unrecorded trade is embraced by businesses or individual not only to evade taxes or regulatory fees but also to avoid administrative formalities e.g. requirement of quarantine certificate, sanitary and phytosanitary certification, fumigation certification that are perceived to be time-consuming, complex and involves further transaction cost [4]. Although unrecorded trade is ubiquitous but its frequency and extent is relatively higher in developing countries [13].

Review of secondary literatures and national documents on liquor consumption and trade is revealing that in commensurate to the global trend the consumption of liquor is also increasing in Bangladesh. So, unrecorded production and trade of liquor are expected to increase in future. Hence, it is important to understand the extent of unrecorded production and trade of liquor. There are newspaper articles, features and reports on the nature of unrecorded liquor trade in Bangladesh. However, there is little academic effort made to quantify the extent of unrecorded liquor trade and for that how much potential revenue government is losing each year. This particular study is one of the very few attempts that should help to inform the policymakers about the magnitude of unrecorded liquor trade in Bangladesh and its future implications.

3. METHODOLOGY AND DATA

A static partial equilibrium (demand and supply) analysis has been attempted to roughly estimate the value of unrecorded liquor trade in Bangladesh. With unrecorded supply of alcohol e.g. either by unrecorded production or trade, the initial supply schedule will shift rightward from S_0 to S_1 . Hence, with higher market supply the price of per liter alcohol is expected to drop from P_0 to P_1 . Assuming elastic nature of alcoholic liquor, with the drop in per unit price, the forgone revenue is also expected to increase. Under a highly regulated liquor market, the increase of unrecorded liquor trade is also expected to significantly higher than its legal share of

production and trade. To carry out the analysis, secondary data has been used from DNC and WHO.

4. Regulations of Legal Production and Trade of Liquor: Bangladesh Context

According to 'Intoxicant Control Act 1990' of Bangladesh, the liquor is defined to be an alcoholic beverage with an alcohol content of $\geq 0.5\%$. Within this definition, alcoholic beverages such as beer, wine, spirits are classified as foreign liquor. In addition, locally produced alcoholic beverages popularly known as tari, bangle mod, haria, choani, do chuani, mohua, etc. are made from agricultural inputs such as sorghum, maize, millet, rice, cider, fruit wine or fortified wine; also known as country liquor.

4.1 Regulated Market

There is regulated monopoly of legal production of country liquor in Bangladesh. The company, Carew & Co (Bangladesh) Ltd, established in 1938, was nationalized in 1973 after the independence of Bangladesh; and since then, the company is owned by the state. The 200 sales agent which undertake the retail sales are licensed by the DNC. At present, there are 140 licensed bars and 37 licensed warehouses which have the permission to sell alcohol. With the increase in demand for liquor intake, the DNC has also provided licenses to 185 rehabilitation centers and 74 non-government organizations.

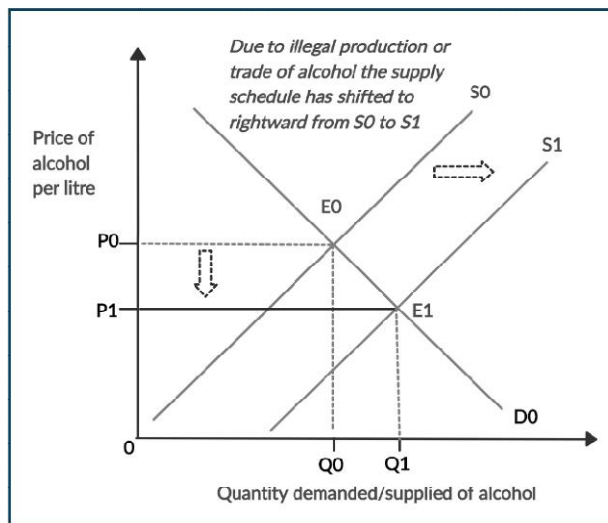


Fig. 1. Unrecorded production or trade of alcohol and shift in market equilibrium

Source: Developed by Authors

4.2 Regulated Import

Globally, alcohol beverages are highly regulated trade products. The extent of sensitiveness may be expressed by countries when all but narcotics and arms usually put in place in the negative list of most bi- or multi-lateral trade facilitation agreements. For instance, Bangladesh and India enjoys nearly zero tariff except for 25 items which mostly include tobacco and liquor. Similarly, the import of alcohol in Bangladesh is highly regulated. According to the Import Policy Order, 2015-2016 (Chapter 06, Section 26, Subsection 48) issued by the Ministry of Commerce of Government of the People's Republic of Bangladesh, in exercise of the powers conferred by section 3(1) of the Imports and Exports (control) Act, 1950 (Act No. XXXIX of 1950) - Ethanol (ethyl alcohol) is not importable. But ethanol annular grade (undenatured) is importable only by recognized pharmaceutical units with the approval of the Directorate of Drug Administration of Bangladesh and subject to prescribed conditions (S.R.O. No. 28- Ain/2016, Date: 10 February, 2016 AD).

4.3 High Duty Structure

Effective taxation on alcoholic beverages are critical from the view point of government's revenue generation. As consumption of alcohol in a developing country is often eschewed by majority of people and regarded as luxury good, government often finds popular support to generate revenue by rising tax on alcohol beverages. However, determining an effective rate of taxation on alcohol beverages has always been a challenge. The trade-off of increasing import duty may create further diversion of liquor trade through illegal channels. It is widely known that high duty structure is one of the major reasons of unrecorded liquor trade globally [14,15]. In Bangladesh, where majority of population is Muslim, the rationale behind setting high import duty on alcohol beverages is primarily to discourage the import of alcohols alongside generate higher revenue. At present, imports of wine and spirit are subject to 25% customs duty, 350% supplementary duty, 15% value added tax, 5% advanced income tax, 5% advance tax and 3% regulatory duty. Hence, total tax incidence appears to be more 600%. The customs duty for beer is 250%.

5. RESULTS

Estimated Value of Unrecorded Liquor Trade in Bangladesh: DNC issued permits for

consumption of 48,816 liters of country liquor and 9,899 liters of foreign liquor in 2008 [16]. Since then each year DNC has issued more permits than the previous year. In 2016, DNC issued 80,530 liters and 15,841 liters of country and foreign liquor respectively [16]. However, the market demand is perceived to be significantly higher than legally permitted supply of liquor. According to the WHO, only 11.1% male and 3.9% female of Bangladeshi adult citizens have ever consumed alcohol at least one point of time. Besides, about 3.5% and 1% of adult male and female drinkers had consumed alcohol within the past 12 months of the survey period [17]. Only among drinkers, in 2016, average annual per capita alcohol consumption was 0.9 liters. Specifically, average per capita alcohol consumption were 1.1 liters and 0.4 liters for male and female drinkers respectively in 2016 [17]. To estimate the demand for liquor, 72% of adults (aged 15 years and above) were considered from a total population of 163 million in Bangladesh in 2016. Adjusting the weights of per capita alcohol intake by male and female and their ratio, the estimated demand for liquor was found to be nearly 2.5 million liters in 2016. The legal permits issued for consumption of liquor were 0.10 million liters in 2016; of which nearly 84% were country liquor and rest 16% were imported foreign liquor [16]. Therefore, roughly 2.4 million liters of excess demand for liquor has met either by unrecorded production of country liquor or by unrecorded trade of foreign liquor or by a combination of both.

On average, the prices of per liter permitted country and foreign liquor are Tk. 4,257 and Tk. 20,437 respectively. The price of per liter legally imported foreign liquor is nearly five times higher than country liquor. However, illegal or unrecorded supply of liquor is likely to drop per liter liquor price. After adjusting for a price drop, the per liter price of illegally produced country liquor is calculated to be Tk. 1,904 and the per liter price of illegally traded foreign liquor is calculated to be Tk. 8,234. The estimated value of illegally met excess demand for liquor significantly varies with the source of supply.

A simulation exercise is presented in Table 1 and Table 2 by developing seven different scenarios by which the 2.4 million liters of excess liquor demand could have met. Assuming high maintaining cost of illegally managed production plant, a more than 50% of unmet liquor demand from country liquor is rather unrealistic. In addition, the assumption of no unrecorded

domestic production of liquor would also be rather extreme. Taking these two abovementioned possibilities in account, the estimated value of unrecorded consumption of liquor from domestic production is nearly between USD 11 million and USD 28 million per year (Table 1). Besides, the estimated value of unrecorded trade of liquor is nearly between USD 120 million to USD 190 million per year (Table 2). In addition, government is losing potential revenue equivalent to about USD 0.9 million to USD 2.2 million at production stage and USD 9.5 million to USD 15.2 million at import stage (Tables 1 and 2).

6. DISCUSSION

According to National Board of Revenue (NBR) data, in 2013 alcohol import was equivalent to only about USD 1.3 million which increased to about USD 1.8 million in 2018; resulting an annual compound growth rate of only 6.7%. It suggests that only a tiny percentage of alcohol trade is taking place through formal channel in Bangladesh. Nevertheless, globally there are evidence that traders are inclined to high percentage of illegal liquor trade to avoid complex custom procedures, restrictions and high duties levied on alcoholic beverages [14].

This argument also stands true for Bangladesh. Trends from NBR and DNC statistics suggest that the demand for alcoholic beverage is likely to increase in future in Bangladesh. With increase in demand, illegal alcohol trade is likely to create an unfair competition for formal traders. As a result, formal liquor traders may find disincentive to operate business with relatively lower profit margins. As a consequence, a relatively higher share of prospective formal trade of alcohol may divert towards illegal channels. Higher diversion of liquor trade through unrecorded channel implies higher erosion of government revenues. In addition, higher presence of unrecorded alcohol trade may reduce incentives for formal traders to invest further in formal economy. Which in turn may reduce the scope of formal employment opportunities. On the other hand, more resources will be required to deploy to control the flow of informal alcohol trade.

Increasing per capita income, growing income inequality, widespread advertisements featuring on social media, electronic and press media, popular magazines etc. are also predicted to influence further to increase the market demand for alcohol consumption in near future, particularly among youth [18].

Table 1. Estimated value of unrecorded production of liquor and forgone revenue

| CL* (%) | FL** (%) | Unrecorded value of liquor consumption from domestic production (in million USD) | Potential revenue loss at production stage (in million USD) |
|---------|----------|--|---|
| 100 | 0 | 55 | 4.4 |
| 80 | 20 | 44 | 3.5 |
| 60 | 40 | 33 | 2.6 |
| 50 | 50 | 28 | 2.2 |
| 40 | 60 | 22 | 1.8 |
| 20 | 80 | 11 | 0.9 |
| 0 | 100 | 0 | 0.0 |

Source: Authors Estimation; *Unrecorded production of Country Liquor (CL) to meet excess demand; **Unrecorded trade of Foreign Liquor (FL) to meet excess demand

Table 2. Estimated value of unrecorded trade of liquor and forgone revenue

| CL (%) | FL (%) | Unrecorded value of liquor consumption from trade (in million USD) | Potential revenue loss at import stage (in million USD) |
|--------|--------|--|---|
| 100 | 0 | 0 | 0.0 |
| 80 | 20 | 48 | 3.8 |
| 60 | 40 | 95 | 7.6 |
| 50 | 50 | 120 | 9.5 |
| 40 | 60 | 143 | 11.4 |
| 20 | 80 | 190 | 15.2 |
| 0 | 100 | 238 | 19.0 |

Source: Authors' Estimation

In this information age, a group of young people are at risk of being exposed to consumption of alcohol at an early age – as all leading alcohol producing companies have relatively higher information about these youths than before. These companies even after maintaining all its ethical code of conducts can go for targeted advertising by forecasting their product demand. As scope of on field activities are shrinking in Bangladesh, children from a young age are more likely to be over dependent on online based entertainment sources. At the early age, an adventurous consumption of liquor may quickly turn into an addiction [18]. Addiction on alcoholic beverages may hamper the potential productivity of the youth section of the society. In addition, such addiction to liquor consumption may force an individual as well as a family into debt trap. Other social problems such as homelessness, family problems, domestic violence, homicide, sexual problems, absenteeism and employment problems may also show up as consequences. Besides, adverse health effects such as esophageal cancer, epileptic seizures, liver cirrhosis, and chronic pancreatitis are highly associate with drinking alcohol. Hence it is anticipated that out-of-pocket and public health expenditure are likely to be increased to cover treatment costs for health-related problems due to either higher consumption of alcoholic beverages or low-quality alcohol consumption.

Unregistered trade flows of alcoholic beverages may threaten the overall management of cross-border trade. In the long run, such unregulated flow of trade items may curtail the ability of policymakers to design strategic trade policies. Such unrecorded trade of liquor may allow organized networks to involve themselves in other systemic crimes by weakening the institutional process and triggering bribery and corruption [14]. As it has been already identified by the police and narcotics control department that the land custom stations and nearby border points are extremely exposed to smuggling of drugs and alcohol, the government should immediately install latest scanners to reduce some form of unrecorded trade. It is to be noted that currently majority of those identified land custom stations lack adequate modern facilities to take appropriate measures against some organized networks of unrecorded alcohol or drug trades.

Above all, good governance is a necessary condition to reduce the extent of unrecorded

trade of alcoholic beverages. In attempt to achieve that coordination among multiple government agencies, it is important to control illegal trade of alcohol. Ministry of Finance (MoF) may levy higher import duty on alcohol beverages but it must be properly collected by designated custom official of NBR. Such trade policy measures by MoF may complement the effort of Ministry of Health and Family Welfare to combat drug and alcohol related health diseases or problems. However, increase in import duty on alcohol beverages may create additional burden for DNC – as unrecorded trade is likely to be increased. Ministry of External Affairs should always be updated so that it can play its role to control cross-border illegal trade of alcohol. As a preventive measure, involvement of Ministry of Youth and Sports, Ministry of Communication and Information, and Ministry of Education are crucial to create awareness against alcohol consumption. At the current stage of operation, a coordinated work plan is rather weak among multiple government agencies. It must be improved if any positive outcome to be attained regarding controlling unrecorded alcohol trade. Cross-border information and data sharing between Bangladesh and India and Bangladesh and Myanmar will be crucial as Bangladesh's unrecorded trade with the neighboring countries is almost equivalent to the size of its legal value of trade [3].

7. CONCLUSION

This study is one of the first attempts to estimate the value of unrecorded liquor trade in Bangladesh and hence, to estimate the revenue government lost through this unrecorded liquor trade. Despite high regulation on liquor consumption, we found that there was a 2.5 million liters of liquor demand in Bangladesh in 2016. Of which, the non-permitted consumption of liquor was about 2.4 million liters. As a result, a significantly high unrecorded production and trade of liquor is prevalent in Bangladesh. According to our analysis, the estimated value of unrecorded consumption of liquor from domestic production is nearly between USD 11 million and USD 28 million. And, unrecorded trade of liquor was nearly between USD 120 million and USD 190 million. In turn, the government is losing potential revenue equivalent to about USD 0.9 million to USD 2.2 million at production stage and USD 9.5 million to USD 15.2 million at import stage.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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