

Taxes on the Consumption of Alcohol Beverages. Ineffectiveness of the alcohol Tax in Mexico. New evidence*

Impuestos sobre el consumo de bebidas alcohólicas. Ineficacia del impuesto sobre el alcohol en México. Nueva evidencia

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ABSTRACT

Excise taxes on alcoholic beverages are applied according to two basic principles: Ad valorem and ad quantum. In Mexico, the Special Tax on Production and Services is an ad valorem tax with different quotas according to alcoholic content, combining both principles. However, under this system, lower-quality beverages with a high alcohol content are among the cheapest on the market, which demonstrates the tax's failure to achieve its objective. This study tests the modification of the ad valorem system and first-hand collection to measure government revenue and the regressive effects of the tax. Our findings suggest that our proposal would significantly increase tax revenue, thus meeting the objective of the excise tax to provide social benefits and reduce illegal trade. Furthermore, we demonstrate that the distribution of the tax burden is progressive; it is distributed disproportionately among higher income groups. This does not include the additional reduction in health problems, from which lower income groups benefit disproportionately.

Keywords:

JEL classification: H21, H23, H31, I12, I14 and I39.

RESUMEN

Los impuestos especiales sobre las bebidas alcohólicas se aplican bajo dos principios básicos: Ad-Valorem y Ad-Quantum. En el caso de México, el impuesto especial, o Impuesto Especial sobre Producción y Servicios, se basa en un sistema Ad-Valorem con diferentes cuotas según el contenido alcohólico, que combina ambos principios. Sin embargo, con este sistema, las bebidas de menor calidad con alto grado de alcohol se encuentran entre las más baratas del mercado, lo que demuestra el fracaso del objetivo del impuesto. Este estudio prueba la modificación del sistema Ad-Quantum y la recaudación de primera mano para medir los ingresos gubernamentales y los efectos regresivos. Nuestros hallazgos indican que, con nuestra propuesta, la recaudación tributaria aumentaría significativamente, cumpliendo con el objetivo de los beneficios sociales del impuesto especial y reduciendo el comercio ilegal. Además, demostramos que la distribución de la carga tributaria es claramente progresiva, es decir, se distribuye de forma más que proporcional entre los deciles de mayores ingresos de la población. Esto, sin incluir la reducción adicional en los problemas de salud, que beneficia de forma más que proporcional a los grupos de menores ingresos.

Palabras clave: Impuestos, bebidas alcohólicas, sistema Ad-Quantum, riesgo de salud, recaudación fiscal.

Clasificación JEL: H21, H23, H31, I12, I14 y I39.

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A BRIEF LITERATURE REVIEW

This study adds to earlier research by Farfán, Foncerrada, Rodríguez, and Sánchez (2022), which suggests that heavy drinking can lead to addiction, harm health, and have negative social and family consequences. Our study fits within the great issues of human rights, health, inclusion and equal opportunities, all elements that affect the distribution of income, equity and wellbeing of the population in Mexico.

A variety of papers analyze the importance of a tax on alcoholic beverages, arguing that this Pigouvian tax could reduce excessive alcohol consumption. A well-documented review was carried out by CIEP in 2023. Under international law, the health of individuals and their right to access are the responsibility of all states, including the Mexican state. This was confirmed by the amendments made to the Political Constitution of Mexico in 1914, whereby a series of articles were reformed to give international human rights treaties constitutional status. The UN Committee on Economic, Social and Cultural Rights issued General Comment 14 (United Nations, 2001), which specifies the right to enjoy the ‘highest possible level of physical and mental health’. This implies that the right to health is not limited to healthcare, but extends to virtually all determinants of health, including living and working conditions.¹

In Mexico, various efforts to guarantee the right to health were strengthened in 1983 with the amendment to Article 4 of the Constitution, which enshrined the right to health protection alongside the right to health. Furthermore, in accordance with international legal obligations, the reference to the ‘highest attainable level of physical and mental health’ encompasses not only the right to healthcare, but also a broad range of factors that contribute to a healthy life. This implies that the State must play an active role in any aspects that could influence the physical and mental health and well-being of families, including the creation and maintenance of equal opportunities.

In this sense, when it comes to health issues arising from excessive alcohol consumption, the State has both the capacity and the obligation to address the problem. Excessive alcohol consumption has detrimental effects on society, including the deterioration of consumers’ health, the destruction of household economies, an increase in vulnerability to poverty and negative effects on equality and equal opportunities. Therefore, the state must implement the necessary mechanisms to prevent excessive alcohol consumption and address the issues involved, such as the reduction of human rights and the deterioration of family income and spending.

¹ The right to health is therefore “extended to the basic determinants of health, such as food, health and nutrition, housing, access to clean drinking water, adequate sanitary conditions, safe working conditions, and health and a healthy environment” (United Nations, UN, 2001).

State intervention in markets is fundamental for distributive reasons, as well as due to monopolistic or oligopolistic imperfections and asymmetric information. One way to address negative externalities is to introduce ad hoc taxes, such as Pigouvian taxes.

The idea of applying a tax to alcoholic beverages that is different from the value-added tax is based on the work of Arthur Pigou. In 1920, he published *The Economics of Welfare*, in which he outlined his vision of economics as a toolkit for improving the lives of people in poverty. In this book, he expanded upon Marshall's concept of negative externalities, proposing that they should be offset by a tax. This type of intervention is now known as a Pigouvian tax, or an excise tax.

Pigouvian taxes can be imposed on economic activities that generate negative externalities, such as environmental pollution, harmful substances (*e.g.* tobacco and alcohol) and traffic. The idea is that the costs of these externalities are not reflected in the final cost of a product or service. The main purpose of Pigouvian taxation is to correct negative externalities in various ways, such as reducing the production and/or consumption of harmful goods and services or collecting financial resources to cover the damage they cause to society.

In the case of taxes on alcoholic beverages, there is wide evidence. Firstly, it is important to highlight a few positive economic arguments for taxing alcohol. Firstly, the damage caused by alcohol consumption is not reflected in the sale price, and applying taxes to these products can help offset the associated health costs. Secondly, governments can allocate some of the income collected from alcohol taxes to initiatives aimed at controlling excessive alcohol consumption and counteracting the damage caused to the population. Research on this topic not only highlights the importance of taxing these kinds of beverages but also proposes two systems for doing so: the ad valorem system and the ad quantum system.

Some initiatives have been proposed in Congress to change the model; in particular, two are worth mentioning: Senator Gerardo Novelo (2021) and Senator Gina Campusano (2024). In both cases, their arguments were based on the findings of our investigation. See Farfán, Foncerrada, Rodríguez and Sánchez (2021, 2022), and Rodríguez and Foncerrada (2022).

The World Health Organization (WHO, 2006, 2010) is among the organizations that support the use of an ad-quantum system to tax alcoholic beverages. The WHO establishes that a fiscal structure under an ad-quantum system is preferable to a structure based on an ad valorem system when it comes to an effective policy framework to address the harmful use of alcohol. The International Monetary Fund (IMF, 1996) also recognizes that ad valorem taxation is the most effective system for avoiding difficulties in determining the taxable value related to the production or distribution stage at which taxes must be applied to alcoholic beverages. Furthermore, the Organization for Economic Co-operation and Development (OECD)

highlights that 33 of its 37 member states use an ad valorem system, an ad valorem system or a combination of the two to tax alcoholic beverages.

Similarly, the Member States of the European Union use a system of volumetric special taxes (the ad-quantum system), through which they apply the same tax rate per hectoliter of pure alcohol to all beverages containing ethyl alcohol (Official Journal of the European Union, 1992).

Likewise, alcoholic beverages in East Asia are subject to ad valorem and ad valorem taxes, and in some cases to a combination of the two. The rates calculated on the volume of alcohol in the product mean that beverages with a higher alcohol content, such as Aguardiente, incur a higher tax per liter.

In sum, it is important to note that the theoretical and empirical evidence described provided valuable support for this approach and research, the focus of which is the following research question:

Does Mexico need to modernize the IEPS on alcoholic beverages?

HYPOTHESIS

The ad valorem system currently used in Mexico to tax alcoholic beverages does not achieve its objective. Even when ad valorem is applied, cheaper, lower-quality beverages such as aguardiente (cane alcohol products), which are produced at extremely low cost, remain extremely cheap. This has precisely the opposite effect to that desired. In fact, rather than inhibiting the consumption of alcoholic beverages, the ad valorem system actually benefits the most harmful and lowest quality products since it taxes the value of the drink and not the quantity of alcohol. Thus, a change to an ad-quantum system, which taxes the alcoholic content, is proposed. Three important findings were made. Firstly, consumption of the most harmful alcoholic beverages could be reduced by increasing their final price, thus fulfilling the objective for which the tax was created. Secondly, switching to an ad-quantum system would enable increased tax collection, provided a fee greater than 122 pesos per liter of pure alcohol is applied. This is the implicit amount charged through the ad-valorem system in 2023. Thirdly, given consumption patterns, the main source of the new tax would be high-income deciles, thus proving the system's progressivity, even without considering the more significant social and family consequences.

The IEPS (Impuesto Especial sobre Producción y Servicios), which is currently applied to alcoholic beverages, is an ad valorem tax charged on the value of the drinks. It is ineffective in terms of revenue collection and does not achieve the objective of reducing excessive alcohol consumption, particularly among lower-income

groups, for health reasons. Paradoxically, the ad valorem system encourages excessive consumption of the most harmful beverages and facilitates evasion and illegality through under-invoicing.

I. ALCOHOLIC BEVERAGE CONSUMPTION FROM 2018 TO 2023

Private sales sources (IWRS) indicate that the value of consumption of alcoholic beverages increased by almost one hundred billion pesos between 2018 and 2023, representing an accumulated increase of 21% over this period. See table 1.

Of the 95,491.5 million pesos increase in consumption, beer accounts for 56%, spirits for around 25%, with these two types of beverage accounting for over 80% of the total increase. The remaining 20% is accounted for by prepared beverages and wine.

Table 1. *Total sales and growth rates.*

	2019	2020	2021	2022	2023	2019-2023
Beer	350,588	312,993	348,986	382,444	403,916	15.0%
Prepared	7,812	9,738	11,500	13,580	16,154	106.8%
Distillates	72,713	64,704	80,190	97,170	98,732	35.8%
Came	18,140	17,088	21,498	25,472	25,915	42.9%
Cider	42	52	56	65	67	59.5%
Total	449,296	404,577	462,232	518,733	544,787	21.3%
Annual growth rate		-10.0%	14.0%	12.0%	5.0%	

Source: Prepared by the authors based on IWRS figures.

II. ILLEGALITY, EVASION AND POOR COLLECTION OF IEPS

Given the amounts on sales, it seems relevant to calculate the amount of IEPS that this consumption should have generated. By applying the current ad valorem tax rates to each category², the values shown in the 'Potential IEPS' row of Table 2 are obtained. The difference between the IEPS collected and the amount that should have been collected is shown in the last two rows of table 2, in millions of pesos and as a percentage of potential revenues. From 2019 to 2023, the loss in revenue amounts to almost 170 billion pesos. Adding another 40 billion pesos in losses for 2024 brings the total loss in IEPS revenue from alcohol over the six-year period to

² IEPS: 26.5 % for beer, wine, cider and prepared beverages, and 53% for spirits.

around 210 billion pesos, representing 0.75% of the average GDP for those years. By the end of 2024, public sector debt would be 0.75% lower than it would have been otherwise.

Table 2. *IEPS. Calculation of the IEPS that should have been generated (millions of pesos)*

	2019	2020	2021	2022	2023	Addition
Potential IEPS	89,722	80,701	92,941	105,148	110,038	478,549
IEPS SHCP	57,361	52,312	57,395	68,050	73,687	308,805
Difference	32,360	28,389	35,545	37,098	36,351	169,743
% Evasion	36%	35%	38%	35%	33%	35%

Source: Prepared by the authors based on figures from IWRS and SHCP.

The way to reduce this loss is simple: First, establish a system for collecting IEPS ‘firsthand’, i.e. on the initial sale by producers and importers before the goods circulate on the market. Second, change the ad valorem system to an ad quantum system by establishing a fixed quota on the quantity of pure alcohol in each container. This would make collection more transparent and efficient and achieve the health and social benefits for which the IEPS exists by increasing the price of the most harmful beverages and taxing the amount of pure alcohol in each container while eliminating the possibility of under invoicing. These two measures would greatly reduce illegality and evasion and enable the total product to be identified more easily before retail sales. Instead of inspecting tens of thousands of intermediaries, the authorities would only need to inspect less than a thousand points of sale.

III. ADDITIONAL INCREASE IN REVENUE: 2018-2024

If the tax had been a fixed fee per liter of pure alcohol from 2019, that is, establishing an ad quantum system, the collection would have been based on the total alcohol contained in the drinks. The revenue figures below are obtained by converting the liters of beverages sold into the quantity of alcohol each contains³ and applying the quota per liter of pure alcohol sold. The volume of each drink consumed in liters is used to make the calculation. Table 3 shows the quantity of pure alcohol in liters per drink consumed. Liters of pure alcohol (LPA).

³ The content of pure alcohol per liter for the various drinks used in the calculation, on average, is as follows: 4% for beer; 13% for wine, cider and prepared drinks; and 40% for spirits.

Table 3. *Thousands of liters of pure alcohol.*

	Came	Cider	Beer	Distillates	Prepared	
Alcohol Content	13%	13%	4.50%	40%	13%	Total*
2018	12,716.15	562.26	392,838.79	122,164.20	19,794.65	548,076.04
2019	12,628.40	620.76	405,877.53	123,796.80	19,018.06	561,941.53
2020	11,815.54	624.00	357,799.50	114,268.50	23,049.59	507,557.12
2021	13,735.22	799.50	419,907.37	117,756.90	25,066.37	577,265.36
2022	14,945.58	2,216.51	447,160.50	123,497.10	28,039.93	615,859.62
2023	14,248.85	2,118.98	439,762.51	117,869.40	30,159.68	604,159.41

Source: Prepared by the authors based on IWRS figures.

Changing the system from ad valorem to ad quantum corrects the two factors preventing higher revenue collection, both of which are due to evasion: moving to first-hand collection and collecting according to the quantity of alcohol consumed eliminates under-invoicing.

Table 4 shows the revenue that would have been collected for four different fixed rates, ranging from 140 to 200 pesos per LPA, had the system changed. As can be seen, even with the lowest tax of 140 pesos per LPA, there is a significant difference in collection. With quotas of 180 or 200 pesos per LPA, the revenue would have almost doubled in almost all years.

Table 4. *Collection with a fixed rate/liter of pure alcohol (millions of pesos).*

Pesos / Liter Pure Alcohol	SHCP actual collection	140	160	180	200
2018	53,604.4	76,730.6	87,692.2	98,653.7	109,615.2
2019	57,361.3	78,671.8	89,910.6	101,149.5	112,388.3
2020	52,312.0	71,058.0	81,209.1	91,360.3	101,511.4
2021	57,395.4	80,817.2	92,362.5	103,907.8	115,453.1
2022	68,049.8	86,220.3	98,537.5	110,854.7	123,171.9
2023	73,686.9	84,582.3	96,665.5	108,748.7	120,831.9

Source: Prepared by the authors based on figures from IWRS and SHCP.

The annual loss in IEPS revenue due to the Ad-Quantum system not being established is shown in Table 5. This is calculated by subtracting the revenue that would have been obtained with the Ad-Quantum system from the actual revenue obtained with the current Ad-Valorem system.

Table 5. *Loss of annual revenue for various fixed quotas
(millions of pesos).*

	Actual Collection SHCP	140	160	180	200
2018	53,604.35	23,126.30	34,087.82	45,049.34	56,010.86
2019	57,361.32	21,310.49	32,549.33	43,788.16	55,026.99
2020	52,312.04	18,745.96	28,897.10	39,048.24	49,199.38
2021	57,395.35	23,421.80	34,967.11	46,512.41	58,057.72
2022	68,049.77	18,170.58	30,487.77	42,804.96	55,122.15
2023	73,686.91	10,895.41	22,978.59	35,061.78	47,144.97
Total		115,670.53	183,967.71	252,264.89	320,562.07

Source: Prepared by the authors based on figures from IWRS and SHCP.

It is evident that the potential revenue lost amounts to around 50% of that collected with the lowest fixed fee of 140 pesos per LPA between 2018 and 2021, and around 100% of that which would have been collected with fees of 180 or 200 pesos per LPA. These figures are significant in terms of GDP and offer the advantage of increasing tax revenue without the need for tax reform. Table 6 shows these figures as a percentage of GDP for each year. With a rate of 160 or 170 pesos per LPA, revenue would practically double. With rates of 180 pesos or more, revenue would have more than doubled and an additional 1% of GDP would have been obtained during this period.

Table 6. *Increase in revenue from applying a fee per liter of pure alcohol
Percentage of average gdp for each year.*

	Collection made. SHCP	140	160	180	200
2018	0.22%	0.10%	0.14%	0.19%	0.23%
2019	0.23%	0.08%	0.13%	0.17%	0.22%
2020	0.22%	0.08%	0.12%	0.16%	0.20%
2021	0.22%	0.09%	0.13%	0.17%	0.22%
2022	0.23%	0.06%	0.10%	0.15%	0.19%
2023	0.23%	0.03%	0.07%	0.11%	0.15%
Total for the period 2018-2023		0.44%	0.70%	0.95%	1.21%

Source: Prepared by the authors based on figures from IWRS and SHCP.

IV. POTENTIAL FUTURE REVENUE COLLECTION: 2025-2028

Moving to a fixed quota and first-hand collection would significantly increase IEPS collection on alcohol, by more than one point of GDP in the projected period from 2025 to 2028 and by a much greater amount over the entire six-year period. Table 7 shows the potential revenue collection with various fixed quotas and conservative demand growth assumptions.

Table 6. *Total potential collection with fixed quota options*
Million pesos.

Year / Quota	140	160	170	180	200
2025	74,309	84,925	90,232	95,540	106,156
2026	76,615	87,560	93,032	98,505	109,450
2027	93,172	106,483	113,138	119,793	133,103
2028	95,581	109,236	116,063	122,890	136,545
Total for the period	339,818	388,363	412,636	436,908	485,454

Source: Prepared by the authors based on figures from IWRS and SHCP.

V. SOCIAL BENEFITS

The change to a fixed rate will make drinks containing sugarcane alcohol more expensive. This could lead to a change in consumption habits, with people opting for cheaper, lower-strength drinks such as beer. In this sense, the modification is highly progressive. It benefits the lowest income groups more than proportionally and achieves the original objective of the IEPS: to avoid excessive consumption. The lowest income groups are the main consumers of lower quality alcohol, which they may consume excessively given its very low price. Paradoxically, the IEPS charging system allows and induces this. Table 8 shows the distribution of potential revenue for a quota of 170 pesos per liter of pure alcohol, broken down by income decile and per drink. As can be seen, only the 10th decile (the group with the highest income) would contribute 27% of the total revenue, while the sum of the three highest deciles would contribute over 55%.

Table 8. *IEPS collection by decile and by beverage for 2028.*

Decile	Millions of pesos				Quota: 170		
	Wine	Beer	Sugar cane and mezcal drinks*	Distillates without sugarcane beverages ⁴	Prepared	Total	% Collection by decile
1	1.99	3,194.29	962.59	479.29	16.22	4,654.39	4%
2	2.77	4,790.49	336.47	280.53	38.08	5,448.33	5%
3	2.72	5,311.76	273.99	168.66	116.62	5,873.75	5%
4	29.40	6,095.64	231.51	181.11	656.16	7,193.83	6%
5	11.55	6,499.19	220.95	578.66	695.44	8,005.77	7%
6	28.35	8,268.61	677.99	582.44	742.35	10,299.74	9%
7	56.80	10,736.92	79.88	815.31	114.49	11,803.40	10%
8	197.91	11,165.14	216.59	1,792.34	443.28	13,815.27	12%
9	324.04	13,926.07	149.01	3,160.95	758.98	18,319.06	16%
10	1,902.95	17,948.30	812.03	7,738.74	2,247.63	30,649.64	26%
Total	2,558.49	87,936.41	3,961.00	15,778.03	5,829.25	116,063.18	100%

Source: Prepared by the authors based on figures from ENIGH and Inegi.

The first decile would contribute just under 4%, while the second and third deciles would contribute similar figures. This means that the first three deciles would contribute around 14% in total. In other words, the tenth decile alone would contribute almost double what the three lowest deciles would, which demonstrates the progressive nature of this new method of collecting the IEPS.

Given the observed increases in beer prices, an even higher quota of, for example, 170 pesos per liter of pure alcohol would increase demand for beer by making other, higher-alcohol-content drinks more expensive. If a fixed rate of, say, 140 pesos per liter of pure alcohol were applied, the price of 1,000 milliliters of the beverage that can currently be purchased for 60 pesos would increase to 95 pesos, a 57% increase. This would be equivalent to buying almost five beers, each with a tax of around 2.6 pesos and a reduced sales price of almost 6%.

In terms of pure alcohol consumption, a one-liter container of sugarcane-derived beverages contains 300 ml, assuming an alcohol content of 30%. Compared to an expenditure of 95 pesos on beer, the alcohol consumption would be significantly lower: even if 5 beers were consumed at the same price, only 80 milliliters would be consumed, around a quarter of what would be consumed for that value in liquor. This would reduce the current health damage caused to the population. The alcohol IEPS would fulfil its purpose.

⁴ The reason why the 10th decile appears with high consumption of sugarcane drinks and mezcal is because the ENIGH continues to group these two drinks, due to a historical tradition, under the same label: mezcal. It still classifies mezcal as a cheap drink, as it was before, although the situation of mezcal has changed radically recently.

ARE EXCISE TAXES REGRESSIVE?

One of the specific objectives of excise taxes is to protect the population, particularly low-income groups, by discouraging consumption of harmful products that are affordable for low-income households due to their low price or production cost and poor nutritional or harmful quality. In this sense, the tax effectively makes these products more expensive, which is its purpose, despite it frequently being wrongly described as regressive, since it aims to reduce consumption of cheap, harmful and poor-quality goods among lower-income groups. In other words, the tax aims to protect lower-income groups from the harm caused by consuming these goods, which are in high demand due to their low price. In this sense, an excise tax may appear regressive, but it is actually humanitarian and progressive. It improves the quality of consumption for lower-income groups disproportionately.

Excise taxes generally work. For example, increased excise taxes on tobacco have been correlated with a decrease in smoking rates, and changes in consumption patterns have also been observed for alcoholic beverages and high-calorie food. However, Mexico's ad valorem tax system for alcoholic beverages paradoxically encourages the consumption of the most harmful beverages.

CONCLUSIONS AND RECOMMENDATIONS

In this paper, we measured alcohol consumption in Mexico from 2018 to 2023. Despite atypical demand during the pandemic in 2020 and 2021, the collected and presented data is highly useful for estimating the effect on tax revenues in the event of a change to the ad quantum system, and its regressive consequences were also tested. We use the example of Mexico to propose a change in system, namely the adoption of the ad-quantum system instead of the ad valorem system. This is due to the many advantages and benefits of the ad-quantum system, which are explained in detail. Furthermore, evidence from organizations and institutions worldwide provides a solid basis for advocating a change to the current IEPS system and moving from an ad valorem to an ad quantum system, given its potential positive effects on health and revenue collection. In the ad-quantum system, tax can be levied directly from importers and producers, substantially reducing the number of intermediaries and providing a much more effective collection system than collecting from and auditing hundreds of thousands of retailers.

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