The Mexican Tax on Alcoholic Beverages: Reasons to Change It[*]

Impuestos sobre las bebidas alcohólicas: Razón para cambiarlas

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Abstract[1]

Excessive consumption of alcoholic beverages causes addiction, damages people's health and has disrupting social and family consequences. Given that, many countries impose other taxes on these products in addition to sales tax. The ways these taxes are applied varies, though they are based on two basic principles: Ad-Valorem[2] or Ad-Quantum.[3] In the case of Mexico, the Special Tax on Production and Services (ieps, Spanish initials) for alcoholic beverages is based on an Ad-Valorem system with different quotas according to alcoholic content, thus combining the two principles. However, with this system, lower quality beverages with high degrees of alcohol are among the cheapest on the market, curtailing the objective of the tax. We have tested the change to the Ad-Quantum system, to measure government revenues and regressive effects. Our findings indicate that tax collection would increase with no regressive effects.

Keywords: Tax, alcoholic beverages, Ad-Quantum system, health risks, tax collection
jel classification: H21, H23, H31, I12, I14, I39

Resumen

El consumo excesivo de bebidas alcohólicas genera adicción, daña la salud de las personas y tiene graves consecuencias sociales y familiares. Por ello, en muchos países se gravan estos productos con impuestos adicionales. La forma en que se aplican estos impuestos difiere, sin embargo, todos se basan en dos principios básicos: Ad-Valorem o Ad-Quantum. En el caso de México, el Impuesto Especial sobre Producción y Servicios (ieps) para las bebidas alcohólicas se fundamenta en un sistema Ad-Valorem con distintas cuotas basadas en el contenido alcohólico. En este sentido, combinan los dos principios. Sin embargo, las bebidas de menor calidad y con alto contenido alcohólico, con este sistema, se encuentran entre las más económicas del mercado, quebrantando el objetivo del impuesto. Los resultados de nuestra investigación en el cambio al sistema Ad-Quantum, muestran un incremento en la recaudación, sin efectos regresivos.

Palabras clave: Impuestos, bebidas alcohólicas, Sistema cuántico, riesgo de salud, recaudación fiscal.
Clasificación jel: H21, H23, H31, I12, I14, I39.

A BRIEF LITERATURE REVIEW

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.

Under international law, the health of the population and the right to health are the responsibility of all States, including the Mexican State (United Nations, UN, 1993) (González Delgado, 2014), confirmed by the modifications made in the Political Constitution of Mexico of 1914, in which a series of articles were reformed to give international human rights treaties a constitutional status. The UN Committee on Economic, Social and Cultural Rights issued General Comment 14 (United Nations, UN, 2001), which specifies the right to enjoy the "highest possible level of physical and mental health." This implies that the right to health is no longer limited to health care but to virtually all determinants of health, including living and working conditions.[4]

In Mexico, various efforts to guarantee the right to health were strengthened in 1983 with the reform of the 4th constitutional article, which included the right to health protection in addition to the right to health. Furthermore, in accordance with the responsibility that emanates under international law, the reference to the "highest attainable level of physical and mental health" encompasses not only the right to health care but also a broad set of satisfiers that allow for a healthy life and implies active participation of the State in any of the aspects that could affect the level of physical and mental health and well-being of families, including achieving and preserving equal opportunities.

In this sense, in the case of health damage derived from excessive consumption of alcoholic beverages, the State has both the capacity and obligation to solve it. Excessive alcohol consumption has a series of detrimental effects on society, from the deterioration of consumers' health, destruction of the household economy, increase in vulnerability to poverty, to negative effects on equality and equal opportunities. Thus, the State must determine the necessary mechanisms to avoid excessive alcohol consumption and resolve the regressiveness involved in it, in many different aspects, such as reduction of human rights and deterioration in family income and spending.

The need for state intervention in markets is fundamental, both for distributive reasons and because of monopolistic or oligopolistic imperfections in them, as well as existing asymmetric information. One mechanism to resolve negative externalities is the use of ad-hoc taxes, such as the Pigouvian tax.

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[4] This right, therefore, is "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).

The application of a tax on alcoholic beverages different from the Value-Added Tax is based on the ideas of Arthur Pigou, who in 1920 published "The Economics of Welfare," where he outlined his vision of economics as a toolkit for improving the lives of the poor. In this book, he developed Marshall's concept of negative externalities and argued that they should be offset by a tax. This type of intervention is now known as a Pigouvian tax.

A Pigouvian tax can be imposed on different economic activities that generate negative externalities such as environmental pollution, harmful substances (tobacco and alcohol) and traffic. The idea is that the costs from harmful externalities are not considered in the final cost of a product or service.

The main objective of Pigouvian taxation is to contribute to the correction of negative externalities by different means, from reducing the production and/or consumption of those goods and services to collecting financial resources to cover the damages they cause society.

In the case of taxes on alcoholic beverages, there is wide evidence. To begin with, it is important to mention a couple of positive economic arguments for taxing alcohol. The first is that the damage caused by alcohol consumption tends not to be included in the sale prices, and applying taxes on these products can help to correct the health effects that they can cause. The second is that governments can allocate a part of the income collected by taxes on alcoholic beverages to actions related to controlling excessive alcohol consumption and counteracting the damage caused in the population. Research on the subject not only addresses the importance of applying taxes on those kinds of beverages but also establishes two different systems to do it, the Ad-Valorem and the Ad-Quantum systems.

In this paper, we measured alcohol consumption in Mexico for the year 2019 (2020 and 2021 have been shown to be atypical, the first due to the pandemic close-down and the second because of a strong rebound) and then calculated the effect on tax revenues in the case of a change to Ad-Quantum and also tested for regressive consequences. We take Mexico's case to propose a change of system, that is, to use the Ad-Quantum system instead of the Ad-Valorem system. The reason is the many advantages and benefits of the Ad-Quantum system, which are explained. In addition, the existing evidence that comes from organizations and institutions throughout the world provides a solid foundation on which to propose a change in the current IEPS system, to move from an Ad-Valorem to an Ad-Quantum system, given the positive effects that it can have in terms of health and collection.

Among the organizations that support the use of an Ad-Quantum system to tax beverages with alcoholic content is the World Health Organization (WHO, 2006, 2010), which 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-Quantum taxation is the most effective system to avoid difficulties in determining the taxable value related to the stage of production or distribution in which taxes must be applied to alcoholic beverages.

Furthermore, the Organization for Economic Cooperation and Development (OECD) highlights that 33 of the 37 countries that belong to the organization use an Ad-Quantum system to tax beverages with alcoholic content or a combination of the two systems, Ad-Quantum and Ad-Valorem.

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

Likewise, in East Asia, alcoholic beverages are subject to Ad-Quantum taxes, and in some cases to a combination of Ad-Valorem and Ad-Quantum systems. Given this, the rates calculated on the volume of alcohol in the product mean that beverages with higher alcohol content, such as *aguardiente*, pay a higher tax per liter.

To sum up, it is fundamental to mention that the theoretical and empirical evidence described was an important support for this approach and research, where the research question is:

Does Mexico require modernization of the IEPS on alcoholic beverages?

Hypothesis

The Ad-Valorem system used today to tax beverages with alcoholic content in Mexico does not meet its objective, since even when Ad-Valorem is applied, the cheaper and lower quality beverages such as *aguardiente* (cane alcohol products), produced at extremely low costs, continue to be extremely cheap, having precisely the opposite of the desired effect. In fact, rather than inhibit consumption of alcoholic beverages, Ad-Valorem actually benefits the most harmful and lowest quality products, since it taxes the drink value and not the quantity of alcohol. Thus, changing the system to Ad-Quantum, which taxes the alcoholic content, is proposed. Three important findings were made. First, 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. Second, changing to an Ad-Quantum system allows for an increase in tax collection, provided that a fee greater than 106 pesos per liter of pure alcohol, the amount currently charged through the Ad-Valorem system, is applied. And last of all, given consumption patterns, the main source of the new tax will be high-income deciles, thus proving the progressivity of the system, even without taking into account the more important social and family consequences.

PART I. WHY THE CURRENT IEPS IS NOT
ACHIEVING ITS OBJECTIVE

I. TAXES APPLICABLE TO BEVERAGES WITH ALCOHOLIC CONTENT

In Mexico, two taxes comprise the fiscal burden on beverages with alcoholic content: the Special Tax on Production and Services (IEPS, Spanish initials) and the Value Added Tax (VAT). The Ad-Valorem system is used in both cases, the difference being the applicable rates for each tax.

Art. 2 of the IEPS Law establishes that to calculate the applicable rate, the degree of alcohol contained in the drink must be considered.

Alcohol content up to 14º G. L. **26.5%**	Alcohol content of more than 14º and up to 20º G. L. **30%**	Alcohol content of more than 20º G. L. **53%**

In the case of VAT, the single rate of 16%[5] is applied to the value of the product plus the corresponding amount for IEPS. In other words, the IEPS is part of the VAT taxable base. Given the above, we have:

Table 1. *Total Tax Burden[6] on Beverages with Alcoholic Content*

Alcohol Content	IEPS Rate (%)	Applicable Rate	Applicable Rate for VAT	Total Tax Burden (%)
Up to 14º G.L.	26.5	1.265		46.74
More than 14º and up to 20º G. L.	30.0	1.30	1.16	50.8
More than 20º G. L.	53.0	1.53		77.48

Source: Own elaboration based on SHCP, 2020.

I.1. *Contribution of the Tax on Beverages with Alcoholic Content in IEPS Collection[7]*

IEPS is divided into Oil IEPS and Non-Oil IEPS. The tax applied to beverages with alcoholic content is included in the latter, along with taxes on other products. In

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[5] With the exception of the Border Zone in the north of the country, where the applicable VAT rate is 8%.

[6] The total tax burden results from applying VAT at the IEPS Ad-Valorem rate.

[7] (Secretaría de Hacienda y Crédito Público, SHCP, 2019-2020), (Secretaría de Hacienda y Crédito Público, SHCP, 2019-2020) y (Servicio de Administración Tributaria, SAT, 2019).

the period studied, the collection structure for Non-Oil ieps has been formed as follows:

Table 2. *Structure of Non-Oil ieps Collection in the Years Presented*

Product	2019 % of Total Raised	2020 % of Total Raised
Tobacco	26.1	27.2
Alcoholic beverages (except beer)	9.5	10.8
Beer	25.7	21.7
Soft drinks	16.7	17.9
Non-staple foods	13.1	13.1
Others	8.9	9.3

Source: Own elaboration based on shcp, Federal Government Budget Revenues, 2019 and 2020.

I.2. *ieps Collection on Beverages with Alcoholic Content*

Collection of ieps on beverages with alcoholic content in the Non-Oil ieps structure has represented close to 33% in recent years, in other words a third of the total of this ieps subdivision. If we classify beverages with alcoholic content by "Beer" and "Other Beverages", we find that the former has represented around 23% of Non-Oil ieps, while the latter has contributed close to 10%.

In 2019, 57 billion 361.3 million pesos were collected. However, due to the health crisis, ieps collection on alcoholic beverages fell 8.8% in 2020, with, 52 billion 312.1 million pesos obtained in absolute terms.

As for ieps on beer, while it was $41,851.5 pesos in 2019, it reflected a 19.2% drop in 2020 compared to the previous year, which was equivalent to 6 billion 894.1 million pesos. ieps on beverages other than beer was $15,509.8 pesos in 2019. In 2020, these beverages registered a growth of 8.2% compared to 2019, which meant 1 billion 844.9 million pesos in absolute terms.

On the other hand, since the shcp does not break ieps collection down by type of beverage, Table 3 presents an estimate based on information compiled by iwsr (2019). The information refers to total consumption of each type of beverage, so these data are taken as a basis for obtaining the amount corresponding to ieps. The data corresponds to the 2019 financial year, since when this study took place, the closing numbers for 2020 were not yet available.

In a review of all beverages with alcoholic content, it is important to highlight that of total ieps collected, more than 70% corresponds to beer and the rest to other beverages, which reveals the importance of beer consumption in the domestic market.

Table 3. *(Millions of pesos)*

Category	IEPS Collection 2019
Beer	41,851.5
Wine	1,509.3
Spirits	13,110.5
Mixed Drinks	890.0
Total	57,361.3

Source: Own elaboration based on IWSR, 2019.

II. PROPOSAL TO MODIFY TAXATION AND TAX ACCORDING TO ALCOHOL CONTENT

II.1. *Proposal Summary*

The proposal consists of changing the system that is used to collect IEPS on beverages with alcoholic content. It concerns moving from an Ad-Valorem to an Ad-Quantum system so as to tax the amount of pure alcohol contained in beverages. For this, a single quota applicable to the alcohol content in each drink would be established for any and all categories of alcoholic beverages. An example of the advantage of using this system is shown below.

If the fee were set at $140 pesos per liter of pure alcohol, for example on *aguardiente*,[8] which has an average alcohol content of 28° in a 750 ml bottle, the tax to be paid would be calculated as follows:

$$\$140 \text{ x } 0.28 \text{ x } 0.750 = \$29.40$$

If the price before taxes of this drink is an average of $25.35 pesos, in total you would be paying around $63.52 pesos with VAT included, almost $20 pesos more if we consider that this drink currently sells for about $45 pesos.

This example shows that the Ad-Quantum system fulfills the objective of discouraging harmful consumption of alcohol, since it taxes the degrees of pure alcohol contained in a drink, which are what ultimately increase health risks.

The benefits of making this change in the way beverages with alcoholic content are taxed are divided into health and government collection.

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[8] Cane based drinks and other low-quality beverages.

The health benefits of this change would be:

1. Responsible consumption is promoted: the higher the alcohol content in the drink, the more you pay.
2. Distortions are eliminated: low-priced, high-alcohol content beverages would no longer encourage harmful consumption by being highly affordable by the most vulnerable population.
3. Lower alcohol content in beverages is promoted: by taxing alcohol content, the manufacture of beverages with higher alcohol content can be discouraged and the production of better-quality products promoted.
4. Potential to reduce the social and health burdens caused by alcohol consumption is maximized.

The benefits in terms of collection would be:

1. Increased collection: from 15 to 25 billion pesos. Added to this is the reduction of evasion and illegality of 8 billion 500 million.
2. Collection and control are simplified: all the information is on the label or analysis certificate. The amount of alcohol that would be taxed would be based on volume and alcoholic content, information controlled by the Health Sector through Cofepris and Profeco.
3. Difficult evasion: undervaluation is eliminated, since invoice value is not required.

II.2. *Ad-Quantum: A Detail of the New System*

As previously mentioned, ieps is currently taxed through an Ad-Valorem system, so rates are applied to the price of each drink, and the amount of alcohol contained in beverages is not taxed.

In Mexico this leads to easy access to beverages with high alcohol contents, ranging from 20° to 55°, at a very low price. This makes low quality alcoholic beverages that are highly dangerous to health available to youth, low-income people and addicts. An example of this is *aguardiente*, with 28° alcohol content, a 750 ml-bottle of which can be purchased for $45.00 pesos, and another more serious example is 960 ml drinks that are available for less than $20.00 pesos.

Evidently, ieps taxation on these beverages does not fulfill its purpose and has the regressive effect of promoting consumption of lower-quality alcohol by lower-income groups, as we prove in the following pages. In this sense, the current tax is strongly regressive.

Considering this, the importance of proposing a change in the way in which alcoholic beverages are taxed, which consists of moving from an Ad-Valorem to an Ad-Quantum system, is highlighted. The most relevant differences between the Ad-Valorem system and the Ad-Quantum system are presented.

Table 4. *Differences between Ad-Valorem and Ad-Quantum*

Ad-Valorem	Ad-Quantum
It does not tax the amount of alcohol that is sold and consumed.	It taxes the amount of alcohol that is sold and consumed.
It ignores the amount of alcohol in drinks.	A single rate per amount of alcohol is applied to all categories of alcoholic beverages.
It favors the sale of low-cost, high-alcohol beverages.	The argument that it is taxed progressively is already achieved by VAT, since import tax, sales tax and state taxes are levied on the value.
It does not combat excessive alcohol consumption.	It achieves the fundamental IEPS objective that Ad-Valorem ignores.

Source: Own elaboration

In addition, given government restrictions and principles, system modification can be carried out immediately, considering that:

- The tax rate is not increased.
- A new tax is not created.
- The collection system is modernized.
- Revenue is increased without a tax reform.

PART 2. PROGRESSIVITY OF IEPS MODERNIZATION
WHO DRINKS WHAT AND HOW MUCH CONTRIBUTES?

III. ANALYSIS OF CONSUMPTION BY INCOME STRATUM AND BY BEVERAGE TYPE

By analyzing household spending on alcohol by income deciles, it is possible to identify how much each decile consumes (spends) of each type of beverage with alcoholic content.

To begin with, it is important to define deciles. Households divided by deciles are data grouped into subsets of equal size, 10% of the total population each, in ascending income order. Thus, the first decile corresponds to the 10% of families or population with the lowest income and the tenth decile to the 10% with the highest income.

According to the 2018 National Household Income and Expenditure Survey (enigh, Spanish initials) of the inegi, total consumption of alcohol in households was 3,322,909,129 pesos, which does not necessarily represent the real figure, for various reasons, among others, that people tend to underreport spending on these beverages. However, the consumption structure by decile is valid, given the inegi survey methodology.

Derived from the same survey, alcohol consumption is obtained as a percentage of income, which indicates that the lower income deciles assign a higher percentage to alcohol consumption. It is worth noting that while the 10th decile allocates only 1.7% of its income, the 1st decile allocates 13.4%. It must be borne in mind that the income of the 10th decile is greatly underestimated, as has been shown by studies that have been adjusted by figures from the sat (Servicio de Administración Tributaria, Esquivel, 2015)[9] of the Ministry of Finance. Bearing this adjustment in mind, it can be inferred that for decile 10, the percentage is actually much less than 1.0%.

Following the subdivision of beverages with alcoholic content, we can point out that the highest consumption of alcohol in households is represented by beer, with 76.2%, and the remaining 23.8% is divided among other beverages with alcoholic content.

Table 5. *Alcohol Consumption*

Concept	In Current Pesos	Percentage
Beer	2,531,051,130	76.2%
Other drinks	791,857,999	23.8%
Total	3,322,909,129	100.0%

Source: Own elaboration based on inegi, National Household Income and Expenditure Survey (enigh), 2018.

III.1. *Of Total Consumption for Each Drink, Who Consumes What?*

Some Specific Conclusions on Consumption Distribution by Decile for Each Beverage Type

Regarding consumption by the 10th decile, the 10% of the population with the highest income, we can note the following:

- The 10th decile is by far the main consumer of all beverages, with the sole exception of *aguardiente* (cane-based drinks and other low-quality beverages) (Table 6).

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9   See, in others, Gerardo Esquivel (2015), Extreme inequality in Mexico, Oxford Committee for Famine Relief (Oxfam), Mexico.

- The beverage that this decile consumes the least is *aguardiente*, a product of cane alcohol, without a doubt the cheapest of the beverages with high ethanol content.
- This decile consumes more than 50% of the total wine, distillates, and even "other drinks".
- In particular, it should be noted that this same decile consumes almost 90% of the wine in the country and represents almost a quarter of total beer consumption.

Looking at the lowest income decile, decile 1, we find that:

- This decile has the second highest consumption in the *aguardiente* category, with 14.5% of its total consumption. It is worth noting that the Ad-Valorem tax does not inhibit consumption of this product with high ethanol content, 28°, because its production cost is so low that when the tax is applied, its sale price remains the lowest in the market. Hence the importance of taxing alcohol content. It should be noted that almost half of the consumption of this beverage is encompassed by the first five deciles and 85.5% by deciles 1 to 7.
- Of total consumption of wine, distillates and mixed drinks, their consumption does not even reach 1% in any of the three cases.
- Regarding beer consumption, this group only represents 3% of the total consumed, this being the lowest figure among the rest of the deciles.

Table 6. *Total Consumption of Each Beverage by Decile*
(Percentage)

Deciles	Wine	Beer	*Aguardiente*	Spirits	Mixed Drinks	Other	Total
1	0.2	3.0	14.5	0.6	0.0	4.8	2.6
2	0.7	4.9	6.2	3.0	1.0	7.1	4.3
3	0.4	6.0	6.1	1.4	8.6	1.6	4.9
4	0.6	7.9	10.5	4.9	9.5	2.7	6.8
5	0.3	8.8	9.3	4.5	11.9	2.4	7.5
6	0.4	9.5	3.3	10.7	11.6	7.3	8.7
7	2.3	10.5	35.7	8.0	3.3	3.0	9.6
8	2.6	11.5	0.6	2.5	18.6	5.4	9.5
9	3.1	14.2	9.4	9.1	13.3	5.3	12.3
10	89.4	23.7	4.5	55.1	22.3	60.5	33.8
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Own elaboration based on INEGI, National Household Income and Expenditure Survey, 2018.

III.2. *Of Total Alcohol Consumption per Decile, What Beverages Do They Consume?*

Table 7 shows consumption preferences by decile, that is, the percentage that each decile assigns to each type of beverage, of the total consumed. The following comments result from this structure:

- In general terms, it can be said that consumption preferences for beverages with 90% ethanol content are similar among the Mexican population, as can be seen in Table 7. Again, decile 10 is the only one showing a different spending distribution.
- As can be seen, beer is the most preferred drink of all deciles. With very similar figures in 90% of the population, allocating an average of 88% of their spending to this drink. The 10th decile is the exception with 53%, however this figure represents more than half of their spending.
- By far, decile 1, the lowest income stratum, chooses beer as its main drink, allocating 87% of its total spending to this drink. However, this barely represents 3% of total beer consumption. The second most consumed beverage by this decile is *aguardiente*.
- Unlike decile 1, deciles 2 to 9 have distillates other than *aguardiente* as their second preferred beverage. This may suggest that higher incomes prefer beverages of better quality and perceived qualities.
- Regarding decile 10, its consumption preference structure shows beer in first place, followed by wine and spirits.

Table 7. *Consumption Structure by Decile*
(Percentage)

Deciles	Wine	Beer	*Aguardiente*	Spirits	Mixed Drinks	Other	Total
1	0.7	87.1	7.2	2.5	0.0	2.4	100
2	1.7	86.4	1.9	7.6	0.1	2.2	100
3	0.8	93.1	1.6	3.1	0.9	0.4	100
4	0.8	88.3	2.0	7.7	0.7	0.5	100
5	0.4	90.3	1.6	6.5	0.8	0.4	100
6	0.5	83.9	0.5	13.3	0.7	1.1	100
7	2.4	83.3	4.8	8.9	0.2	0.4	100
8	2.7	92.5	0.1	2.9	1.0	0.8	100
9	2.5	87.5	1.0	7.9	0.6	0.6	100
10	26.4	53.3	0.2	17.4	0.4	2.4	100

Source: Own elaboration based on inegi, National Household Income and Expenditure Survey, 2018.

IV. WHO PAYS IEPS ON ALCOHOLIC BEVERAGES?

Contribution to the payment of taxes applicable to beverages with alcoholic content allows us to know which deciles bear the greatest part of the tax burden.

IV.1. *Contribution to IEPS Collection by Income Stratum and by Beverage Type*

To find out about contribution to IEPS collection on beer according to the deciles ordered by per capita income classified by households and by population, data from the Ministry of Finance and Public Credit (SHCP) corresponding to 2018 are used. According to the figures, we can say that the greatest contribution comes from the highest income deciles. Only the 10th decile contributes a third to the payment of IEPS on beer. With the 8th and 9th added to it, they represent just over 65%. The decile that contributes the least is decile 1, with only 1.1%, and the sum of the first three deciles barely reaches 4.9% of the total collected on this beverage.

Table 8. *Percentage Contribution to the Collection of IEPS on Beer*
Deciles Ordered by Per Capita Income

Income Decile		Households
Beer	1	1.1
	2	1.4
	3	2.4
	4	5.0
	5	5.1
	6	9.0
	7	11.1
	8	17.3
	9	17.6
	10	30.1
	Total	**100**

Source: SHCP, Distribution of tax payments and receipt of public spending by household deciles, 2018.

For the rest of the beverages, divided into "wine", "distilled spirits" and "mixed beverages," IWSR information is used. In general terms, it stands out that in the three categories the greatest participation in IEPS collection comes from the 10th decile, while the lowest contribution is found in the first three deciles (Table 9). Regarding wine, we observe that only the 10th decile represents 86% of total collection on it. Similarly, if we look at the last four deciles, it is found that together

they encompass 94.7% of the collection. Deciles 1 to 6 barely contribute the remaining 5.3%, with deciles 3 and 5 contributing the least, both with a marginal share of 0.5%.

Of distillates, it is highlighted that the 10th decile contributes 49.7% of what is collected by IEPS on these beverages. Another 30% of the collection is found among deciles 6, 7 and 9, which contribute 9.9%, 11% and 9.1%, respectively. The remaining 20.3% is distributed among the other deciles; the decile that contributes the least is decile 3, with a 1.9% contribution.

In the case of mixed beverages, even though again the 10th decile contributes the most, with 22.3%, distribution is more evenly divided among the deciles; for example, the 8th decile represents 18.6% and the 9th 13.3%. The decile that contributes the least is decile 2, with only 1%, while decile 1 does not contribute at all.

Table 9. *Percentage of Contribution to IEPS Collection by Beverage Type*
Deciles Ordered by Per Capita Income

Decile	Wine	Spirits	Mixed Drinks
1	0.7	2.1	0.0
2	1.5	3.4	1.0
3	0.5	1.9	8.6
4	0.8	5.5	9.5
5	0.5	5.0	11.9
6	1.2	9.9	11.6
7	2.4	11.0	3.3
8	2.9	2.3	18.6
9	3.4	9.1	13.3
10	86.0	49.7	22.3
Total	**100**	**100**	**100**

Source: Own elaboration based on INEGI, National Household Income and Expenditure Survey, 2018.

The foregoing shows that if an adjustment is made to the way in which IEPS is collected going from Ad-Valorem to Ad-Quantum, as proposed, and consequently there is an increase in the amount that is paid, more than half would be covered by the highest deciles, especially by the 10th.

The latter is fundamental, since it proves that if a change were made in the way of taxing beverages with alcoholic content, there would be no regressivity. On the contrary, more would be collected from the higher income groups. The amounts collected by this tax would be higher than current ones and could contribute to inhibiting consumption of the most harmful beverages by lower-income groups, making it a progressive policy.

PART 3. PROGRESSIVE EFFECTS
ON DISTRIBUTION AND HEALTH

V. PRICES AND COLLECTION: SCENARIOS AND SIMULATIONS

V.1. *Effects on Taxation Due to a Change to the Ad-Quantum System*

One of the most important objectives of this research is to find out the possible consequences of a system change in the different income strata, in order to verify a progressive impact and rule out the argument of a regressive one.

The matrices presented result from having converted the total consumption of beverages with ethylic content to liters of pure alcohol. This was achieved with the consumption of beverages, their degrees of alcohol and the percentage structure of consumption of each decile by type of beverage. Thus, the liters of pure alcohol consumed per decile and per drink were obtained (see Table 10), which allows collection to be calculated with a specific quota by multiplying the liters of pure alcohol of each stratum for each drink.

Table 10. *Thousands of Liters of Pure Alcohol per Decile and per Drink, 2019*

Deciles	Wine	Beer	Spirits	Mixed Drinks	Total
1	91.6	11,463.7	2,467.4	–	14,022.68
2	187.8	18,973.8	3,979.1	68.8	23,209.45
3	66.4	23,821.9	2,293.0	563.1	26,744.40
4	101.7	29,906.2	6,465.8	626.2	37,099.93
5	69.4	33,741.0	5,895.5	781.6	40,487.42
6	154.8	34,362.8	11,693.1	761.6	46,972.28
7	303.9	38,670.0	12,903.3	218.3	52,095.41
8	368.0	47,218.6	2,754.1	1,223.8	51,564.55
9	424.0	54,913.6	10,751.0	872.5	66,961.19
10	10,860.8	112,805.9	58,404.8	1,467.3	183,538.72
Total	**12,628.4**	**405,877.5**	**117,607.0**	**6,583.2**	**542,696.05**

Source: Own elaboration based on IWSR (2019), INEGI (ENIGH, 2018) and SAT (2019).

Table 11 shows collection of the IEPS tax on alcoholic beverages based on the Ad-Valorem system for the year 2019.

Table 11. *(Thousands of pesos)*

Collection with Ad-Valorem System					
Deciles	**Wine**	**Beer**	**Spirits**	**Mixed Drinks**	**Total Collection by Decile**
1	11,249.31	1,152,514.76	292,854.91	–	1,456,618.98
2	23,062.43	1,907,553.06	472,272.84	10,935.05	2,413,823.38
3	8,160.11	2,394,964.32	272,152.46	89,475.70	2,764,752.59
4	12,496.21	3,006,655.33	767,414.95	99,512.35	3,886,078.84
5	8,524.19	3,392,188.17	699,724.06	124,203.90	4,224,640.33
6	19,019.38	3,454,703.91	1,387,838.25	121,018.64	4,982,580.19
7	37,325.45	3,887,730.50	1,531,472.56	34,692.14	5,491,220.66
8	45,207.09	4,747,182.00	326,875.45	194,474.07	5,313,738.59
9	52,079.44	5,520,808.44	1,276,028.35	138,650.16	6,987,566.37
10	1,334,050.78	11,341,078.77	6,931,991.77	233,158.73	19,840,280.06
Total Collection per Drink	**1,551,174.38**	**40,805,379.26**	**13,958,625.62**	**1,046,120.74**	**57,361,300.00**

Source: Own elaboration based on IWSR (2019), INEGI (ENIGH, 2018) and SAT (2019)+

It is important to point out that IEPS collection for the year 2019 was $57 billion 361.3 million pesos, and given that 542 billion 7[10] million liters of pure alcohol were consumed, simple division shows that what was collected is equivalent to having applied a fixed fee of almost 106 pesos per liter of pure alcohol. Clearly, with higher quotas the collection would increase. As an example, Table 12 shows the resulting collection matrix if the proposed system had been used, with a fee of 140 pesos per liter of pure alcohol consumed.

Table 12. *(Thousands of pesos)*

Collection with the Ad-Quantum System and a Fee of $140					
Deciles	**Wine**	**Beer**	**Spirits**	**Mixed Drinks**	**Total Collection by Decile**
1	12,821.58	1,604,915.30	345,438.64	–	1,963,175.52
2	26,285.76	2,656,331.36	557,072.06	9,633.90	3,249,323.08
3	9,300.61	3,335,067.81	321,018.95	78,829.12	3,744,216.48
4	14,242.75	4,186,867.97	905,208.57	87,671.52	5,193,990.81
5	9,715.58	4,723,735.33	825,363.41	109,425.06	5,668,239.38
6	21,677.64	4,810,790.59	1,637,032.32	106,618.81	6,576,119.36
7	42,542.27	5,413,794.58	1,806,456.97	30,564.17	7,293,357.99
8	51,525.49	6,610,609.49	385,567.75	171,333.87	7,219,036.60
9	59,358.35	7,687,910.15	1,505,146.32	122,152.37	9,374,567.20
10	1,520,505.27	15,792,831.00	8,176,669.41	205,415.51	25,695,421.19
Total Collection per Drink	**1,767,975.30**	**56,822,853.59**	**16,464,974.40**	**921,644.33**	**75,977,447.62**

Source: Own elaboration based on IWSR (2019), INEGI (ENIGH, 2018) and SAT (2019).

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[10] Data from IWSR (2019).

It is important to note that when applying a fixed quota, whatever it may be, the contribution to collection is progressive, since the contribution of the higher income deciles grows more than that of the lower income deciles. For example, with a fee of $140 pesos, decile 10 would contribute an additional 5 billion 855 million pesos, while decile 1 would only contribute 506 million. It is evident that consumption taxes, such as this one in particular, imply an additional expense for families, although it is clearly progressive, and in the case of alcoholic beverage consumption, that is precisely the objective.

The progressivity of Ad-Quantum must not only be considered with respect to tax burdens by deciles but also in terms of the more than proportional effect on the health of the lower-income deciles. They have more deficiencies, and health problems inevitably mean loss of income, worsening their economic situation and increasing costs in daily life, since in Mexico, their health service coverage is also minimal.

V.2. *Additional Collection Contribution from Changing to the Ad-Quantum System, by Income Deciles*

The following table shows the difference in contribution of income deciles by beverage type for a quota of $140.00 pesos.

- Collection is higher than that produced by the Ad-Valorem system, as mentioned, for any fixed fee over $106 pesos.
- Thus, for a 140-peso fee, the increase would have been $18,616,147.62, and if the fee were $160 pesos per liter of pure alcohol, the collection increase would have been $29,470,068.70.
- As seen in Table 13, collection increases for all beverages except for mixed beverages, which show a reduction.
- This reduction is because the amount of alcohol in mixed drinks is similar to that of beer, but at a higher price than beer, so that in the Ad-Valorem system, when the quota on pure alcohol is applied, its contribution is similar to that of beer.
- Regarding additional revenue distribution, it can be seen that the highest tax burden occurs in the higher income deciles. Comparing the contribution of decile 10 with that of decile 1, the former is 11.6 times greater. Progressivity in the new system is evident.

Table 13. *(Thousands of pesos)*

		Collection Differences between the Ad-Quantum System with $140 and Ad-Valorem			
Deciles	**Wine**	**Beer**	**Spirits**	**Mixed Drinks**	**Total Change in Revenue by Decile**
1	1,572.27	452,400.54	52,583.73	−	506,556.53
2	3,223.34	748,778.29	84,799.21	−1,301.15	835,499.70
3	1,140.50	940,103.49	48,866.49	−10,646.59	979,463.89
4	1,746.54	1,180,212.64	137,793.62	−11,840.83	1,307,911.97
5	1,191.39	1,331,547.16	125,639.34	−14,778.85	1,443,599.05
6	2,658.26	1,356,086.68	249,194.07	−14,399.84	1,593,539.17
7	5,216.82	1,526,064.08	274,984.41	−4,127.97	1,802,137.33
8	6,318.40	1,863,427.50	58,692.30	−23,140.19	1,905,298.01
9	7,278.92	2,167,101.72	229,117.98	−16,497.78	2,387,000.83
10	186,454.49	4,451,752.23	1,244,677.64	−27,743.23	5,855,141.14
Total Change in Revenue Per Beverage	**216,800.92**	**16,017,474.33**	**2,506,348.78**	**−124,476.42**	**18,616,147.62**

Source: Own elaboration based on iwsr (2019), inegi (enigh, 2018) and sat (2019).

VI. CONCLUSIONS AND RECOMMENDATIONS

VI.1. *Health*

1. By adopting the Ad-Quantum system, ieps achieves the objective of its creation, taxing the amount of alcohol consumed. In this sense, it solves the inefficiency of the Ad-Valorem system that ignores the amount of alcohol consumed by enabling consumption of excessively cheap drinks with high ethylic contents.

2. The Ad-Quantum system involves a change in relative prices, making some drinks more expensive than others. Those with higher alcohol contents, very low quality and excessively low prices will lose competitiveness and in principle will be consumed less and replaced by beer or higher quality and less harmful drinks, whose prices might even be lower.

VI.2. *Consumption*

1. Regarding total spending on beverages with ethyl content, the lowest income deciles allocate a high proportion of their income. The 10th decile allocates only 1.7% of its income, whereas the 1st decile allocates up to 13.4%.

2. The highest alcohol consumption in homes is represented by beer, with 76.2%, and the remaining 23.8% is divided among other alcoholic beverages. Ninety percent of the population allocates an average of 88% of their spending on alcohol to the purchase of beer. The 10th decile is the exception, with 53%; however it is still more than half of their spending.

3. Liquor consumption for decile 1, the lowest income decile, is high, as the liquor that is consumed, fundamentally cane alcohol, is the cheapest drink on the market. It can cost less than 20 pesos for almost a liter. Obviously, the quality of this drink is the lowest and most harmful on the market. The Ad-Quantum system could reduce this consumption.

VI.3. *Collection and Distribution of the Tax Burden by Income Decile*

1. IEPS collection for 2019 was $57 billion 361.3 million pesos, which is equivalent to having applied a fixed fee of almost 106 pesos per liter of pure alcohol. Clearly, with fees higher than $106, collection would increase.

2. With respect to additional collection distribution with a fixed fee of $140 pesos, the highest tax burden occurs in the higher income deciles. Comparing the contribution of decile 10 with that of decile 1, the former is 11.6 times greater. The progressivity of the new system is clear.

3. Progressivity in the Ad-Quantum system is evident in tax burden distribution. However, this progressivity should not only be considered in terms of tax burdens by deciles but also because of the more than proportional positive effect on the health of the lower income deciles by reducing the inevitable negative effects on health caused by income reduction. This system would reduce the risk of their economic situation worsening and deficiencies in daily life increasing. It must be borne in mind that health service coverage for these income strata is minimal.

4. The concept of regressivity must be understood more broadly. The IEPS Ad-Valorem applied to the price mainly increases the cost of drinks sold by small craft producers, such as craft beer, wine, tequila, mezcal and other local drinks throughout Mexico, making them less competitive.

VI.4. *Recommendation*

Given the damage to health and household economies from excessive consumption of alcoholic beverages, mainly in the lower income levels, establishment of the IEPS tax has been an important step to inhibit excessive consumption. However,

the current modality, Ad-Valorem, does not really meet this goal, as the system partially ignores the ethyl content of beverages, enabling a perverse consumption structure by favoring beverages with high alcohol contents and low quality, which, even with the tax, are sold at very low prices.

Hence, the importance of changing from an Ad-Valorem to an Ad-Quantum system, which taxes precisely the amount of alcohol that is acquired and consumed, is clear.

Current collection with the Ad-Valorem system is equivalent to applying a fee of 106 pesos per liter of pure alcohol. Thus, any quota higher than this figure would lead to an increase in collection.

Based on the foregoing, we recommend that for health, as well as tax collection and competitiveness reasons for artisan producers, modernization of the system be carried out as soon as possible, establishing an Ad-Quantum system with a fee greater than $106 pesos per liter of pure alcohol.

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