

Contribution of the Bavaria S. A. operation in the Colombian Economy

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I. INTRODUCTION

This study aims at quantifying the contribution of Bavaria S. A.'s operation¹ in the economic activity of the country. The objective goes beyond considering the direct effects of Bavaria's production; it furthermore aims at calculating the indirect impact, in such way that the contribution to the economy may be captured at added level.

For this reason, the analysis takes into account Bavaria's economic relationships with the rest of the sectors of economy, and with other agents such as households and the Government. The most proper way to capture these inter-relations and to be able to measure the final added effects, is through the input-output matrixes prepared by DANE and the Social accounting matrix, (SAM), prepared by DANE and the National Planning Department. As far as the authors are aware of, this is the first study of this type undertaken by a company in Colombia.

The direct effects, those most commonly known, have to do with what Bavaria generates directly over the general economic activity, employment and taxes. Intuitively, the indirect effects have to do with those its operation generates over other sectors, which supply intermediate consumption to the company. In other words, for Bavaria to undertake its operation it has to consume raw materials from other sectors and they, at the same time and as a consequence of such demand, generate economic activity, employment and taxes. These impacts are well known as the chain backwards.

To consider the indirect effects in this type of analysis is of paramount importance, and not doing so would mean ignoring a critical part of the company's contribution. This study shows that the indirect effects are important, in many cases even greater than the direct contribution. An illustrative example is the added value generated by Bavaria S. A. In 2006, Bavaria S. A.'s exclusive contribution derived from its operation was COP\$1.7 Trillion (COP \$2.7 Trillion if the effect generated through the intermediate consumption is additionally considered), while if the indirect effects are added (and induced effects), total

¹ In this case, Bavaria S. A. includes Cervecería Bavaria, Cervecería Unión, Maltería Tropical, Cervecería Leona and Productora de Jugos.

generation of the added value was COP \$4.7 Trillion. In other words, for every added value peso generated by the company, COP \$2.8 additional added value pesos are generated.

Based on this analysis methodology and taking as reference year 2006, this study measures the impact that the supply and demand of products of the Bavaria brand (and of the company Bavaria S. A.) have over the economy in general, specially in variables such as production, the capital stock (investment), employment, labor income, taxes and the GDP.

The work is divided as follows. After this introduction, the second chapter presents some descriptive figures of the contribution of the Bavaria brand products in some specific areas. The third chapter explains the calculation methodology and presents Bavaria S. A.'s contribution results (as a corporation) in different variables, taking into account the backwards chain. Finally, the fourth chapter shows some general conclusions derived from the results.

II. GENERAL STATISTICS OF THE BAVARIA PRODUCTS CONTRIBUTION

The description of the economic system as a whole stands on a simple basic accounting principle: All income has an associated expenditure. In this way, a balance is to be generated (in terms of equality) between income and expenses of an economy, in aggregated terms.

Based on this principle, DANE, SCN 93's National Accounting System, is built using in the accounting the different transactions that occur in the economy. Particularly, in the case of supply and demand of goods (supply and utilization) at national level, according to this principle the total supply of a good within the national boundaries should be equal to the internal demand, which can be divided according to the type of use given to the goods. In this way, it is possible to know how production (the supply of a product) is interrelated to the rest of the economy and know the direct and indirect effect the production of such good has over the total of the economy.

Using this methodology, the study measures the supply and demand impact the Bavaria brand products have on the economy in general, especially over production, employment, labor income, capital stock, taxes and the Gross Domestic Product.

Given that the beverage sector is registered at DANE in an added way, that is, it corresponds to the sum of all the participants, to specifically do the accounting of the impact of Bavaria's beverages, it was necessary to break down the beverages item in Bavaria and the rest of the sector.

Under this order of ideas, the first step was to separate in the supply and utilization matrixes the Bavaria brand products – which in this case includes Pilsen type beer, purified water, non alcoholic carbonated soft drinks (malt and soft drinks) and non alcoholic beverages without gas or refreshments – from the rest of products contained in the beverage supply. Likewise, it was necessary to separate Bavaria S. A.'s activity from the rest of the companies dedicated to produce beverages. This allowed obtaining technical coefficients and from Leontieff, exclusive for Bavaria S. A., generating accuracy and reliability in the results.² Chart 1 shows the composition of the beverages sector, according to the offered products.

Chart 1: Products included in the beverage sector, according to the Dane Nomenclature. National Accounts System base 1993

Type of beverage (Group)	Code SCN 1993 (Kind)	Product
Ethylic Alcohol and other types of alcohol	-	-
Rum, aguardiente and other distilled alcoholic beverages	20.02.01	Aguardiente
	20.02.02	Rum
	20.02.03	Gin
	20.02.04	Scotch Whisky
	20.02.05	Other distilled alcoholic beverages
Wines	20.03.01	Grape wines
	20.03.02	Cider and other fermented beverages
Malt and Malt liquors	20.04.01	Malt beer and beer based mixtures
	20.04.02	Malt, whether roasted or not
Non alcoholic beverages	20.05.01	Natural water, Carbonated soft drinks
	20.05.02	Other carbonated soft drinks
	20.05.03	Ice and Snow

Source: DANE

It is observed that the Bavaria brand products are in at least three of the divisions in which DANE classifies the beverages offered within economics: malt beer and beer based mixes (Code 20.04.01), natural water and carbonated soft drinks (Code 20.05.01) and other soft drink beverages (Code 20.05.02).

² The following link, remits to the version of the supply and utilization matrixes, separating Bavaria S. A. from the rest of the sectors, in the electronic version of this work [SAM60_06_def_II_oct08.xls](#).

A. Some figures about Bavaria S.A. and Bavaria's brand products

In 2006 the supply of Bavaria's products was COP \$5.8 Trillion, with a 38.4% contribution to the beverage supply in the economy, 1.8% of the industrial goods supply and 0.8% of the total offer. On the other hand, production³ reached 38% of the beverage production, 1.7% of the industrial goods production and 0.5% of the economy production in added terms. These figures evidence that Bavaria's products are an important item of both industrial and aggregate production at national level (Charts 1 and 2).

The most important effect arisen regarding tax payment, since beer, being an alcoholic beverage, is one of the products that has a greater tax burden within all the products offered in the economy. Given the importance of this topic, subsection 2 is dedicated to explain in detail in what type of taxes Bavaria S. A. participates (as payer and "collector"). On the demand side, Bavaria's beverages share within the home consumption is 1.7%.

Chart 1: Supply and Demand Indicators
Million Current Pesos

Composition of Supply and Demand (2006)

	Bavaria's beverages	Beverages	Industry	Economy
Production	3,252,887	8,556,870	186,293,558	659,357,170
Total taxes except for IVA	1,354,858	1,815,730	4,883,909	5,727,437
Imports	891	410,112	68,717,378	84,058,149
Import Duties	212	310,970	3,826,562	3,992,997
Trade and Transportation margins	1,088,218	2,999,805	48,496,001	-
Not deductible VAT	110,346	1,033,126	14,249,466	18,527,906
TOTAL SUPPLY	5,807,412	15,126,613	326,466,874	771,663,659
TOTAL DEMAND	5,807,412	15,126,613	326,466,874	771,663,659
Intermediate Consumption	560,787	1,461,819	150,638,592	309,620,109
Final Consumption	5,185,079	13,516,098	107,046,234	305,098,804
Gross formation of fixed capital	-	-	28,887,686	80,664,101
Acquisition of valuable goods	-	-	-	156,174
Trade losses	-	-	-	-
Stock change	6,259	21,062	4,895,420	7,799,318
Export	55,287	127,634	34,998,942	68,325,153

Source: Fedesarrollo calculation based on Bavaria's and Dane's Information.

Bavaria S.A includes Cervecería Bavaria, Cervecería Union, Maltería Tropical, Cervecería Leona and Productora de Jugos.

(1) It only includes the specific taxes to the products, which for the case of beer are the sales tax and the consumption tax. Other products burdened with these taxes are cigarettes and gasoline. In total COP\$6.2 trillion were collected in the economy derived from this concept, representing 9.4% of all the taxes paid in the economy.

(2) According to DANE's study undertaken for the sector.

(3) Here the intermediate consumption makes reference to the consumption of Bavaria brand products by the remaining sectors of the economy, in order to undertake their own production.

³ Production is measured as the value produced ex factory. On the other hand, supply corresponds to the production plus the trade margins, transportation and tax on the products.

Chart 2: Participation of the Bavaria brand products in the supply and demand depending on the aggregation

Composition of Supply and Demand (2006)

	Beverages	Industry	Economy
Production	38.0%	1.7%	0.5%
Total Taxes except for IVA	74.6%	27.7%	23.7%
Imports	0.2%	0.0%	0.0%
Import Duties	0.1%	0.0%	0.0%
Trade and Transportation Margins	36.3%	2.2%	-
Non deductible VAT	10.7%	0.8%	0.6%
TOTAL SUPPLY	38.4%	1.8%	0.8%
TOTAL DEMAND	38.4%	1.8%	0.8%
Intermediate Consumption	38.4%	0.4%	0.2%
Final Consumption	38.4%	4.8%	1.7%
Gross formation of fixed capital	-	0.0%	0.0%
Acquisition of Valuable goods	-	-	0.0%
Trade Losses	-	-	-
Stock Change	29.7%	0.1%	0.1%
Exports	43.3%	0.2%	0.1%

Source: Fedesarrollo calculation based on Bavaria's and Dane's Information.

Additionally, it is important to understand how the added value produced by Bavaria S. A. is broken down. In this case, it is fundamental to differentiate among the Bavaria brand products and the company Bavaria S. A., since as shown in Chart 4, Bavaria S. A. produces \$3.7 trillion, out of which COP \$3.2 correspond to Bavaria brand products (beer, juice and water) while the remaining \$514 billion correspond to other sub-products such as some agricultural goods and trade services. Out of these COP \$3.7 trillion of gross production, 1.7 trillion correspond to the added value generated by Bavaria S. A. It is important to highlight that given the way accounts are reported to DANE, it results difficult to differentiate that part of the added value is generated thanks to the manufacture of the Bavaria brand products and that part of it is generated thanks to the fact that other by-products are obtained.

Chart 4: Break down of Bavaria S.A's products

In million pesos

Bavaria S. A. Production Account (2006)

	(1) Bavaria Beverages prod.	(2) Prod. other products	Total Production Bavaria S.A (1+2) ó (a+b)
	3,252,887	514,750	3,767,637
(a) Intermediate Consumption*	?	?	2,065,254
(b) Added Value (b.1+b.2+b.3)	?	?	1,702,383
(b.1) Payroll	?	?	211,440
(b.2) Taxes on Production	?	?	29,655
(b.3) Gross Exports Surplus	?	?	1,461,288

Source: Fedesarrollo calculation based on Bavaria's and Dane's Information.

* Here intermediate consumption refers to the raw materials used by Bavaria S.A to undertake its production.

** Production taxes include payments for ICBF, SENA, Stamp tax, Vehicles taxes and 60% of ICA, following DANE's methodology (2002)

1. Employment

In 2006 Bavaria S.A. directly employed 4.509 workers. On the other hand, while the average monthly salary per worker among Bavaria S. A.'s employees was COP \$3.9 Million, the average salary in manufacturing industries covered by the Annual Manufacturing Survey was COP \$1.3 Million a month. According to this figure, an average worker at Bavaria S. A. is almost three times better compensated as compared with any other average worker in the industry (Chart 5).

Chart 5: Compensation to Bavaria S.A.'s workers

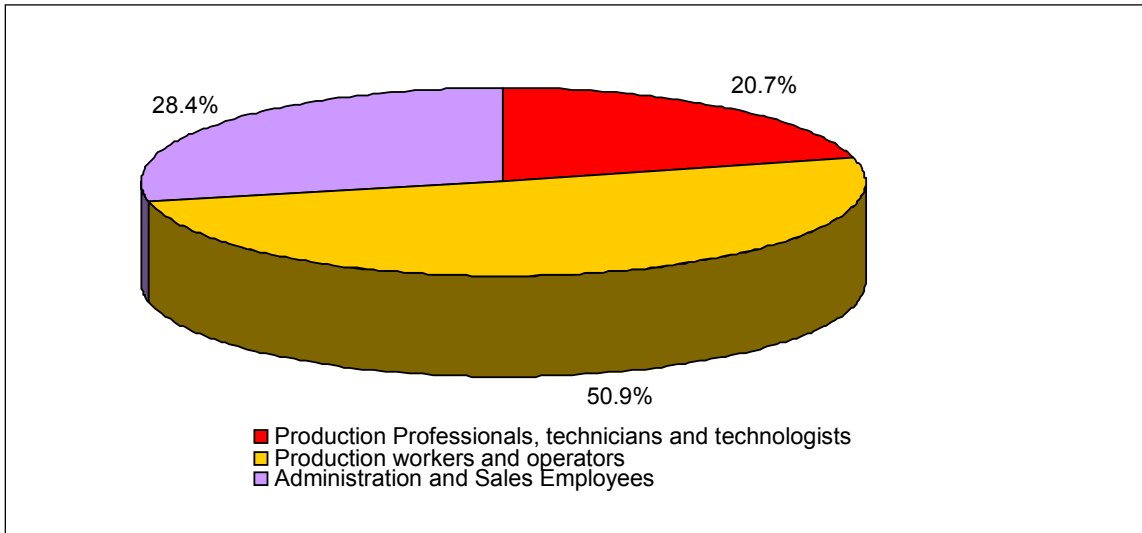
Employment figures (2006)

	Bavaria	Industry
Number of employees	4,509	612,080
Work Compensation (million)	211,440	9,832,000
Annual Average Salary	46,892,989	16,063,260
Monthly Average Salary	3,907,749	1,338,605
Share of Bavaria's salaries as a percentage of the industrial salaries	2.15%	-
Bavaria's average monthly salary as a Percentage of the average monthly Salary of the industry	291.93%	-

Source: Fedesarrollo calculation based on Bavaria's and EAM's Information.

A more detailed analysis of the figures show that in 2006 most of the workers were operators, with a participation of 50.9% of the total employment at the company, followed by the administration and sales staff with 28.4% and the professionals, technicians and technologists, 20.7%. By gender, it is found that women represented 14.1% of the employment, while men were 85.8%. Among genders, the composition was as follows: Men: 20.8% were production technicians or technologists, 54.5% were production workers and operators and 24.7% did administrative and sales tasks. Women, 20.4% were professionals and production technicians, 28.9% were operators and 50.7% administration and sales employees (Graph 1).

**Graph 1: Amount of employees of Bavaria S.A. per type and gender:
In 2006 Bavaria S.A employed 4.509 workers**



Source: Fedesarrollo estimates, based on Bavaria's Information

2. Taxes

Perhaps the aspect where Bavaria S. A.'s activities have greater impact in the economy is in the amount of taxes generated. For this analysis it is important to differentiate the types of taxes (DANE 2002). In a first group we find the tax on the products, collected pro rata to the value of the good or service, or to the amount of units produced, imported or sold, while the second class refers to production taxes, paid over the property and use of land and buildings or other assets which participate in the production. The latter include the taxes on the

labor used or the compensation paid. These taxes are accounted as a production cost of the establishments or institutional units.

Those taxes on the products (which are not directly paid by the company, but which are collected by it and paid to the corresponding entity) include the Value Added Tax (VAT), duties and fees on imports, export taxes and other taxes on the sale or consumption of certain products such as gasoline, cigarettes, liquors and beer.

Production taxes (paid by the company and which comprise a cost to the company) include stamp tax, industry and trade tax, circulation and transit taxes, ICBF and SENA contributions and VAT, not deductible, paid by the company when buying raw materials.

Although it is true that the greatest effect of taxes are generated through those charged to the products (due to the high tax rates to beer consumption) and they are not directly paid by Bavaria S. A., it should be recognized the outstanding contribution of the company, since these collections would not be generated without the operation and supply of Bavaria brand products.

During 2006 the total taxes to the Bavaria brand products and to Bavaria s. A.'s production was COP \$1.8 Trillion, out of which 80.6% corresponded to taxes on products, 12.0% to gross VAT paid in procurements, 1.6% to production taxes and 5.7% to income tax. The latter, according to DANE's classification, neither corresponds to a production tax nor to a tax to the product (Graph 2).

Regarding the Consumption tax and Sales tax, these reached COP \$14 Trillion, representing 74.6% of the specific taxes to the collected products for the total of the beverage sector, 27.7% of those collected in the industry and 23.7% of those collected in all the economy.

On the other hand, the VAT collected from Bavaria beverages – paid by the consumer, reached an amount of COP 110 Billion /COP \$77 billion on beer and 33 billion on the other products), with a share of 10.8%, 0.77% and 0.59% in the beverage sector, in the industry and the economy, respectively.

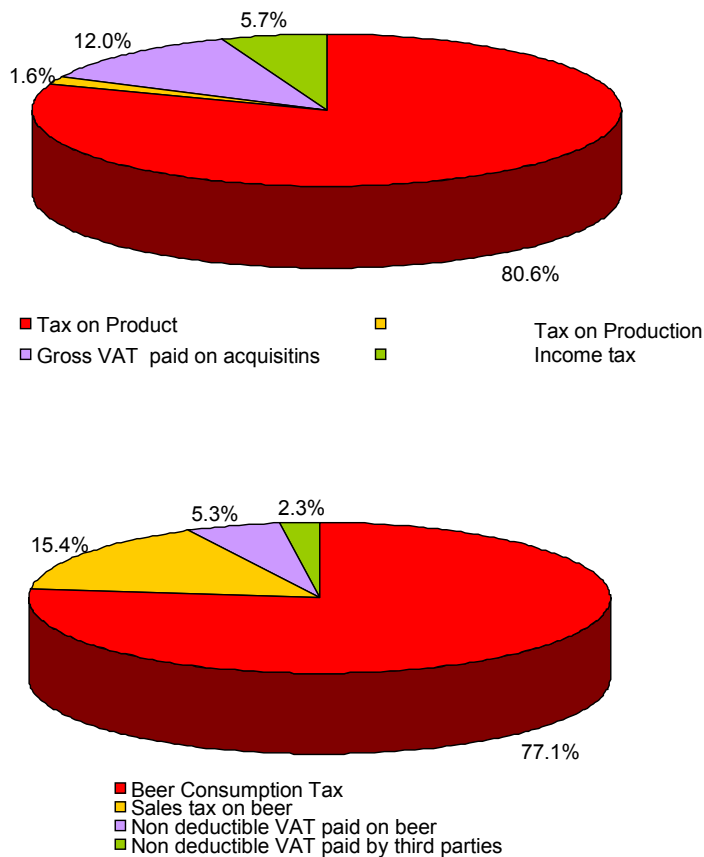
Out of the tax on products, once more the one with the greatest weight was beer consumption tax, with 77.1% of the total, while sales tax on beer and the value added tax non deductible on beer and on other products⁴ represented 15.4%, 5.3% and 2.3%, respectively.

On the other hand, income tax share was 5.7% of the total (Graph 2).

⁴ This tax reflects VAT collected by the company, not deductible from VAT effectively paid by Bavaria S.A. for intermediate consumption.

It is worth noting that the amount of the taxes collected and paid by Bavaria (\$1,8 trillion) represented 3,4% of all taxes collected in the economy in 2006.

Graph 2: Taxes paid and collected by Bavaria S.A.
In 2006 Bavaria's activities generated COP \$ 1.8 trillion in taxes.



Source: Fedesarrollo calculation based in Bavaria's data

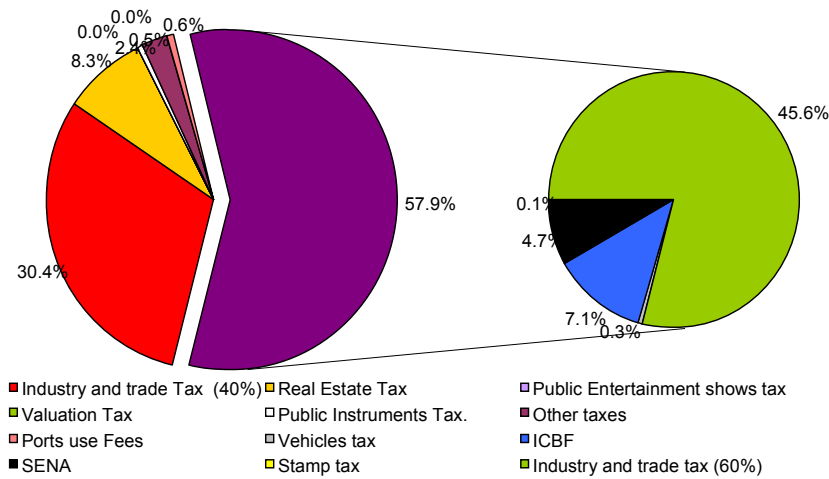
Production tax paid and reported by Bavaria S. A. reached \$51 billion pesos spread as follows: 76.06% Industry and Trade Tax (ICA), 8.29% real estate tax, 7.09% to ICBF, 4.72% to SENA, 0.57% Port use fees, 0.48% tax on public deeds, 0.33% vehicles tax, 0.10% stamp tax, 0.01% real estate revaluation tax and 2.35% other taxes⁵ (Graph 3a).

⁵ In spite that payments to ICBF and SENA are not considered a tax, methodologically they are to be included here, since they are a payroll associated cost considered labor related.

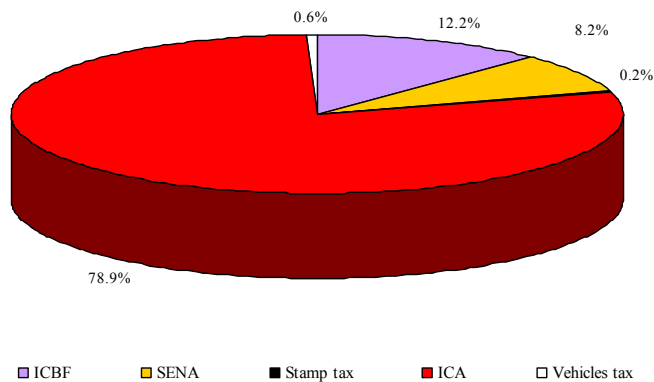
However, in the national accounts, according to DANE's methodology (2002) just one portion of the total paid tax, as reported by Bavaria S. A. is included. These taxes correspond to payments to SENA, ICBF, stamp tax, vehicles tax and 60% percent of the industry and trade tax (ICA).

These five taxes add up to a total of \$29 billion, divided as follows: 78.9% ICA, 12.2% ICBF, 8.2% SENA, 0.6% vehicles tax 0.2% stamp tax (right side of Graph 3a and Graph 3b).

**Graph 3a: Taxes effectively paid by Bavaria S.A
2006**



Graph 3b: Taxes effectively paid by Bavaria S. A. and reported by Bavaria S. A., according to DANE's methodology *



Source: Fedesarrollo's calculation based on Bavaria's data

* In this case, only the Vehicles, Stamp taxes are included ICBF, SENA and 60% of ICA

III. IMPACT MEASUREMENT ON BAVARIA S.A.'S ECONOMIC ACTIVITY

The methodology used to measure Bavaria S. A.'s impact on the economy is based on the so called backward links. They analyze the way the economy responds when Bavaria S. A. produces the products and byproducts it offers, since in order that production takes place, the company requires raw materials from other sectors, as well as capital and work. In other words, backward links are related to the stimulus generated by Bavaria S. A. on its suppliers⁶.

The backwards effects may be divided in several categories, depending on their scope⁷:

First round effects (intermediate consumption or technical coefficients): refers to the impact of Bavaria S. A.'s operations on the direct suppliers of the company (effect on production, employment and tax payment made by the suppliers).

Direct impact (intermediate consumption + added value, that is, technical coefficients +added value): includes the resources directly injected by Bavaria S. A. to the economy plus the effect of direct suppliers of the company (production, employment and suppliers' tax payment).

Indirect impact (Leontieff matrix): it occurs when the suppliers of Bavaria S. A. require goods and services of their own suppliers (effect on production, the employment and tax payment on the suppliers of Bavaria S. A.'s direct suppliers).

Induced impact (SAM's multipliers): the impact generated when the suppliers and their employees and homes spend once more within the economy, generating a new economic activity.

Total impact on the economy: It is the result of the sum of direct, indirect, net and net induced impact⁸.

A. Effect of the intermediate product (consumption)– Production value at buyers' prices

⁶ It does not include forward impacts as distributors.

⁷ The effects are similar to those calculated in BER, 2006 for the case of SAB's contribution in South Africa.

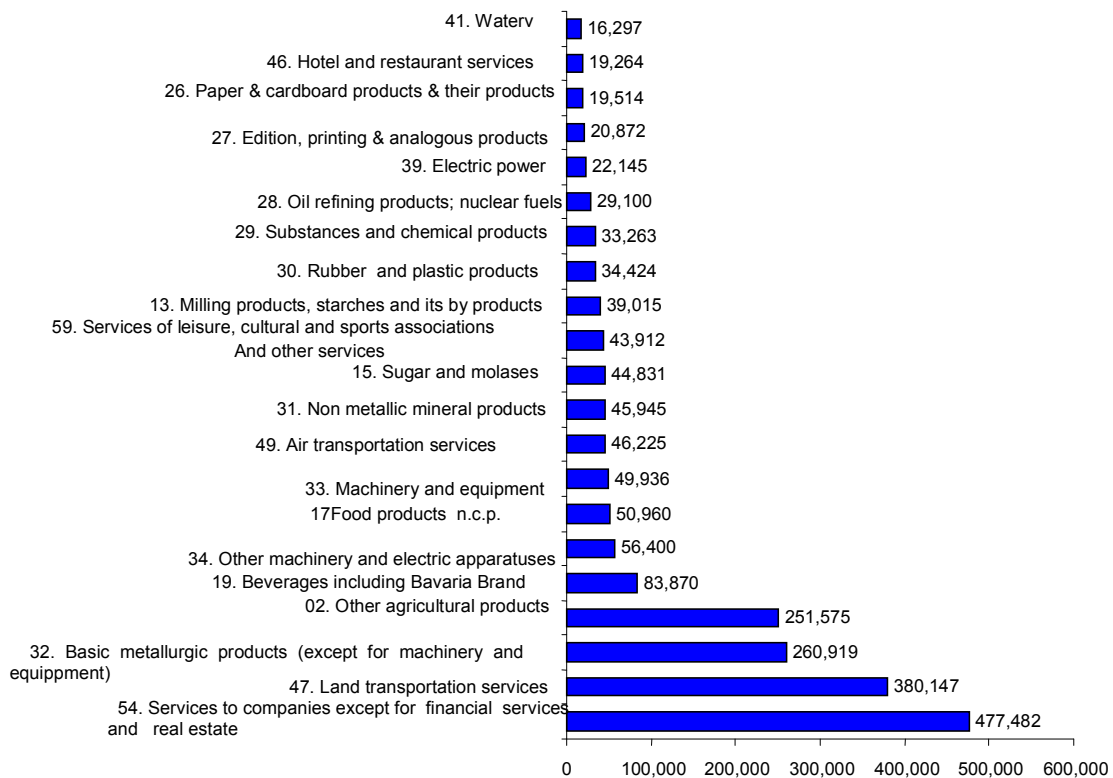
⁸ Net effect is understood as the effect an activity has on the economic flow once the accumulated effect is deducted in former stages.

Bavaria S.A. requires an important amount of raw materials to produce and subsequently offer the final consumer the different Bavaria brand product.

In 2006 intermediate consumption reached COP \$2.06 Trillion, out of which the most important spend items were services to the companies – where advertisement expenses are included in accounting – reaching COP \$477 billion, road transportation services for COP 380 Billion, agricultural products represented COP \$251 Billion and basic metallurgic products for COP \$260 Billion. The rest of the expenses added to COP \$695 Billion (Graph 4).

Graph 4: Bavaria S. A.'s intermediate consumption in 2006 (Consumer prices)

In million current pesos

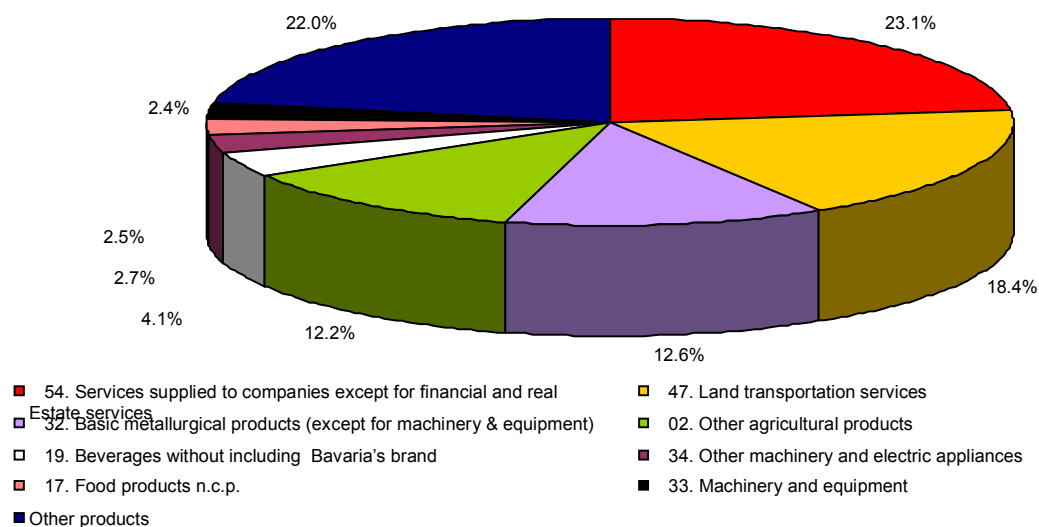


Source: Fedesarrollo's calculation based on information from Bavaria and Dane.

These figures show that intermediate consumption had an important concentration, since the main 4 items represented 66.3% of intermediate consumption. These items correspond to services supplied to the company except for the financial services (23.1%), road transportation services (18.4%),

other agricultural products (12.2%)⁹ and basic metallurgical products (12.6%) (Graph 5).

GRAPH 5: Products directly demanded by Bavaria per type
First round effects of Bavaria S.A.'s operation
Bavaria S.A.'s intermediate consumption reached COP 2.06 Trillion in 2006.



Source: Fedesarrollo's estimates based on Bavaria's and Dane's information.

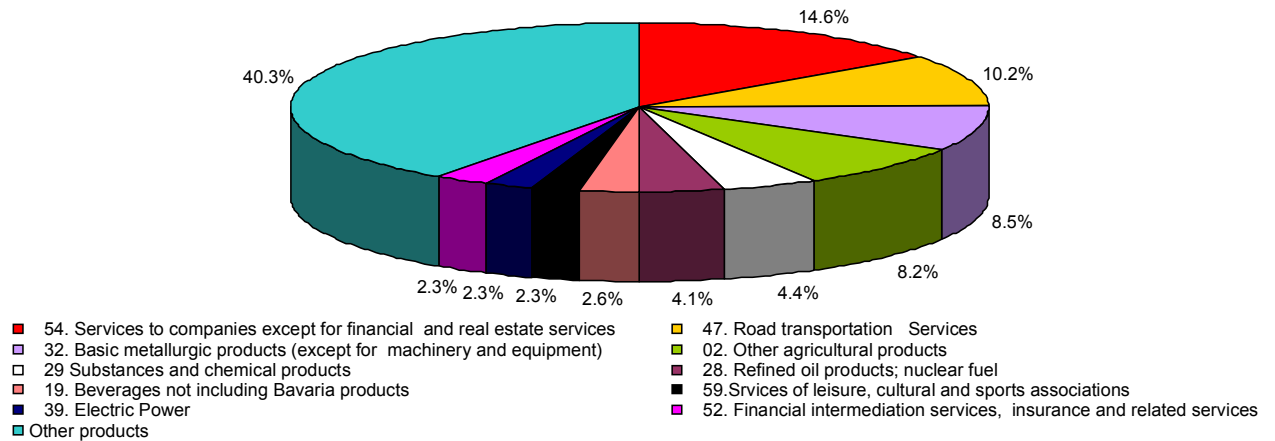
However, this concentration is not maintained when taking into account Bavaria S. A.'s induced effect, on the economy as a whole. In fact, although the most important items continue being the same - which include services to the companies (14.6%), land transportation services (10.2%), agricultural products (8.2%) and Basic metallurgic products (8.5%), these jointly represent 41.5%, which mean an important drop regarding concentration in direct purchases made by the company (Graph 6).

⁹ In this case agricultural products does not include cattle

Graph 6: Bavaria's Induced Production per activity depending on the type of good

Total effect of Bavaria S.A.'s operation

The production induced by Bavaria S.A. reached \$1.9 trillion in 2006*



Source: Fedesarrollo's estimates based on Bavaria's and Dane's information.
 *Excluding the induced effect on Bavaria's production

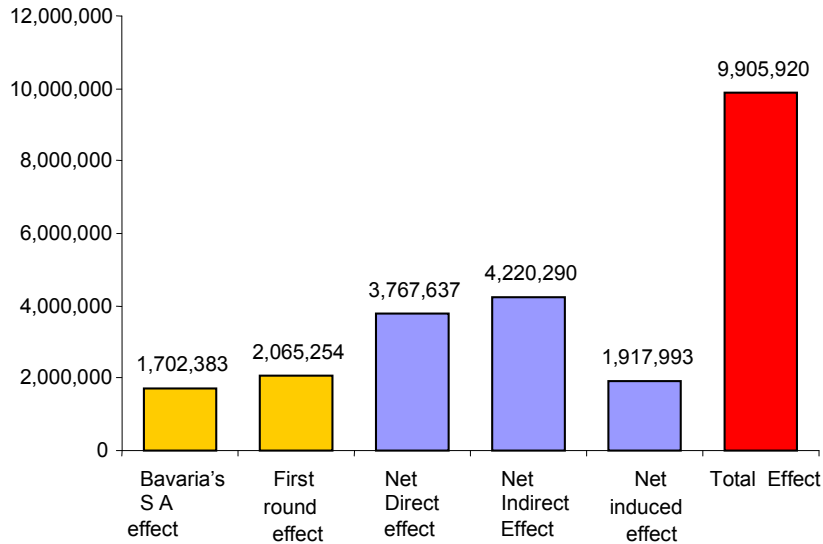
Finally Graph 7 shows the direct, indirect and induced effects, of Bavaria S. A.'s operation in the economy. In 2006 the direct effect was \$3.7 Trillion (38.0% of total effect), while indirect effect reached \$4.2 trillion (42.6% of the total effect) and the induced effect reached COP \$1.9 trillion (19.3% of total effect).

The aggregate effect on the economy in 2006 was COP \$9.9 Trillion, that is, per each production peso of Bavaria S.A., a total of COP\$ 5.8 are injected to the economy as a whole.

Graph 7: Direct, indirect and induced effects of Bavaia S. A.'s operations on intermediate production

In million pesos

2006



Source: Fedesarrollo's estimates based on Bavaria's and Dane's information

To conclude this section, we show that Bavaria S. A.'s production share in total production of the economy, the industrial and beverage areas in 2006. Furthermore, the shares are calculated taking into account the direct and total effects (Chart 6).

The first thing to be highlighted is the difference between the direct effect of Bavaria S. A. and the total effect, the latter referring to the sum of direct, indirect and induced effect. The difference between these two effects is important, since, for example, in 2006 the first one represented 0,57% of the economy's production while the total was 1,50%. On the other hand, it is important to state that the direct effect on production represented 42.4% of the beverage production and 2.0% of the industry's production.

Chart 6: Bavaria S.A direct and total contribution in the sectorian intermediate production

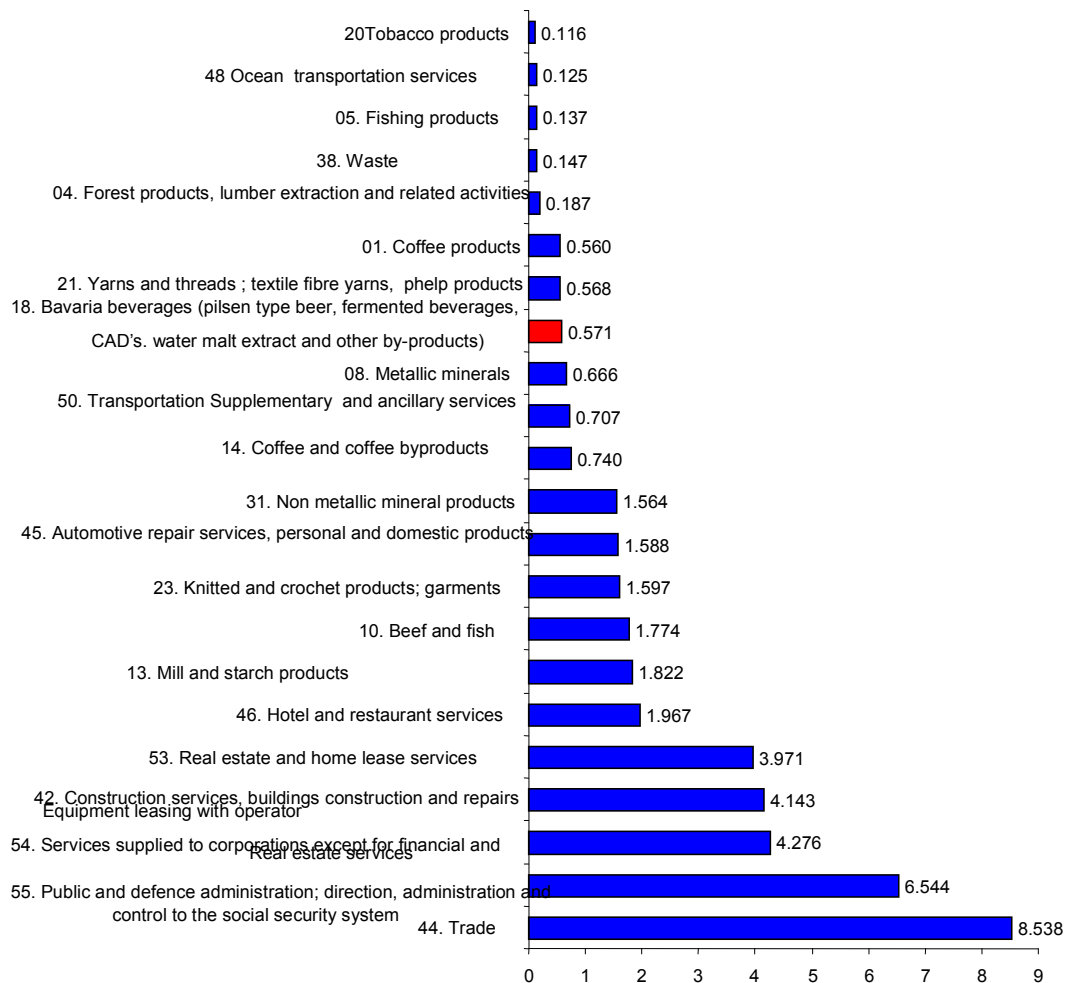
	Direct effect	Total effect
	2006	2006
Contribution to Production (%)	0.57	1.50
Contribution to beverage production (%)	42.40	-
Contribution to the industry production (%)	2.07	-

Source: Fedesarrollo's estimates based on Bavaria's and Dane's information.

Bavaria S.A.'s direct effect of 0.57% on the total intermediate production, is greater than the direct effect of sectors such as tobacco (0.11%) or fishing derivatives (0.13%), similar to the effect of certain sectors such as coffee (0.56%), Yarns and threads (0.56%) and metallic minerals (0.6%) (Graph 8).

Graph 8: Direct Effect of Bavaria S.A. and other sectors on the Intermediate consumption

Percentage on the total intermediate consumption (2006)



Source: Fedesarrollo's estimates based on Bavaria's and Dane's information.

B. Investment: Capital goods requirements

Capital goods are referred to machinery and equipment, other machinery and electric appliances and transportation equipment¹⁰.

During 2006 the direct demand of capital goods by Bavaria S.A. was COP \$118 billion, out of which 47.6% corresponded to other machinery and electric appliances, 42.2% to machinery and equipment, and 10.1% to transportation equipment.

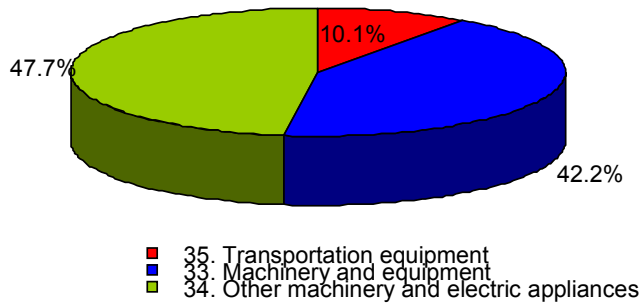
On the other hand, the effect generated through the economy as a whole was COP \$219 Billion pesos, out of which 36.6% corresponded to machinery and electric appliances, 33.8% machinery and equipment, and finally 29.5% to transportation equipment.

Consequently, per every peso invested by Bavaria S.A. in capital goods, the economy as a whole invests COP \$1.8 to be able to sustain the demand for raw materials by Bavaria S.A. (Graph 9 and Graph 10).

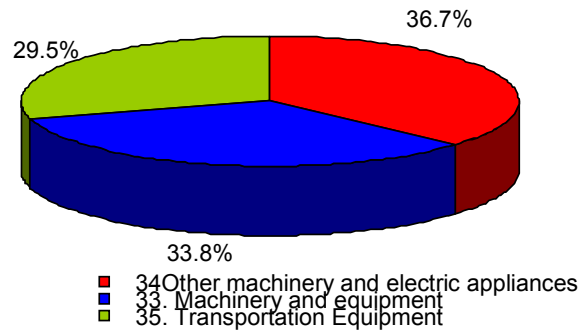
¹⁰ Does not include construction works.

Graph 9: First round effect and total effect in the economy of Bavaria S.A's activity on the capital goods production (2006)

First round effect

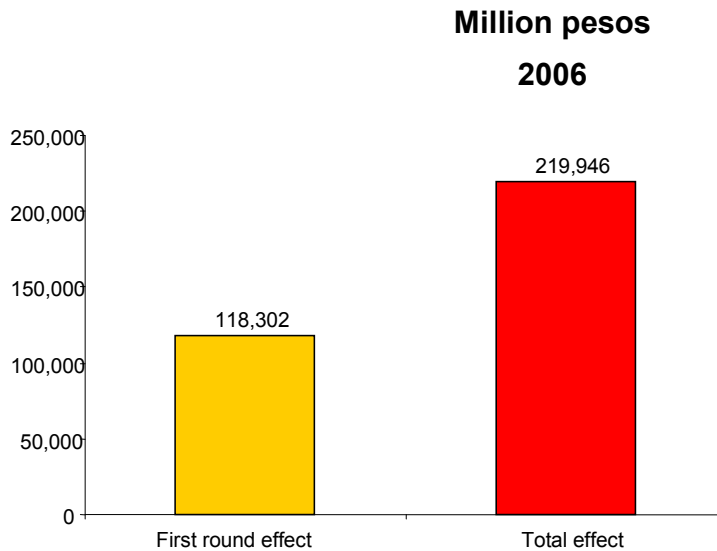


Total Effect



Source: Fedesarrollo's estimates based on Bavaria's and Dane's information.

Graph 10: First round and total effect of Bavaria S. A.'s operations on the production of capital goods



Source: Fedesarrollo's estimates based on Bavaria's and Dane's information.

In 2006 Bavaria S.A. was the company that contributed the most in the acquisition of capital goods (investment) in the beverage sector, since it represented 73.8% of the total acquisitions of capital goods made by this sector. Additionally, it represented 1.65% of the acquisitions made by the industrial sector and 0.60% of the total capital goods acquisitions in all the economy (Chart 7).

On the other hand, the total effect on the procurement of capital goods represented 1.11% of the total goods of economy, amount that is almost twice the direct effect.

Chart 7: Bavaria S.A.'s Direct and total Contribution to the purchase of capital goods

	Direct Effect	Total Effect
	2006	2006
Contribution to the purchase of capital goods (%)	0.60	1.11
Contribution to the purchase of beverages capital goods (%)	73.81	-

Source: Fedesarrollo's estimates based on Bavaria's and Dane's information.

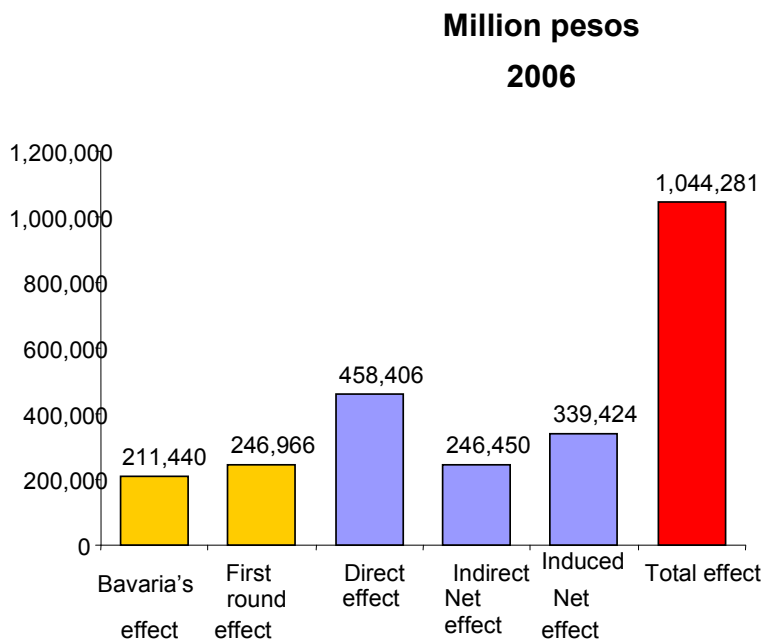
C. Compensation to payroll employees

Following DANE's methodology (2002), the employees compensation includes salaries and wages; fringe benefits such as vacation, legal and extralegal bonuses; fringe benefits and interest on them and mandatory employer contributions such as health insurance, professional risk insurance and pensions of the staff, plus the voluntary contributions.

During 2006 Bavaria S.A. paid for compensation to its payroll employees COP \$ 211 Billion. In addition, production stimulated by Bavaria S.A.'s activity to its suppliers generated a salary payment of COP \$ 246 billion, which added to the salaries paid by Bavaria S.A., amounted to COP \$ 458 billion, i.e. 43.8% of total effect on salaries. On its part, the Indirect Effect amounted to COP \$246 billion (23.6% of the total), and the induced effect amounted to COP \$339 billion (32.5% of the total).

Given this composition, the total effect reached COP \$1.04 billion, which implies that for every salary peso paid by Bavaria S.A., COP \$4.9 payment to the economy as a whole is generated (Graph 11).

Graph 11: Direct, indirect and induced effects by Bavaria S.A.'s operations on the compensation of those who receive a salary.



Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

The share of compensation to Bavaria S.A.'s employees in 2006 amounted to 0.18% on the aggregate as a whole, while in beverages it amounted to 28.87%, and in the industry it represented 1.20% (Chart 8).

Finally, the total effect, including direct effects represented 0.88% of the whole economy derived from remuneration to the employees.

Chart 8: Bavaria S.A.'s direct contribution to the employees compensation

	Direct Effect	Total Effect
	2006	2006
Contribution to the employees' compensation (%)	0.18	0.88
Contribution to the beverage employees' compensation (%)	28.87	-
Contribution to the industry employee's compensation (%)	1.20	-

Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

D. Contribution to the GDP

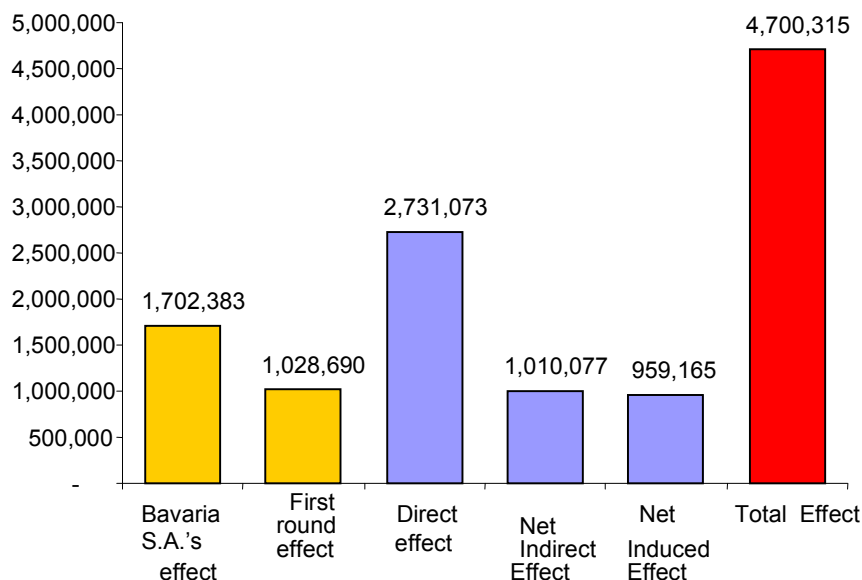
The added value generated by Bavaria S. A. in 2006 reached COP \$1.7 trillion, while the added value included within the production of other sectors used as intermediate consumption by Bavaria S.A reached COP \$1.02 trillion pesos. This implied that the Direct Effect of Bavaria S.A.'s operations in 2006 reached around COP \$1.01 trillion pesos, 21.4% of the total effect. Finally, the induced effect on the total GDP reached COP \$954 billion, with a 20.4% share in the total effect.

Consequently, the aggregate effect on the GDP amounted to COP \$ 4.7 trillion pesos. This suggests that Bavaria S.A.'s GDP multiplier amounted to 2.8, which means that for every added value peso generated by Bavaria S.A., 2.8 pesos of added value are generated in the economy (Graph 12).

Graph 12: Direct, Indirect and Induced Effects of Bavaria S.A's operations on the Gross Domestic Product

Million pesos

2006



Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

The comparison of direct and total effects shows an important difference: while the first one represented 0.45%, the second one amounts to 1.24% of the total economy. On the other hand, direct share within the industry GDP amounted to 2.89% while the contribution to beverages GDP amounted almost to 45.9%. (Chart 9).

Chart 9: Bavaria S.A's direct and total contribution to value added

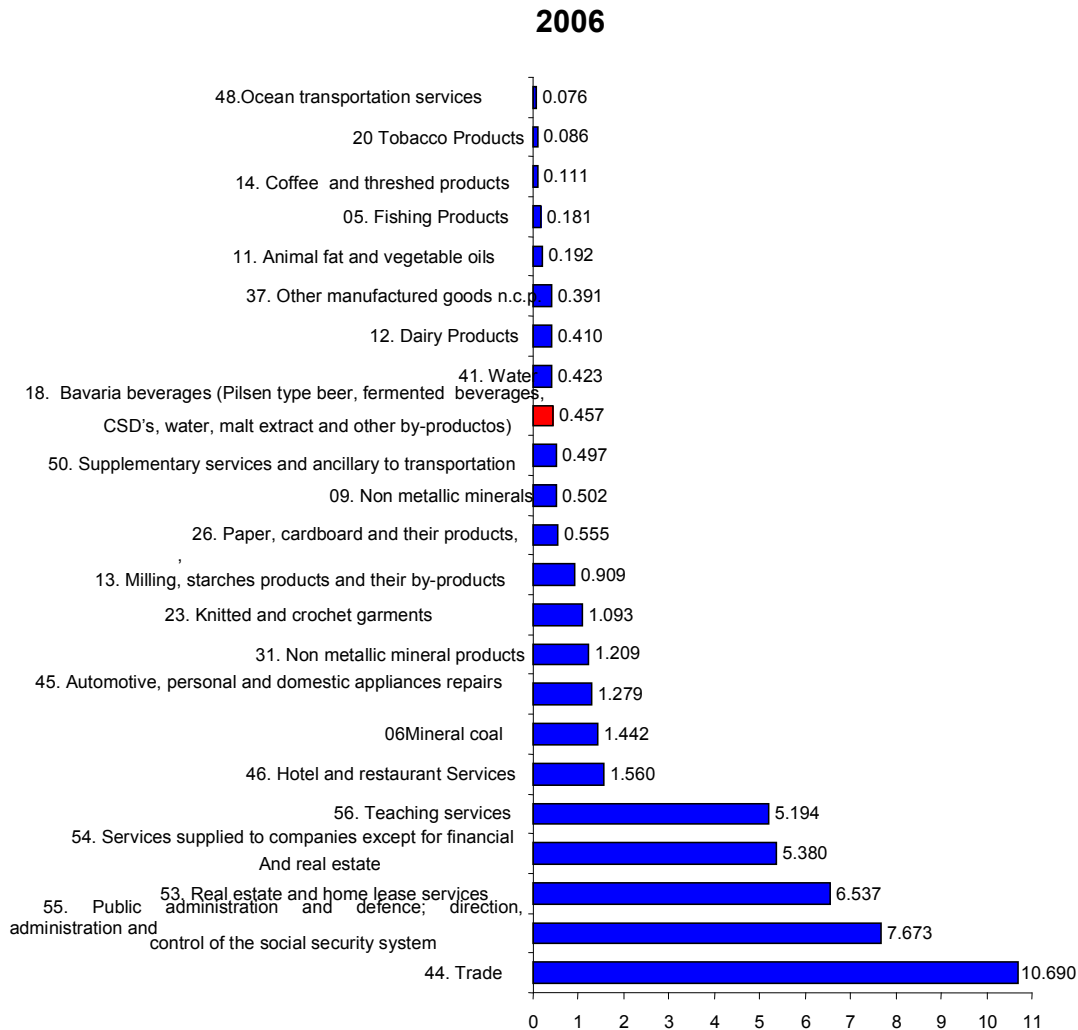
	Direct Effect	Total Effect
	2006	2006
Contribution to the GDP (%)	0.45	1.24
Contribution to the beverages GDP (%)	45.92	-
Contribution to the industry GDP (%)	2.89	-

Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

This 0.45% direct contribution to the GDP by Bavaria exceeds the GDP generated by coffee and threshed products (0.11% of the total) or the fishing by-products (0.18% of the total); and it is similar to the GDP generated by the dairy

products sector (0.41% of the total) and non-metallic minerals (0.50% of the total) (Graph 13).

Graph 13: Direct Effect of Bavaria S.A on the total GDP compared with the Direct Effect of some sectors of the economy
Total GDP Percentage



Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

E. Effects on the production taxes

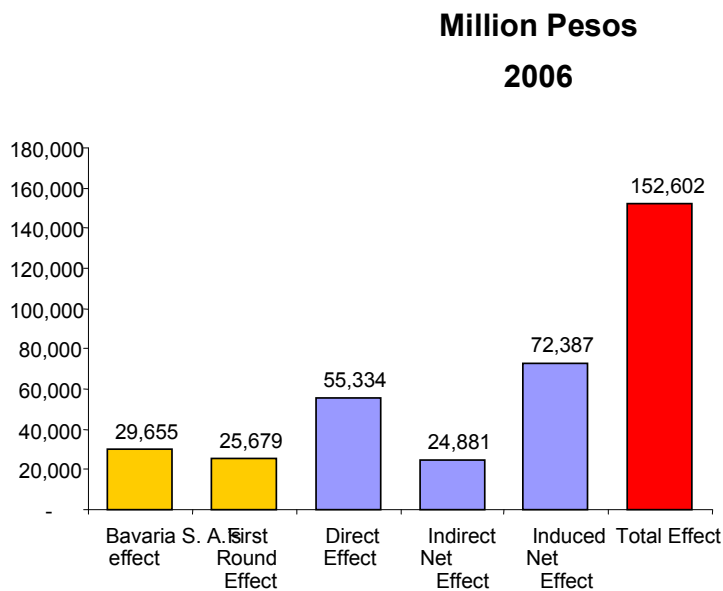
In this case, given the methodology of the national accounts construction, it is only possible to measure the direct, indirect and induced impact of a portion of the production taxes, that is, some of those directly paid by Bavaria.

In 2006 the amount of production taxes paid by Bavaria S.A. (according to DANE's methodology) for production taxes were \$29 billion, which added to the tax paid by the suppliers, thanks to the acquisition by Bavaria S.A. of their products, reached COP \$55 billion. Additionally, the indirect effect was \$24 billion, while the induced effect was COP \$72 billion.

The aggregate effect was COP\$152 Billion, spread as follows: 36.2% as direct effect, 16.3% as indirect effect, 47.4% as induced effect (Graph 14).

The multiplying effect in this case is COP 5.1 pesos, that is, the relationship between the taxes paid by Bavaria S. A. and those generated through the economy thanks to its activities.

Graph 14: Direct, Indirect and Induced Effects of Bavaria S.A's operations on direct production taxes



Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

One first relevant result is that the total effect on the tax payment is more than five times the direct effect. In 2006 the first one implied a contribution of 0.37% while the second one was 1.89% of the total (Chart 10).

Finally, Bavaria S.A's taxes represented 64.4% of the production taxes paid by the beverage sector and 3.08% of the taxes paid by the industry.

Chart 10: Bavaria S.A.'s Direct and total contribution to tax payment on production

	Direct effect	Total Effect
	2006	2006
Contribution to Production Taxes (%)	0.37	1.89
Contribution to beverage Production Taxes (%)	64.48	-
Contribution to the Industry's Production taxes (%)	3.08	-

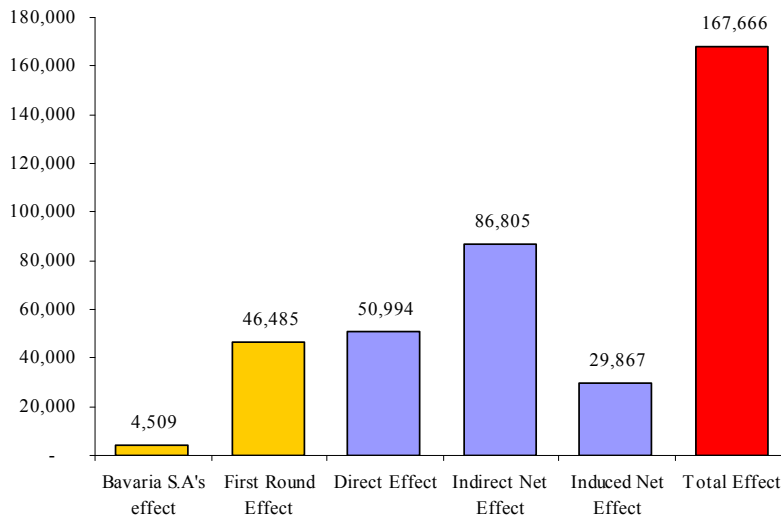
Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

F. Effect on Employment

In 2006 Bavaria S.A. had 4,509 workers, which added a direct effect of 50,994 jobs in total. Additionally the indirect effect was 86,805 and the induced effect was 29,867 jobs generated. In total, the added effect reached 167,666 jobs, generated in the economy thanks to Bavaria S. A.'s productive activity. These effects represented 30.4%, 51.7% and 17.8% of the total, respectively (Graph 15) Likewise, the multiplier effect was 37.2.

Graph 15: Direct, Indirect and Induced effects on Bavaria s. A.'s operations on employment.

2006

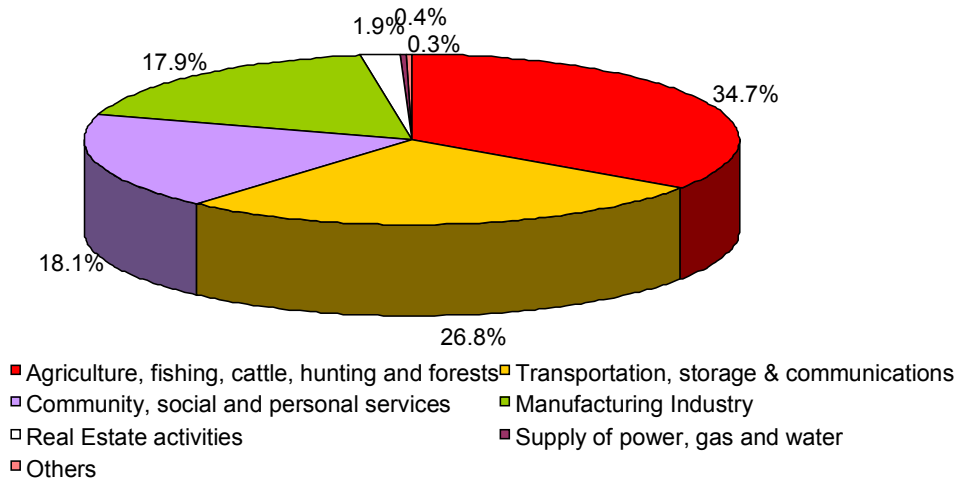


Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

The employment effect composition of Bavaria S.A.'s suppliers shows a concentration in four sectors. 34.7% of these employments were generated in the agricultural sector, followed by the transportation sector, storage and communications with 26.8% share, personal and community services 18.1% and the manufacturing industry with 17.9% (Graph 16).

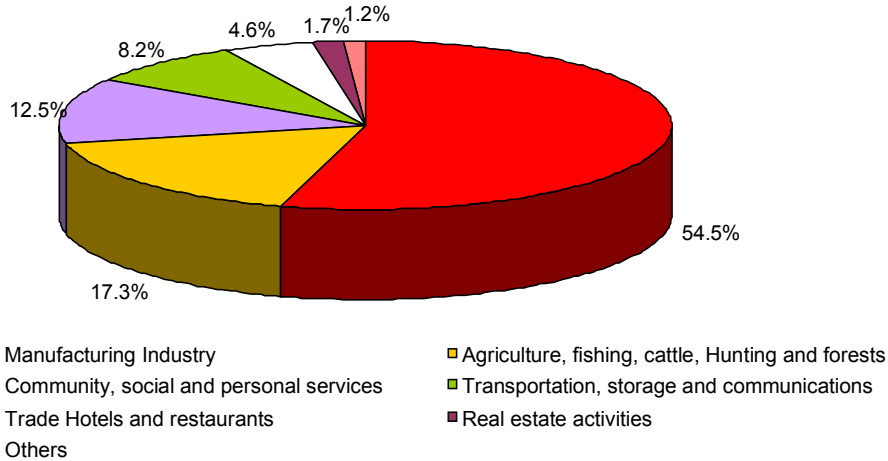
Finally, the behavior of the employment Composition of the total effect on the economy shows that the sector with the greatest benefit was the manufacturing industry with a 54.5% share, followed by the agricultural sector with 17.3%, community, social and personal services that represented 12.5%, and transportation services with 8.2% of the generated employment (Graph 17).

Graph 16: The number of jobs generated by Bavaria's demand for raw materials to its suppliers was 46.485



Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

Graph 17: The total number of jobs created due to Bavaria's activity was 167.666 (2006)



Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

The direct effect of the employment generated by Bavaria S.A. represented 0.03% of the total employment, while the total effect represented 0.93%. Additionally the direct contribution to the industrial employment represented 0.19% (Chart 11).

Chart 11: Bavaria's direct contribution to employment

	Direct effect	Total effect
	2006	2006
Contribution to employment (%)	0.03	0.93
Contribution to the industrial employment (%)	0.19	-

Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

G. Multiplying effects

This section describes the multiplying effects Bavaria's activity has on the economy, understanding as a multiplying effect the number of times that a variable is amplified on the economy, for each unit of this variable that is generated by the activity of Bavaria activity.

It is important to observe that in 2006, the economy produced 5.8 pesos for each peso produced by Bavaria S.A. The multiplying effect is less if you consider the

added value because for each added value peso contributed by Bavaria S.A., the total effect over the added value of the economy was of 2.8 pesos.

Analyzing employee's compensation, it was found that for each peso paid as a direct salary by Bavaria, the total effect on the salaries paid in the economy was 4.9.

However, the most important effect is on employment because for each job generated directly by Bavaria S.A, there were 37.2 jobs generated in the total economy. (Chart 12 and Chart 13)

Chart 12: Multipliers of Bavaria S. A.'s net effects on the economy ¹¹

Variable	Year	First Round effect multiplier	Bavaria S.A.'s effect	Direct effect Multiplier	Net indirect Multiplying Effect	Net Induced Effect Multiplier	Total Effect
Intermediate Production	2006	1.2	1.0	2.2	2.5	1.1	5.8
Compensation To the	2006	1.2	1.0	2.2	1.2	1.6	4.9
GDP	2006	0.6	1.0	1.6	0.6	0.6	2.8
Taxes	2006	0.9	1.0	1.9	0.8	2.4	5.1
Employment	2006	10.3	1.0	11.3	19.3	6.6	37.2

¹¹ Net effect is understood as the effect that Bavaria S.A.'s activity has on the economy flow once the accumulated effects of the previous stages are deducted. For example, the multiplier of the net indirect effect is the magnitude of Bavaria S.A.'s activities on the people that supply raw material to Bavaria's direct suppliers, after withdrawing the economic flow, the effect on the direct suppliers, and stimulus injected by Bavaria S.A.

Chart 13: Bavaria's accumulated effects multipliers on the economy ¹²

Variable	Year	First Round Effect Multiplier	Bavaria S.A.'s Effect	Direct Effect Multiplier	Total indirect Effect Multiplier	Total Induced Effect Multiplier	Total Effect
Intermediate Production	2006	1.2	1.0	2.2	4.7	5.8	5.8
Compensation To employees	2006	1.2	1.0	2.2	3.3	4.9	4.9
GDP	2006	0.6	1.0	1.6	2.2	2.8	2.8
Taxes	2006	0.9	1.0	1.9	2.7	5.1	5.1
Employment	2006	10.3	1.0	11.3	30.6	37.2	37.2

Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

Finally, we show a comparison of Bavaria's effect on the Colombian economy versus SAB Miller's effect on the South African economy.

Bavaria has a greater effect in the Colombian economy than SAB Miller in the South African economy in terms of the intermediate production and the taxes paid. With respect to the intermediate production, the results show that Bavaria's multiplier is 5.8, while SAB'S is 4.4. The multiplier for the taxes paid by Bavaria S.A is 5.1, while SAB'S multiplier is 2.4. (Chart 12 and Chart 14)

For the rest of the variables calculated, SAB's multipliers had a greater effect on the South African economy than what Bavaria S.A.'s multipliers had on the Colombian economy.

¹² Unlike the net effect, the accumulated effect is made up as the accumulated sum of all the effects of the previous stages of the economic flow.

Chart 14: SAB Miller's net effect multipliers on the South African Economy

Variable	Year	First round effect multiplier	Bavaria S.A.'s effect	Direct effect multiplier	Indirect net effect multiplier	Induced net effect multiplier	Total effect
Intermediate production	2005	0.5	1.0	1.5	0.7	2.2	4.4
Payroll compensation	2005	1.4	1.0	2.4	1.5	6.9	10.8
Gross Domestic Product	2005	0.6	1.0	1.6	0.7	3.2	5.5
Taxes	2005	0.2	1.0	1.2	0.2	0.9	2.4
Employment	2005	5.3	1.0	6.3	6.4	29.4	42.1

Source: Estimates made by Fedesarrollo based on Bavaria's and Dane's Information.

Chart 15: SAB Miller's total effect multipliers on the South African economy

Variable	Year	First round effect multiplier	Bavaria S.A.'s effect	Direct effect multiplier	Indirect net effect multiplier	Induced net effect multiplier	Total Effect
Intermediate production	2005	0.5	1.0	1.5	2.2	4.4	4.4
Employee's compensation	2005	1.4	1.0	2.4	3.9	10.8	10.8
Gross domestic product (GDP)	2005	0.6	1.0	1.6	2.3	5.5	5.5
Taxes	2005	0.2	1.0	1.2	1.5	2.4	2.4
Employment	2005	5.3	1.0	6.3	12.7	42.1	42.1

Source: Estimates made by Fedesarrollo based on BER, 2006

IV. CONCLUSIONS

Certain General figures show that during 2006 the supply of Bavaria's products was of \$5.8 trillion, having a share of 34.8% of the total beverages supply in the economy, 1.8% of the industrial goods supply and 0.8% of the total offer. On the other hand, production reached 38.0% of the beverage sector production, 1.7%

of the industrial goods production and 0.5% of the economy production in aggregate terms.

During 2006, Bavaria directly employed over 4.509 workers.

During 2006, Bavaria's product taxes (paid by consumers), total production taxes, income taxes, and the gross VAT paid for sales (by the company), was 1.8 trillion, out of which 80.6% correspond to product taxes, 1.6% to production taxes, 5.7% to income taxes, and 12% gross VAT paid on purchases. Out of the taxes on the product, the one that weighed the most was the beer consumption tax, and out of the other taxes the most important was income tax.

With respect to the demand, Bavaria's share of the home consumption products was of 1.7%, while in the exports it was practically non-existent.

We analyzed Bavaria's global effects considering: the backwards links related to Bavaria's stimulus to the production of its suppliers and the forward links related to the impulse generated by Bavaria's demand on the other productive sectors of the economy.

The backwards effects are divided in several categories according to their scope: Direct impact on the economy including the resources injected by Bavaria S.A. to the economy plus the effects on Bavaria S.A.'s direct suppliers; indirect impact given on the direct suppliers' suppliers of Bavaria S. A.; Induced impact that is generated when the suppliers and their employees spend on the economy which produces new economical activity; and total impact resulting from the addition of direct, indirect and induced impact.

As to the total, direct and indirect effects, the results were the following:

Intermediate production

In 2006, Bavaria's direct effect over the intermediate product reached a value of \$3.76 trillion, the indirect effect was of \$4.22 trillion, and the induced effect increased to \$1.9 trillion. As a result, the added effect over the economy was \$9.9 trillion, which means that for each peso of Bavaria's production, 5.8 pesos are injected in the economy as a whole.

The direct effect of Bavaria S. A.'s intermediate production share operated by Bavaria was 0.57%, while the total effect was of 1.50%.

Value Added

In 2006 the value added produced by Bavaria S.A. was \$1.7 trillion, the value generated by its suppliers by effect of the company's demand was \$1.02 trillion, and hence the direct effect was of \$2.7 trillion pesos. The indirect effect

increased to \$1 trillion and the induced effect over the total GDP was \$959 billion. With this information, the added effect over the GDP was of \$4.7 trillion pesos, which means that for every added value peso generated by Bavaria S.A, 2.8 added value pesos are generated by the economy.

Throughout 2006, the added value share generated directly by Bavaria was 0.45% of the total GDP. On the other hand, the added effect was of 1.24% within the total GDP.

Investment

According to the available information, during 2006, Bavaria S.A. acquired capital goods worth \$118 billion. Additionally, the production value of capital goods generated throughout the whole economy was \$219 billion.

Likewise, Bavaria S.A. was the company that contributed the most to the direct purchase of capital goods of the beverage sector (73.8% of the total), it represented 1.65% of the purchases done by the branches belonging to the industrial sector and 0.60% of the purchases of capital goods in all productive branches. In terms of the added effect, the total share was of 1.11%.

Employment

In 2006, Bavaria employed 4.509 workers. The company's effect over its suppliers generated 46.485 jobs, which added up to a direct effect of 50.994 jobs. The indirect effect was of 86.805 jobs and the induced effect was of 29.867 jobs. In total, the added effect increased to 167.666 jobs, which shows that for every job generated by the company, 37.2 jobs were created thanks to its activities.

This shows Bavaria's indirect effect over the job market is very important. During 2006, the share of the direct effect produced by Bavaria increased by 0.03% within the total employment of the economy, if it is considered the indirect impacts this share went up 0.93%.

Employees' compensation

In 2006, Bavaria S.A paid \$211 billion pesos for payroll to its employees which, added to the effect the company has over its suppliers' payments it generated a direct effect of \$246 billion. The indirect effect was of \$246 billion and the induced effect was of \$339 billion. As a result, the added effect was for \$1.04 billion, which implies that for every peso paid by Bavaria S.A., \$4.9 pesos were paid to the economy in general.

Bavaria's contribution in the payment of salaries through the direct effect was of 0.18% and 0.88% if the added effect is considered.

Taxes

During 2006, Bavaria paid a total of \$29 billion pesos in production taxes (according to DANE methodology), a quantity that added to the taxes paid by the suppliers thanks to Bavaria's purchases of their products it increased to \$55 billion pesos. In addition, the indirect effect was of \$24 billion, while the induced effect was of \$72 billion. The added effect was of \$152 billion, which means that for every peso directly paid by Bavaria S.A., 5.1 pesos for production tax payments are generated in the economy.

These amounts represent a total share for this type of tax in the economy of 0.37% if it is only considered Bavaria S. A's direct effect and 1.89% share if the added effect is taken into account.

With respect to product taxes, the specific taxes to the products collected by Bavaria S.A represent 23.7% of the product taxes paid in the whole economy, while the VAT charged by Bavaria's products represented 0.5% of the added VAT.

Relative effect

Bavaria S.A. has greater effect on Colombia's economy as compared to the one SAB has in South Africa regarding taxes and production

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