Article

The coffee marketing process in the south of the State of Mexico

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Abstract

The present study analyzes the predominant production system in coffee exploitation (*Coffea arabica* L.) in the south of the State of Mexico, its commercialization process and the economic impact generated by said activity among the main participating agents, the reference year of the research was 2018. The predominant production system in the region was determined, the main marketing channels that the product follows from its exit at the farm until its arrival to the final consumer were identified and the margins were calculated, at current prices, the margins resulting marketing throughout the process. The use of coffee in the south of the State of Mexico is developed under a system of rustic or mountain production, shade, which is developed in small dispersed production units, as a complement to other agricultural activities. The traditional marketing channel used to take the product from exploitation to the final consumer was the direct sale of the producer to the producer cooperative, which adds value to the product and operates as the main intermediary. The participation of the producers in the final price of the product was an average of 75.46%, the collector participated with 15.67% and the retailers 8.92%. The average total marketing margin of 63.00 $ kg^{-1}, of which the cooperative achieved the highest average margin with 23.95 $ kg^{-1}, while the remaining 12.65 $ kg^{-1} was awarded by retailers.

Keywords: *Coffea arabica* L., marketing, marketing margins.

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Introduction

Today, Mexico is located as an important coffee producer in the world, with more than 200 years of tradition, which indicates in some way, the importance of this aromatic in the agricultural economy of the country, the coffee produced it is of the arabic type in different varieties, each of which is related to the different ecological regions of the country (ASERCA, 1997).

Mexico, traditionally considered as a producer of lower quality coffee than other countries, has not only the ideal qualities, but a natural vocation for the production of specialty coffee especially if we take into account that: a) our production is predominantly coffee of shade and organic, for the shelter provided by the forests, an ecosystem where the largest amount of coffee is grown in our country; b) 92% of coffee producers in Mexico have areas under 5 ha; and c) by not having large amounts of capital for investment, the use of hybrid varieties and agrochemicals is reduced, thereby handling a product very close to the interest shown in the world for the consumption of healthy food products.

These factors, which for a time were seen as weaknesses of the Mexican coffee sector, allow us to give added value to Mexican coffee per-se, agreeing that large sectors of coffee production in our country, are able to be consolidated and by both recognized and specialty coffee producers, thereby obtaining the benefit that implies.

In this sense, the new vision recognizes the relationship between quality and consumption, so that coffee is seen as a differentiated product, in a segmented market, which demands greater quality every day; in this way, the quality at each point of the coffee marketing chain can be the answer to improve the income of the different participating agents (ASERCA, 2002).

According to the International Coffee Organization (ICO), during the 2016-2017 harvest; 73.5% of world coffee production was concentrated in five countries: Brazil (35.74%), Vietnam (16.57%), Colombia (9.42%), Indonesia (7.47%) and Ethiopia (4.29%), meanwhile, Mexico placed in the eleventh position, with a participation of 2.01% of world production (3.1 million bags), that is, 11.29% more compared to the harvest of the previous period.

Regarding the international coffee trade, during the 2015-2016 harvest, 78.93% of the world aromatic production was commercialized in the world markets; in this sense, total exports grew at an average annual rate of 3.1% in the last decade (2005-2006-2015-2016), with an average volume of 103.6 million bags; five countries participated together with 74.82% of the total volume exported in the 2015-2016 cycle: Brazil (30.87%), Vietnam (22.1%), Colombia (10.28%), Indonesia (6.67%) and Honduras (4.9%), for its part Mexico was in eleventh position with 2.3 million bags, 1.93% of world exports.

In our country, coffee regions are concentrated in four areas: the slopes of the Gulf of Mexico and the Pacific Ocean, the Central North region and the Soconusco region in Chiapas, which together cover 398 municipalities in all producing states (CEFP, 2001). Likewise, approximately 283 000 producers are engaged in coffee production, which generates 300 000 temporary jobs, as well as 100 000 jobs in tasks related to agribusiness and marketing; in this sense, the aromatic represents

the main source of income for more than 700 000 families, on which around 3 million people depend, consolidating itself as a strategic product in the generation of employment, income and rural development.

The coffee producing population, as well as the largest area is concentrated, in small production units; the average size of the farms is 2.7 ha, while 92% of the coffee growers in the country have areas of 5 ha or less, this fact that apparently is a factor of fragility due to the degree of fragmentation of the farms, represents an advantage, especially if we consider the artisanal care given to production, which allows us to provide added value to the product (ASERCA, 2002).

Also, according to statistics from SAGARPA (2017), during the 2014 production cycle 1.16 million tons of green coffee were produced, which is 7.31% less than the production of the previous cycle; the crop is centralized in four states, which concentrated 88.72% of the national production: Chiapas participated with 34.48%, Veracruz (30.33%), Puebla (12.77%) and Oaxaca (11.13%). It should be noted that during the period 2000-2014 the national coffee production contracted, registering a negative annual average growth rate of 3.19%, mainly attributable to phytosanitary problems.

For its part, the State of Mexico ranked as the twelfth producer during 2014, with 427 t (0.04% of the national total), this volume represented 0.80% more than the production recorded the previous year and only 18.57% of the maximum volume reached in 2003, when more than 2 300 t were produced; Thus, during the period 2000-2014, production in the entity registered a negative annual average growth rate of 1.63%, which was lower than the one registered at the national level, a situation that shows the importance of the activity in the state, despite registering a slow pace, shows a recovery from the national stage.

In the same way, during the 2016 cycle, the State of Mexico produced 250 t of green coffee in an area of 475 ha; 67.39% of said production was concentrated in the Rural Development District (DDR) of Tejupilco, which due to its climatic and orographic conditions has the ideal conditions for the production of quality coffee, the municipalities that stand out in the production of aromatic are Amatepec, which participates with 73.82% of production and Temacaltepec 16.8%.

The municipality of Amatepec has more than 300 producers that cultivate a total of 350 ha of the aromatic, where more than a thousand workers are employed in the work of cutting cherry mainly; likewise, the producers of the municipality have formed some companies, which sell processed coffee in different presentations such as coffee beans, roasted and ground, in this way, at least one member of each family in the municipality is dedicated to the cultivation of coffee (Estrada, 2017).

In this sense, the production of this crop has become an important activity in agriculture in the region, representing an important source in the generation of employment and income for the population with limited resources, as well as an incentive for economic and commercial growth in the southern region of the State of Mexico.

Under this context, coffee cultivation represents an important traditional activity in the southern region of the State of Mexico; however, the impact and problems of this activity in the region's economy have been poorly addressed; in this sense, it is relevant to study and analyze the situation presented by the production and commercialization of coffee cultivation, in order to detect the main problem of the activity in its different stages, to subsequently issue opinion judgments and solution alternatives (Li *et al*., 2006; MacDonald, 2007).

Materials and methods

The investigation was carried out during the months of April to July 2018, period in which the field information was collected; intentional sampling was performed (Cochran, 1984), 41 coffee producers from the municipalities of Amatepec, Temacaltepec, Tlataya and Sultepec were surveyed in the State of Mexico, which represent 50.61% of the producers that make up the Organic Coffee Cooperative from Amatepec (CAFOA), a collector, 10 retailers and 30 consumers. The objective of the surveys was to gather information regarding the production process, participating agents, marketing costs, volumes and current purchase and sale prices, elements that helped determine the marketing margins, as well as characterize the production.

Calculation systems

To calculate marketing margins, there are two systems: direct and indirect; the most suitable system is the direct one, which consists of: a) following statistically representative lots of agricultural products, from when they leave the farm until they reach the final consumer; b) record the costs and prices that originate in the product path by the different participating agents; and c) delimit the research to lots representative of the movement of the products, using statistical sampling to select the segments to be studied, with the intention that the results can be considered as an estimate of the true margins (García *et al*., 1990).

The direct calculation system provides very complete information for the calculation of the total margins and their components; however, the procedure is very complicated and expensive. In the present investigation the direct method was used, since it is more truthful and reliable regarding the calculation and analysis of the information obtained.

Information used

Data referring to purchase and sale prices were obtained directly from the agents participating in the marketing process; this information was weighted by the volumes of purchase and sale of the product, with which its real prices were calculated; the product that was taken as a reference to unify the information and calculate prices was roasted ground coffee.

Estimation procedure

In the estimation of the margins of commercialization, it is very important to ensure that the information used is comparable throughout the process; that is, that it refers to the same unit and quality of the products, whether processed or unprocessed.

Likewise, by-products are generated in the marketing process from the producer to the final consumer, so the prices that the producer receives are not directly comparable with the sales prices to the final consumer. For this case, the problem of determining the equivalent value has to be solved in the calculation of the margins. In this way, the total absolute marketing margin (M) is calculated by difference between the value of the product in consumption (Pc) and the corrected value in production (Pp) plus the marketing costs incurred during the process (CC); that is, M= Pc - Pp - CC.

In this sense, a marketing margin refers to the difference between the sale price of a product unit by a marketing agent and the payment made in the purchase of the quantity of product equivalent to the unit sold. In addition, the margins are constituted by a series of components corresponding to the different costs and benefits of the agents, such as the value in pesos of the work used, of transport, of the materials, containers and packaging used, advertising, depreciation, taxes, benefits, interest, rents and other costs, which are called marketing costs (CC) (García *et al*., 1990).

In this way, the gross marketing margin (MBC), expressed as a percentage, is defined as the difference between the price per kilogram paid by the final consumer and the price per kilogram received by the producer. The MBC analysis aims to determine its magnitude in the different stages of commercialization, according to the type of participating agent, as well as the distribution of income among its actors (Acuña, 1980; cited by Vilavoa *et al*., 2010); the MBC is calculated in relation to the final price or price paid by the last consumer and is expressed in percentage terms; so, the: $MBC= [(PC - PP) / PC]*100$. Where: PC= is the price to the consumer; and PP= producer price (Mendoza, 1987).

Marketing costs

To calculate the marketing margins were determined as components of the marketing costs (CC), which were incurred by the different participating agents, direct labor, transport costs, electricity, water, depreciation of machinery and equipment, storage, administrative expenses, indirect labor and other miscellaneous costs.

Byproduct consideration

In the case of agricultural and livestock products, it is important to properly address the aspect concerning the by-products obtained, in order to determine their equivalent quantity. In the case of coffee, defining this value properly is transcendent, since the value of cherry coffee received by the producer is comparable to us, with the value of roasted and ground coffee purchased by the final consumer, due to post-harvest practices (benefit and drying) to which the product is subjected.

A practical rule to solve this problem may be to correct the producer price by decreasing it by the percentage represented by the by-products. This percentage can be in physical terms or in terms of value, which is calculated in the phase in which the main product and by-products are separated. Accordingly, the marketing margin is calculated by difference between the value of the product in consumption and the corrected value in production.

Thus, to calculate this equivalent amount, roasted coffee was used as the equivalent unit of measure, for which the conversion measure proposed by the International Coffee Organization (ICO) (2018) was used, where to convert roasted coffee in grain, to equivalent green coffee, the net weight of roasted coffee is multiplied by the factor 1.19, with which the corrected value in production was determined and allowed to make product prices comparable during the entire marketing process and calculate the corresponding margins (Pérez y Ruiz, 2017).

Results and discussion

Production system

In accordance with the classification of Moguel and Toledo (1996), coffee production in the southern region of the State of Mexico is characterized by being a rustic or mountain production system, characterized by plantations of the arabic species, mainly of the typica and caturra varieties, which develop under a shadowy environment; production is carried out by small producers dispersed in the region, whose planting areas do not exceed 3 ha, the workforce used is essentially familiar, with a contract for wages during the harvest season; the benefits of this activity represent a complementary income to other livestock, agricultural and service activities performed by the producers.

Agents and marketing channels

The agents participating in the coffee marketing process in the southern region of the State of Mexico are the producers, a collector, constituted by the CAFOA producer cooperative, retailers and final consumers.

The traditional marketing channel that follows the aromatic from its exit from the farm until its arrival to the final consumer is producer → CAFOA cooperative, which is carried out by 60% of the agents participating in the process.

On the other hand, 15% of the agents practice the following aspect of this traditional channel: producer → retailer → final consumer and another 15% follow the channel: producer → final consumer, while the remaining 10% of the producers do not market their product, allocating it for self-consumption (Figure 1).

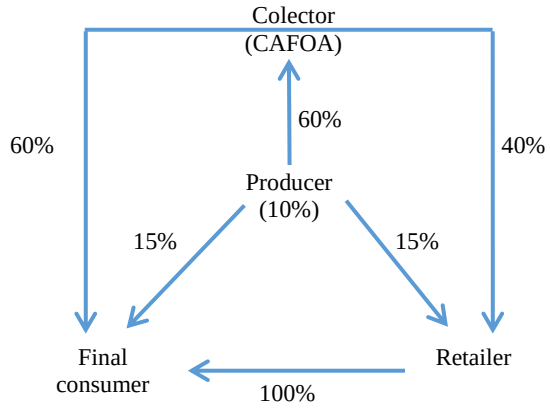

Figure 1. Coffee marketing chain.

Sale prices

In relation to the sales prices reached by the different agents participating in the marketing process, during 2018, retailers stand out, who recorded an average sale price of 162.92 $ kg^{-1} of ground roasted coffee, the collector, constituted by the CAFOA cooperative, with 148.26 $ kg^{-1}, while the producers obtained a price of 122.91 $ kg^{-1}. Regarding the participation in the sale price of the product, retailers contributed with 8.92%, the collector with 15.62% and the producers obtained the largest share of 75.46% of the final sale price.

The highest selling price, reached by the producers was recorded in the month of September, which coincides with a lower offer of the product, the collector for its part, recorded the best price during the period from January to April, while retailers they obtained the best prices in the months of July, August and September (Table 1).

Table 1. Participation of the different agents in the sale price.

Month/agent	Producer ($ kg^{-1})	Part (%)	Gatherer ($ kg^{-1})	Part (%)	Retailer ($ kg^{-1})	Part (%)
January	122.11	74.92	149.26	16.65	163.00	8.43
February	115.96	76.15	149.26	21.87	152.28	1.98
March	117.89	75.1	149.26	19.98	156.98	4.92
April	120.35	73.38	149.26	17.62	164.03	9
May	122.29	74.22	148.79	16.09	164.76	9.69
June	125.10	74.86	148.79	14.17	167.12	10.97
July	126.55	75.71	147.41	12.48	167.14	11.81
August	125.44	75.05	147.41	13.14	167.14	11.81
September	130.92	78.33	147.41	9.87	167.14	11.81
October	118.58	71.74	147.41	17.44	165.29	10.82
November	126.61	80.3	147.41	13.19	157.67	6.51
December	123.14	75.76	147.41	14.93	162.54	9.31
Average	122.91	75.46	148.26	15.62	162.92	8.92

Gross marketing margin

To calculate the gross marketing margin (MBC), the final price or price paid by the last consumer is taken into account and expressed in percentage terms; thus, the MBC showed that for each peso paid by the final consumer when acquiring a kilogram of ground roasted coffee, the intermediaries obtained 24.54% of that price, that is, 40.01 $ kg^{-1}, meanwhile, the producers got 75.46 % of the total price paid by the consumer (122.91 $ kg^{-1}). The intermediaries recorded the best gross marketing margins during the months of June, July, August and September (Table 2).

Table 2. Gross marketing margin.

Month/agent	Producer Sale price ($ kg^{-1})	Retailer Sale price ($ kg^{-1})	Margin (MBC) (%)
January	122.11	163.00	25.08
February	115.96	152.28	23.85
March	117.89	156.98	24.9
April	120.35	164.03	26.62
May	122.29	164.76	25.78
June	125.10	167.12	25.14
July	126.55	167.14	24.29
August	125.44	167.14	24.95
September	130.92	167.14	21.67
October	118.58	165.29	28.26
November	126.61	157.67	19.7
December	123.14	162.54	24.24
Average	122.91	162.92	24.54

Source: elaboration based on field information.

Of the total gross profit (MBC) recorded during the entire intermediation process (24.54%), the CAFOA cooperative reached the best marketing margin, since for each kilogram of ground roasted coffee sold it obtained $ 25.34 of profit (15.62% of the profit gross), the highest margin was recorded in the month of February (33.30 $ kg^{-1}) and the lowest in September (16.49 $ kg^{-1}), while retailers reached an MBC of 14.67 $ kg^{-1}, which represents 8.92% of total gross profit, registering in July, August and September the highest margin with 19.73 $ kg^{-1} (Table 3 and 4).

Table 3. Gross marketing margins in intermediation.

Retail collector	Price to the collector	Producer price	Final consumer price	MBC (%)	MBC ($ kg^{-1})
January	149.26	122.11	163.00	16.65	27.15
February	149.26	115.96	152.28	21.87	33.30
March	149.26	117.89	156.98	19.98	31.36
April	149.26	120.35	164.03	17.62	28.91
May	148.79	122.29	164.76	16.09	26.50
June	148.79	125.10	167.12	14.17	23.69
July	147.41	126.55	167.14	12.48	20.86
August	147.41	125.44	167.14	13.14	21.97
September	147.41	130.92	167.14	9.87	16.49
October	147.41	118.58	165.29	17.44	28.83
November	147.41	126.61	157.67	13.19	20.80
December	147.41	123.14	162.54	14.93	24.27
Average	148.26	122.91	162.92	15.62	25.34

Table 4. Gross marketing margins in intermediation.

Retailer to final consumer	Consumer price	Price to the collector	Price to the last consumer	MBC (%)	MBC ($ kg^{-1})
January	163.00	149.26	163.00	8.43	13.74
February	152.28	149.26	152.28	1.98	3.02
March	156.98	149.26	156.98	4.92	7.72
April	164.03	149.26	164.03	9.00	14.77
May	164.76	148.79	164.76	9.69	15.97
June	167.12	148.79	167.12	10.97	18.33
July	167.14	147.41	167.14	11.81	19.73
August	167.14	147.41	167.14	11.81	19.73
September	167.14	147.41	167.14	11.81	19.73
October	165.29	147.41	165.29	10.82	17.88
November	157.67	147.41	157.67	6.51	10.26
December	162.54	147.41	162.54	9.31	15.13
Average	162.92	148.26	162.92	8.92	14.67
Total				24.54	40.01

Total marketing margins

The average total margin recorded during the entire coffee marketing process in the southern region of the State of Mexico, was 36.60 $ kg^{-1}; the CAFOA producer cooperative obtained the highest margin with 23.95 $ kg^{-1}, while the remaining 12.65 $ kg^{-1} corresponded to retailers; the highest total (absolute) margins of commercialization were reached in the months of October and April, with 43.30 $ kg^{-1} and 40.26 $ kg^{-1}, respectively; meanwhile, the lowest total margins were recorded in the months of November (27.65 $ kg^{-1}) and September (29.97 $ kg^{-1}).

The CAFOA producer cooperative registered the best margins during the months of February (31.91 $ kg^{-1}) and March (61.22 $ kg^{-1}), while the lowest were in September (15.10 $ kg^{-1}) and November (19.41 $ kg^{-1}), which coincides with the greater supply of the product originated by the harvest period; on the other hand, retailers reached better margins during the months of July, August and September with 17.71 $ kg^{-1}, a lower supply period, and a lower margin during February (1.00 $ kg^{-1}) and March (5.70 $ kg^{-1}).

With the previous behavior, the distribution of the income generated between the different agents participating in the marketing process is evident, as well as the complement that is generated with the product offer (Table 5).

Table 5. Total marketing margins of the participating agents ($ kg^{-1}).

Month	Margin 1 producer to collector				Margin 2 retail collector				Absolute margin producer retailer			
	PC	CC	PV	M	PC	CC	PV	M	PC	CC	PV	M
January	122.11	1.39	149.26	25.76	149.26	2.02	163.00	11.72	122.11	3.41	163.00	37.48
February	115.96	1.39	149.26	31.91	149.26	2.02	152.28	1.00	115.96	3.41	152.28	32.91
March	117.89	1.39	149.26	29.97	149.26	2.02	156.98	5.70	117.89	3.41	156.98	35.67
April	120.35	1.39	149.26	27.52	149.26	2.02	164.03	12.75	120.35	3.41	164.03	40.26
May	122.29	1.39	148.79	25.11	148.79	2.02	164.76	13.95	122.29	3.41	164.76	39.06
June	125.10	1.39	148.79	22.30	148.79	2.02	167.12	16.31	125.10	3.41	167.12	38.61
July	126.55	1.39	147.41	19.47	147.41	2.02	167.14	17.71	126.55	3.41	167.14	37.18
August	125.44	1.39	147.41	20.58	147.41	2.02	167.14	17.71	125.44	3.41	167.14	38.29
September	130.92	1.39	147.41	15.10	147.41	2.02	167.14	17.71	130.92	3.41	167.14	32.82
October	118.58	1.39	147.41	27.44	147.41	2.02	165.29	15.86	118.58	3.41	165.29	43.30
November	126.61	1.39	147.41	19.41	147.41	2.02	157.67	8.24	126.61	3.41	157.67	27.65
December	123.14	1.39	147.41	22.88	147.41	2.02	162.54	13.11	123.14	3.41	162.54	35.99
Average	122.91	1.39	148.26	23.95	148.26	2.02	162.92	12.65	122.91	3.41	162.92	36.60

M= margin; PC= purchase price; PV= sale price; CC= marketing costs.

Conclusions

Coffee production in the southern region of the State of Mexico is developed under a rustic or mountain production system, characterized by shady plantations, of the Arabic species, farms do not exceed 3 ha of surface area, which are dispersed In the region, the activity is developed as a complement to other activities, in which family labor is used primarily. The traditional marketing channel to take the product from the farm to the final consumer is the direct sale of the producer to the cooperative of producers Organic Coffee Amatepec (CAFOA), which operates as the main intermediary, other variants of this channel are the sale of the producer to the final consumer and retailers.

The product is marketed essentially through the presentation of ground roasted coffee, a process carried out by the producers on their own or with the support of the producers' cooperative, a phase that provides added value to the product. Under this marketing scheme, producers obtained a greater share in sales prices, which reached the highest level in the months of least supply. In the marketing margins resulting from the intermediation process, the cooperative of producers registered the best profits during the months of greater aromatic offer, originated by the high volumes of purchase sales.

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