THE INEQUALITY IN PURCHASING BEHAVIOURS FOR SHEEPMEAT IN THE TIARET REGION (ALGERIA)

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Abstract.- *While using the microeconomic approach of the Keynesian function of households' consumption in a basket of products and services, the study compared the purchasing behaviour of sheepmeat from urban to rural areas. In this respect, for 3 months (June to August) 2020, a survey collected data from 316 rural households in Hamadia and urban households (Tiaret) based on random sampling. Hence, it revealed an inequation in purchasing behaviour in terms of expenditures of income $y_1 = 0.0142x + 749.37$ and $y_2 = 0.0107x + 688.09$ (Tiaret and Hamadia), along with a volumetric consumption $y'_1 = 0.0164x + 228.33$ and $y'_2 = 0.0131x + 503.76$ at the expense of the countryside. Besides, the demand for this meat represents a constant in the food supply of all populations (76.83% of urban dwellers and 62.5% of rural surveyed individuals), but unevenly increases in terms of consumption in carcass weight, the proportion of the food budget devoted to it and residence. In addition, the progress of urbanisation, purchasing power and socio-demographic parameters inevitably calls for greater consideration of the demand for mutton with a constant food supply for the entire households.*

Keywords: *Animal product; Consumer behaviour; Household budget; place of residence; socio-demography.*

INÉGALITÉ DES COMPORTEMENTS D'ACHAT DE LA VIANDE OVINE DANS LA RÉGION DE TIARET (ALGÉRIE)

Résumé.– *Avec l'approche microéconomique de la fonction keynésienne de consommation des ménages dans un panier de biens et services, l'étude a comparé le comportement d'achat de la viande ovine du milieu urbain au milieu rural. Une enquête a permis de recueillir des données auprès de ménages ruraux de Hamadia et urbains (Tiaret). Elle a révélé une inégalité de comportement d'achat en termes d'une équation de dépenses en fonction du revenu $y_1 =0,0142x + 749,37$ et $y_2 =0,0107x + 688,09$ (Tiaret et Hamadia), et de celle de consommation volumétrique $y'_1 =0,0164x + 228,33$ et $y'_2 =0,0131x + 503,76$ aux dépends de la campagne. La demande est une constante de l'alimentation de toutes les populations (citadines 76,83% et rurales 62,5%), mais s'accroit inégalement de par la consommation en poids carcasse, du budget alimentaire et la résidence. Le progrès de l'urbanisation, du pouvoir d'achat et des paramètres sociodémographiques appelle à une prise en compte renforcée de la demande de viande avec une constante de l'alimentation de tous les ménages.*

Mots-clés: *Comportement du consommateur, budget du ménage, produit animal, milieu de résidence, socio-démographie.*

Introduction

In Algeria, sheep farming is one of the most far-reaching and familiar strategic activities; it is alike playing an important role in the economy with a contribution of almost 50% to the agricultural gross domestic product [1-3]. More to the point, this country produces an average of 300,000 tonnes of red sheep and beef meats each year with imports of 40,000 tonnes of frozen beef meat, covering 12% of the total supply [4]. However, they

are both contributing with 340,000 tonnes, or 10 kg/inhabitant/year to average consumption, whilst the remaining share comes from 240.000 tonnes of white meat (07 kg/inhabitant/year) and other animal categories [5].

Indeed, for this kind of consumption, there is a main difficulty in taking the behaviour of the household into account throughout the analyses impacting the corrective measures to be carried out. More to the point, these are the structural characteristics and the ambiguity of the concepts that refer to a diversity of realities, both objective (social and economic categories) and subjective (preferences: taste, culinary habits, perception, and environment). Nevertheless, in the entire environments, the behaviour of meat purchases is not very diversified [6], and in Algeria it is mainly based on four categories: sheep, beef, poultry, and goat. In virtue of which, the household becomes a major consumer of sheep meat.

In fact, high demand is far outstripping supply, implying a price increase. In 2021, among a sample or a "basket" of products and services, the food and non-alcoholic beverages group weighing 43.09% overall, with fresh food products having a weight of 16.92%, of which 5.72% originates from mutton and offal (chicken meat 2.41%, beef meat and offal 1.08%). Between 2011 and 2020, the annual price indices for mutton and offal rose steadily from 183.97 to 299.67 compared with 173.84 to 266.04 in the basket, including 163.33 to 275.92 for beef and giblets [1]. Does this high consumption reflect certain types of households and localities? In such conditions, the analysis suggested that the disparity in meat consumption observed would be in favour of the city compared to the countryside, but with a constant in the food supply of all households in the entire environments.

In this paper, the aim of the analysis based on the microeconomic approach of the Keynesian household consumption function is to compare the purchasing behaviour of sheepmeat in urban and rural areas. Besides, the similarity and difference reports are examined in terms of purchasing power (income), preferences (taste and geographical location) and socio-demographic factors for the different food items, for an equivalent number of meals taken at home. In addition, the application thereof will lead to the compliance of the perspectives of the evolution of urban and rural life and its impacts on attitudes to production, food supply and distribution.

1.- Material and methods

1.1.- Theoretical and conceptual framework for the economic analysis of consumption

There was some consumption of meat by various socio-economic categories, and it occurred in a locality that subtended a particular place. However, this was assumed to be the market in which the purchasing behaviour of households took place. In consequence, when reference was made to the consumption of meat, it referred to the demand for that meat. More to the point, consumption is determined as a set of expenditures made in a basket of products and services to satisfy needs; it has been subject to analysis by various thoughts [7,8].

Above and beyond, Keynesian thinking looked at consumption as an economic aggregate in a macroeconomic approach. Considering which, it relied on the study of the overall functioning of the system, and determined that consumption of individuals was

made as a function of disposable income based on a fundamental psychological law by the formula hereunder: C = c.Y + Co (C: total consumption, c: marginal propensity to consume, Y was national income and Co: share of consumption that did not depend on income). Besides, it shows that consumption represents an increasing function of disposable income and increases in consumption have shown to be lower than increases in income [6,9-11].

As for neoclassical thinking on consumption, it takes up the usual questions on the nature of products and on the demand function (Are they normal or inferior products? How do preferences change according to seasons through drawing consumption and production cycles? How do buyers react to price changes? What is the level of substitutability of these products? etc. The lack of answers that can be generalised to all products constitutes the limits of a pure economic analysis of the purchasing behaviour [8]. Further, the neoclassicals argued that consumption is a microeconomic analysis; they conceived an approach that focused on methodological individualism.

Indeed, the theory was based on the utility value U (X, Y). Thus, we were given the choice between two products X and Y, whereat the buyer sought to maximise satisfaction under the constraints of purchasing power, rationality, and perfect information as regards the price of the goods. In addition, the utility approach has transformed economic thinking by stating that an agent's behaviour in the face of multiple and varied options is consistent with its value. There is no doubt that the random utility function obtained with Marshallian goods optimisation is again revitalizing both economic thinking and algorithmic thinking with computer tools [8,12,13].

The Modigliani theory (life cycle), founded by Modigliani, asserts that demand represents an almost constant proportion of income allocated for consumption by a household over the course of its lifetime. It is subdivided into three phases [14]: the inactivity phase whereat a consumption is higher than income and wealth is negative, the activity whereat income is higher than purchase and the agent builds wealth, and the retirement period during which income decreases and the individual uses the wealth accumulated during the active life to continue consuming.

The various approaches have used economic factors, which have provided for a long-time explanation for most of the buyer's behaviour in the food field, and which are still important, but have increasingly included ethnic, psychological, and sociological considerations. Besides, the Keynesian school, which did not deviate from this, was used to provide explanation thereto from another position: Purchase of households in a basket of products and services as a function of three independent variables: Purchasing power, socio-demographics, and preferences. As regards preferences, according to Mankiw and Taylor [7], the most obvious determinant of demand is taste for goods or things. Hence, if you like mutton, you will buy further quantities.

Additionally, preferences are intrinsic and can alike refer to exogenous sources, inclusive of the effect of climate on the consumer and price [3,5]. In this respect, this seemed to lead to the provide explanation of the purchase phenomenon through localisation. Further, several studies explain the preponderant influence of income on consumption, sometimes using elasticity [10,15-17]. Nevertheless, very few studies are devoted to the consumer by redefining preferences, but rarely on the relationships between position, socio-demographic parameters, climate, or even distribution systems and the

consumer behaviour [3,8,11,16].

Although neoclassical theory reduced itself to variations in price, income, and proximate goods, it was not able to convincingly provide explanation for consumption, as buyers' tastes have been evolving, the same applies for the phenomena who's the entire variables could account for excluded locality. More to the point, the characteristics of meat and seafood products were based on high growth, seasonality, and perishability, which led to questioning the economic nature of such goods: inferior or normal goods and the fluctuation of demand according to variations in these factors. Nonetheless, by including preferences therein in line with traditional tools, the hypothesis of social diversities or the one related to lifestyles with two hypotheses attempt to provide explanation for the formation of preferences in terms of their purchase: The generation effect and the regional "pattern" often using statistics and the model [8,12,16].

1.2.- Methodology

In fact, sheep have often been raised in economically vulnerable regions such as the pre-Saharan and highland areas, including the region of Tiaret. In this environment, the main components of the climate (rainfall, temperatures) are very variable during the year and the grass has shown to be scattered and in continuous decline [4,3]. Besides, the sheepmeat is part of a traditional market organisation, so the central government does not give support to for private storage, but resorts to support measures for animal feed and vaccination in case of appearance of animal diseases, or to exceptional import instruments if there would be high demand, particularly at festive times [18]. On the other hand, the market surveillance has not been effective, with a lack of a system for reporting prices, production, and trade information. As consequence, this has led to a voluntary classification system for live sheep and their carcasses and insufficient short- and medium-term production of reports on general prospects (purchase, production, and prices), trends, progress and expectations including activity.

In the region, for the purpose of attempting to establish the relationships between the consumption of sheepflesh and the independent variables, an implemented methodology was based on a survey during the period June-July-August 2020 of 316 households (152 for Hamadia, a rural area, and 164 for the urban area of Tiaret in the region of Tiaret). Above and beyond, random sampling around the markets in both locations has given such a signification that everyone in the population had a known, non-zero probability of belonging to the sample. In this respect, the households all had the same probability of being selected for the sample, their probability was a constant, and the 316 individuals have "constituted with conviction a realistic representation of knowledge on this particular issue" [12]. In virtue of which, this procedure was based on a microeconomic approach all the way through introducing the Keynesian consumption function into the Excel software, which generated an equation for expenditure as a function of income and along with the consumption one, thus making it possible to reveal or not an inequality in behaviours.

2.- Results of the surveyed individuals in the two localities

2.1.- Personal data and socio-professional categories of the surveyed population

As being observed from one area to another, the socio-demographic disparities were of remarkable significance. In this respect, several young couples lived with their

parents (9.76% in Tiaret and 14.47% in Hamadia). Therefore, the approach would have allowed the day-to-day expenses to be shared and would have reduced precariousness and social pressure (tab. I). However, figure 1 shows the socio-professional categories of the sample and the representativeness thereof in the two different localities. Indeed, more employees (62.80%), tradesmen (09.15%) and higher professions (02.44%) were found in the town than in the countryside (34.87%, 03.95 and 02.44% respectively). Likewise, other socio-professional characteristics specific to each locality were the rates of farmers, business owners, those unemployed individuals, retired people, and skilled workers.

Table I.- Social and demographic data of surveyed individuals in the two localities

Independent variables	Personal data	Tiaret		Hamadia		Tiaret + Hamadia	%
		Members	%	Members	%		
Gender of the head of household	Female	50	30,49	15	9,87	65	20,57
	Male	114	69,51	137	90,13	251	79,43
	Total	164	100	152	100	316	100
Age of the head of the family	15 and 29 years old	3	1,83	3	1,97	6	1,9
	30 and 44 years old	92	56,1	57	37,5	149	47,15
	45 and 59 years old	53	32,32	56	36,84	109	34,49
	> 60 years old	16	9,76	37	24,34	53	16,77
	Total	164	100	152	100	316	100
Level of education	Illiterate	1	0,61	6	3,95	7	2,22
	Primary level	7	4,27	28	18,42	35	11,08
	Secondary level	88	53,66	84	55,26	172	54,43
	University level	68	41,46	34	22,37	102	32,28
	Total	164	100	152	100	316	100
Size of household	01 room household	14	8,54	16	10,53	30	9,49
	02 rooms household	20	12,2	22	14,47	42	13,29
	03 rooms household	77	46,95	58	38,16	135	42,72
	04 rooms household	20	12,2	23	15,13	43	13,61
	05 rooms household	15	9,15	18	11,84	33	10,44
	More than 05 rooms	18	10,98	15	9,87	33	10,44
	Total	164	100	152	100	316	100
Type of house	With family	16	9,76	22	14,47	38	12,03
	Corporate housing	2	1,22	2	1,32	4	1,27
	House	56	34,15	73	48,03	129	40,82
	Apartment	87	53,05	53	34,87	140	44,3
	Villa	3	1,83	2	1,32	5	1,58
	Total	164	100	152	100	316	100

Figure 1.- Socio-professional categories in the municipalities of Hamadia and Tiaret

2.2.- Monthly household income

The reported monthly income ranged from 0 DZD to more than 160,000 DZD per month, with a common average of 06.01% falling in the category of [80,000 – 160,000 DZD]. While the low budget bracket [0<20,000 DZD] has shown to be largely abundant in the rural locality (40% vs 11%), it was the lower-middle, upper-middle- and higher-income brackets that were dominant among urban residents (Tiaret), at 48%, 35% and 07% respectively (fig. 2).

Figure 2.- Monthly household income in the municipalities of Hamadia and Tiaret

2.3.- Expenses for the purchase of mutton by monthly income and by household

Figures 3 and 4 describe that for Hamadia and Tiaret, on average 37.50% and 23.17% of surveyed individuals did not buy sheepmeat. It concerns rural households that spent less money on this kind of food: less than 1,000 DZD (27.63%), whilst it was only 12.17% in urban households. Nonetheless, when expenditure was equal to or greater than 1,000 DZD/month, surveyed individuals were in the majority in the urban locality.

Formulation of the functions of purchase expenses and meat consumption quantities
Which means that y = linear equation of sheepflesh consumption expenses per household and according to monthly income, y1 for Tiaret and y2 for the municipality of Hamadia (fig. 5)

$y_1 = 0.0142x + 749.37$ with x = monthly income and 0.0142 represented the average propensity of expenses on mutton for the municipality of Tiaret.
$y_2 = 0.0107x + 688.09$ with x = monthly income and 0.0107 represented the average propensity of expenses on sheepmeat for the municipality of Hamadia.

The regression lines ($y_1 = 0.0142x + 749.37$ and $y_2 = 0.0107x + 688.09$) have shown to be positive. In virtue of which, this assumes that there was a relatively increasing linear relationship between income and meat purchase expenses; in other words, as income increased, meat consumption expenses almost increased for both areas. As consequence, the regression curves indicated correlations between the purchase expenditures on mutton and income, with highly significant correlation coefficients $R^2 = 0.8849$ for Tiaret and $R^2 = 0.7997$ for the municipality of Hamadia, but in favour of the urban residents. Moreover, 76.83% of urban surveyed individuals from the city and 62.5% of rural surveyed individuals have consumed sheepmeat.

Figure 3.- Expenses for the purchase of sheepmeat by monthly income in Hamadia

Figure 4.- Expenses for purchase of mutton by monthly income in the municipality

Which means that y'= linear equation of the quantities of mutton consumption per household according to monthly income, y'_1 for Tiaret and y'_2 for Hamadia (fig. 6).
$y'_1 = 0.0164x + 228.33$ has shown to be positive for the municipality of Tiaret showing a strong correlation ($R^2=0.99$) as in Hamadia an equation
$y'_2 = 0.0131x + 503.76$ has alike shown to be positive for Hamadia showing a strong correlation ($R^2 = 0.81$). For both areas, if incomes would increase, the volumes of meat destroyed by households will relatively increase, but always to the detriment of countryside.

Figure 5.- Equation of sheepmeat consumption expenses (Tiaret and Hamadia)

Figure 6.- Linear equation of the purchase quantities of sheepmeat (Tiaret and Hamadia)

3.- Discussion

The inclusion of the location, like the climate elsewhere, in the variable of preferences, combined with the use of structural socio-demographic variables, had shown to be an original way of complementing the understanding of the complex phenomenon of consumption that the objectivity of good usage would only constitute as an avatar. Based on the independent variables described the disparities in behaviour observed between the city and countryside were of significant significance. Consequently, preferences had not only been referring to taste, but alike to climate and location. For instance, if an individual lives where there is no food of his taste, he might develop his own preferences for another food.

Naturally, a locality is characterised by its climate being accepted as a factor of determination of the households' consumption and the price of sheep, in terms of seasonal purchase and seasonal prices [3,9,16,18-20]. Then, it appears that it is through such independent variables complementary to the economic ones that understanding would be best achieved. Accordingly, it has then pushed the limits of a pure economic analysis of consumption behaviours [16,8].

Indeed, the survey of households revealed that mutton held an exceptionally important place in the food supply of households, whether they were urban or rural; it effectively was consumed by 76.83% of households in Tiaret and 62.5% in Hamadia. Besides, sheepmeat has rightly been a constant in the food supply of all populations in the

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