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Urban and rural dietary patterns in Greece in the years 1957-2008; an economic analysis[6]

Abstract. This paper attempts to describe and study in detail the evolution of urban and rural dietary patterns in Greece during the period 1957-2008, in terms of natural and technical features. Natural features refer to the consumption of animal versus plant products, while technical features pertain to agricultural and industrial products consumption. The analysis leads to a conclusion that the dietary patterns obtain internationalized, industrial origin and growing share of animal products, while the weight of tradition (i.e. Mediterranean plant products and services) weakens in Greece after World War II. Additionally, during this period the urban and rural dietary patterns, by comparison, have evolved at different paces and characteristics; the rural dietary patterns converged to urban ones with 'asymmetric' way, time lag and significant particularities.

Keywords: urban and rural dietary patterns, traditional and industrial food products.

Introduction

During the period 1957-2008 major changes are observed in the dietary behaviour throughout the population in Greece and its subgroups; a prevalence of the industrial international 'Western origin' dietary patterns and a rapid decline of the traditional Mediterranean ones. The inquiry based on the geographical regions (urban and rural)

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highlights similarities, differences and characteristics in the evolution of dietary patterns over time, as well as comparisons in certain time periods (e.g. during the decade of 70s or the decade of 00s, etc.): Urban areas have less traditional features and precede in the adoption of 'Western' industrial behaviours, while stronger traditional behaviours have always been observed in rural areas. After the decade of 70s, the rural dietary patterns rapidly converge to urban ones, a phenomenon already observed since the decade of 50s, but at a slow pace. Noteworthy in this development are the local (prominently of Crete, the case of which has been investigated internationally) and the qualitative particularities with regard to specific characteristics of urban and rural patterns (e.g. the consumption of cereals or legumes or meat, etc.).

Data and methodology

The data for this inquiry were selected from the Household Budget Surveys (HBS 1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05 and 2008) of the National Statistical Service of Greece (NSSG - ELSTAT). Descriptive statistics are used for the data analysis. The theoretical approach employed is the 'new consumer theory' [Lancaster 1966] and the general principles of the approach of consumption phenomenon [Deaton 1992].

The 'formula of patterns classification' [Sotiropoulos et al. 2010b] is used in order to identify the relationships between plant and animal components as well as between agricultural and industrial components of diet. This formula, by calculating quantitative data, enables the patterns classification based on components such as plant or animal origin, agricultural or industrial patterns, etc. Thus, the dietary patterns of the decade of 50s are characterized as patterns of plant components, agricultural, traditional 'Mediterranean' and those of the decade of 80s and henceforth are classified as of animal components, industrial, internationalized and of West (Western Europe & North America) influences [Sotiropoulos et al. 2010a].

The 'formula of patterns classification' is:

Qalimentary pattern = (Qplant, Qanimal, Qagric, Qindust, Qbiol),

where:

Qplant = plant characteristics

Qanimal = animal characteristics

Qagric = agricultural characteristics

Qindust = industrial characteristics

Qbiological = biological characteristics

Description and analysis of the main characteristics of dietary patterns

The urban and rural dietary patterns were completely different in the decades of 50s and 60s (Tables 1 and 2). The traditional Mediterranean dietary patterns dominated in rural areas, where the plant components (e.g. cereals) prevailed, and the animal and industrial components were of less importance. In the urban areas, a Mediterranean dietary pattern is observed, which verges to the industrial-internationalized patterns of the higher socio-economic and younger groups of the population [Sotiropoulos 2009]. This verdict is reinforced by the dietary patterns in own consumption [Sotiropoulos 2004].

Table 1. Food consumption patterns in urban areas, %

Consumption component	Household Budget Survey (HBS) of								
	57/58	63/64	1974	81/82	87/88	93/94	98/99	04/05	08
	area of capital	5000-9999 residents	urban areas						
Cereals, bread	14.0	14.4	8.5	8.0	8.3	9.3	8.1	8.0	8.2
Meat	17.0	15.5	26.3	26.7	22.8	19.6	14.6	13.9	13.4
Fish	5.2	5.7	4.0	4.5	4.4	4.7	4.8	5.2	4.7
Vegetable/ olive oil	10.7	9.4	8.1	6.0	4.6	4.2	3.5	3.5	3.2
Dairy products & eggs	12.3	12.1	12.4	12.9	13.5	13.4	12.3	12.1	11.0
Vegetables	13.8	9.1	9.9	9.1	8.5	8.3	7.8	7.4	6.7
Fruit	5.0	8.4	8.5	8.0	8.2	6.4	5.5	5.0	4.6
Sugar & pastry making products	5.9	8.0	6.8	5.0	5.3	4.5	4.0	4.2	3.7
Expenditure on food away from home	12.8	15.4	11.4	16.9	20.6	25.7	35.1	36.1	40.1
Non alcoholic drinks *	0.4	1.4	1.6	1.0	1.7	2.0	2.3	3.7	3.5
Other food categories	2.9	0.6	2.4	1.9	2.2	1.8	2.0	0.9	1.0

* Non alcoholic beverages and ice-cream in H.B.S 1957/58.

Source: [Household…1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05, 2008].

Significant differences are found within the same category of patterns (e.g. the urban, the capital area, and other urban and suburban areas), but this is especially the case for agricultural patterns, where much larger differences are observed, such as in the dietary patterns between the largest and smaller villages in the HBS 1963/64. In smaller villages the residents' diet relies almost exclusively on cereals, characterized by a deprivation and a small variety of products [Sotiropoulos 2002]. Malassis [1986] describes these patterns as 'Third World cereal patterns of food deprivation' e.g. Africa).

Table 2. Food consumption patterns in rural areas, %

Consumption component	Household Budget Survey (HBS) of								
	57/58	63/64	1974	81/82	87/88	93/94	98/99	04/05	08
	Rural areas	Up to 199 residents	rural areas						
Cereals, bread	18.0	49.4	13.0	9.9	9.9	11.9	10.4	10.7	10.7
Meat	15.6	18.3	25.3	27.0	24.1	21.8	16.4	15.8	17.4
Fish	6.9	8.5	5.7	6.1	5.8	5.6	5.9	5.5	5.3
Vegetable/olive oil	10.8	0.1	9.4	8.3	5.3	5.1	4.5	3.8	3.8
Dairy products & eggs	8.7	0.5	8.5	9.2	10.3	11.7	10.7	11.4	11.0
Vegetables	9.4	4.7	9.8	8.3	7.8	7.9	8.3	7.5	7.4
Fruit	3.5	3.1	6.6	5.2	5.9	5.8	4.9	4.6	4.5
Sugar & pastry making products	5.5	6.8	6.8	4.6	5.2	5.0	3.7	4.2	3.7
Expenditure on food away from home	13.6	6.6	10.1	18.5	22.5	21.2	30.9	31.9	31.2
Non alcoholic drinks *	1.6	1.9	1.8	0.7	1.3	1.9	2.1	3.8	4.2
Other food categories	1.2	0.2	2.8	2.3	2.1	2.0	2.2	0.8	0.9

* Non alcoholic beverages and ice-creams in H.B.S 1957/58.

Source: [Household…1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05, 2008].

A key finding that pertains to both types of areas (urban and rural) is that the importance of traditional dietary patterns diminishes in favour of the animal, industrial Western origin and new market products. This decline is more rapid for the urban population and even faster in the capital. Especially, after the decade of 60s, this phenomenon is accelerated and as a consequence after the decade of 70s the differences between urban and rural patterns are quantitative rather than qualitative.

The evolution of the micro-level behavior over time by product category is rather interesting; for example, the bread and cereal consumption in rural areas, even though it is finally reduced at the end of the fifty years period, is realized by more pronounced fluctuations than those in urban areas. However, the percentage of bread consumption is always higher in rural areas than in urban areas.

Similar behaviours are observed in other major categories such as meat and expenditure on food away from home (lower percentages and fluctuations especially for expenditure on food away from home). This leads to a conclusion that there is a time 'lag' in the convergence of rural with urban dietary patterns, which confirms earlier findings [Karapostolis 1979 & 1983]. This time lag is accompanied by particularities which justify the verdict of 'asymmetrical convergence', which means the adoption of the new patterns by the rural population, but with significant differences to urban ones [Karapostolis 1983].

Description and analysis of dietary patterns structure

The analysis of structure of each product category (such as cereals, meat, etc.) reveals further differences and contributes to a deduction of more comprehensive conclusions. The most evident and general conclusion concerns the extent and the range to which patterns have been internationalized. The industrial products participating in the food expenditure of rural households are fewer than those of urban households. This is also the case for food services and the internationalization of dietary patterns in rural areas. These results confirm earlier conclusions on 'asymmetric convergence', as well as the time lag of rural and urban patterns convergence and that within each food category (Table 3).

Table 3. Structure of dietary patterns for cereals, meat, legumes, vegetables and expenditure on food away from home in urban and rural areas, %

Consumption component	Household Budget Survey (HBS) of						
	57/58	81/82	2008	63/64	63/64*	81/82	2008
	urban areas			rural areas			
Bread & cereals							
Bread	67.0	62.0	64.2	31.3	4.6	47.6	72.0
Flour	6.4	3.6	3.7	24.1	71.5	16.2	4.9
Industrially processed cereals	18.9	31.2	26.2	17.5	17.0	25.9	17.1
Rice	7.5	6.8	6.0	11.1	6.9	10.3	5.9
Meat							
Beef	34.8	50.6	40.0	17.0	0	36.5	40.6
Lamb and goat	31.9	15.2	12.6	29.5	24.5	22.4	17.3
Meat products	3.5	6.1	14.4	3.8	0	6.9	10.3
Legumes-vegetables							
Legumes	13.5	6.0	6.8	20.1		16.4	11.3
Fresh vegetable	70.5	66.4	69.9	56.3	44.2	50.3	68.7
Industrially processed vegetables		5.7	18.9			4.1	14.5
Expenditure on food away from home							
Restaurants	56.4	56.7	58.4	35.6	49.1	43.1	45.8
Cafes	43.6	43.3	41.6	64.4	50.9	56.9	54.2

* Smaller villages with up to 199 residents

Typical consumption in meat category: sheep and goats: 31.8%, pork: 17.8%, other types of meat (offal, game, etc.): 21.2%, frozen meat: 4.8%. In the vegetable category: potatoes 55.8%.

Source: [Household…1957/58, 1963/64, 2008].

The analysis of internal structure of the cereal category highlights differences in the evolution of consumption characteristics between urban and rural households. In urban households, the traditional 'industrial' products such as bread gradually disappear in favour of the most modern and western-origin new industrial products (e.g. corn flakes, pasta with meat, cheese, seafood or vegetable preserved, frozen or canned, precooked, etc.). On the

contrary, in rural households the traditional industrial product (bread) increases its share in the expenditure at the expense of home made bread and flour, while the consumption of newly industrialized products increases, though by lower percentage and growth rates compared with urban households. These differences in the evolution of cereal consumption patterns clearly demonstrate the industrialization and its characteristics of the modern Greek diet. While in the decade of 50s [Household… 1957/58], the percentage differences between urban and rural households were minimal (18.9 % and 17.5%), at the end of the period studied (2008) the differences were very important (26.2% and 17.1%).

In meat category, the main common feature in the food consumption of the two population groups (urban and rural households) is the increased consumption of veal. In rural households, the rates continue to rise, though with fluctuations, while in urban households the rates reached a maximum level in the early 70s and since then the fluctuations are small. Regarding the internal structure of this category, there is a clear dominance of beef and veal, approximately 50% of whole category, even though at the beginning of the investigated period (50s and 60s) the equivalent rates were very low; 34.8% in urban areas, 17% in rural areas and 0% in smaller villages. However, this evolution of meat consumption affirms the earlier evaluation and characterization [Karapostolis 1983]: 'time lag' of alimentary behaviour in the meat category of rural compared to urban households. The evolution of consumption of all meat types, traditional and industrial, can be described in the same way. The consumption of traditional lamb accounted for 1/3 of the whole category expenditure in the decade of 50s, but nowadays it accounts for only 1/10 and 1/6 in urban and rural households respectively. Conversely, the consumption of industrial (meat products) is sharply expanding, especially in smaller villages, where at the starting point it was zero.

The inversions of traditional behaviours are also intense to all other traditional categories. A typical example is vegetables; vegetables' consumption decline rapidly especially in rural areas, although during 60s they were among the predominant foodstuffs and were considered a staple food (1/5 of total food expenditure). In contrast, industrial vegetables from around zero rates in the early postwar years, nowadays account for over 10% of vegetables-legumes expenditure. During the 50s and 60s, until 1969, when the first industrial frozen vegetables appeared in the market, the only industrial product of this category was the tomato pulp. These inversions (in vegetables and legumes, meat, and especially in sheep and goats, cereal and bread) have symbolic dimensions with cultural extensions, especially to the Mediterranean diet and specifically in rural communities [Sotiropoulos 2011].

Severe reversals of behaviours are also observed in the consumption away from home. In urban households, the expenditure in restaurants prevailed, while in rural households the expenditure in cafes dominated, reflecting the lifestyle in the countryside. However, after the survey of 2004/05, the expenditure in restaurants in rural areas was higher than in cafes, even though this share is much smaller than in urban households.

Consequently, all the features of the world famous 'Mediterranean diet' are in decline, especially in Crete, where during the 50s the 'Mediterranean diet' dominated [Renaud 1996], maintaining an ages-old tradition from the Minoan era. Nowadays, the population of Crete consumes, to great extent, industrial foodstuffs and Western origin meat instead of the traditional Cretan products, and to much lesser extent olive oil and fruit (the lowest in Greece). The cereal consumption remains slightly above the average in the general

population of the whole country, while fish and vegetable consumption remains high (Tables 4 and 5).

Table 4. Regional dietary patterns (according to regional divisions), %

Consumption component	Region and survey of							
	Crete		Thessaly		Attica		Thessalonica	
	´81/82	´08	´81/82	´08	´81/82	´08	´81/82	´08
Food	100	100	100	100	100	100	100	100
Cereals, bread	9.4	9.5	8.1	7.9	7.6	8.3	8.6	7.4
Meat	28.0	15.9	27.6	14.6	27.7	13.5	22.5	10.5
Fish	7.9	5.5	4.2	4.4	4.2	4.7	3.7	3.8
Vegetable/olive oil	2.3	1.8	11.2	4.7	5.7	3.2	5.9	3.0
Dairy products & eggs	11.6	9.7	11.6	10.8	12.6	11.2	13.4	11.0
Vegetables	10.9	8.2	8.1	6.3	9.3	6.9	8.3	6.0
Fruit	6.6	3.7	6.5	4.4	8.4	4.6	8.6	5.4
Sugar & pastry making products	4.9	4.0	5.4	3.2	4.9	3.4	5.2	4.0
Expenditure on food away from home	15.5	36.5	14.7	40.2	16.6	39.9	20.8	43.7
Non alcoholic drinks *	0.8	4.2	0.7	2.5	1.1	3.4	1.1	3.9
Other food categories	2.2	0.9	1.9	0.9	1.9	1.0	1.9	1.2

Source: [Household… 1981/82, 2008].

Locality seems to influence the dietary patterns and this could be a topic for future research, namely whether each specific region displays local diet features and how this is interpreted. Are these features associated, for example, with the productive base of the region, its trade relations, the activities of residents, their economic capabilities (e.g. tourism provides the necessary income to people to consume the products they wish), etc?

It seems, therefore, that the phenomena of behaviour convergence have accelerated after the decade of 80s, with the decline of traditional behaviours and the domination, eventually, of the modern Western and internationalized patterns. This evolution is characterized by the increased consumption of Western origin meat (especially beef) and of industrial products of all categories which preceded the expansion of food services. There is a complete change of lifestyles, reflected by the food consumption away from home, in restaurants and cafes, although the share of the latter is shrinking in favour of the former.

This is an important cultural element because it is associated with lifestyle and communication, professional behaviour, social relationships, as well as with the role of both sexes in the family and social life. For example, the participation of women in frequenting traditional coffee shops was slightest; however, in modern fast food restaurants it is dominant. This raises other important issues, such as the characteristics and the structure of the respective expenditure, with significant extensions. One of these is the consumption of alcoholic (e.g. the traditional raki, ouzo, etc.) and non-alcoholic beverages (e.g. coca cola), types of coffee, and the choice of restaurant menus, with significant consequences for the production base and the international trade of the country.

Table 5. Structure of regional dietary patterns for cereals, meat, legumes, vegetables, and expenditure on food away from home (in %).

Consumption component	Region and survey of									
	Athens			Thessalonica			Crete		Thessaly	
	´57/58	´81/82	2008	´57/58	´81/82	2008	´81/82	2008	´81/82	2008
Bread, cereals										
Bread	68.6	57.6	62.0	75.5	66.4	64.2	48.0	66.8	51.5	70.6
Flour	3.0	3.2	3.6	3.8	3.0	3.2	9.5	3.7	9.3	3.6
Industrially processed cereals	20.8	32.7	27.6	13.6	24.4	26.8	31.6	22.8	29.4	20.6
Rice	7.4	6.6	6.8	7.2	6.2	5.8	10.9	6.7	9.8	5.2
Meat										
Beef	36.9	53.1	40.4	50.2	56.4	37.5	16.7	31.7	37.9	39.5
Lamb and goat	33.4	14.4	11.1	16.3	5.4	10.9	32.9	19.3	23.9	20.7
Meat products	3.3	5.1	15.1	6.7	10.1	17.1	3.8	11.0	5.3	11.9
Legumes-and vegetables										
Legumes	5.7	5.3	7.2	5.5	4.9	6.8	10.1	8.1	14.8	9.1
Fresh vegetables	40.1	66.3	68.4	40.6	69.9	69.6	47.1	73.5	59.0	67.7
Industrially processed vegetables		6.0	20.0		6.0	19.2	3.7	14.3	3.3	17.3
Expenditure on food away from home										
Restaurants	61.6	57.6	61.3	68.3	58.2	56.2	38.0	64.5	46.2	53.3
Cafes	38.4	42.4	38.7	31.7	41.8	43.8	62.0	35.5	53.8	46.7

Source: [Household…1957/58, 1963/64, 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05, 2008].

The analysis based on local criteria leads to broader conclusions about the traditional behaviours which often exceed the prevailing broader patterns (e.g. Mediterranean or industrial) and have stability and durability. For example, fish consumption has always been and still remains increased in the island of Crete and the islands of Aegean and Ionian Seas. The same applies to areas where vegetable production is high, such as in Crete (e.g. greenhouses), though fruit consumption in Crete over time constantly declines, as well as in Western Greece. Epirus, one of the poorest regions of Europe, but with a strong livestock and poultry production base, displays increased meat consumption, although overall meat consumption is strongly related to income level [Sotiropoulos 2006].

Conclusions

The Greek food consumption analysis based on regional criteria, given its world historical and cultural weight ('Mediterranean diet'), is an extremely interesting research topic. This research employed the 'formula of patterns classification' which enables a decomposition and reclassification of data. The data reclassification allows performing an in-depth analysis of product categories such as industrial or traditional, plant or animal,

etc., beyond the standard classification by general product category provided by the Statistical Service (NSSG-ELSTAT).

During the examined period (1957-2008) the traditional Mediterranean dietary patterns decline in Greece. Moreover, the consumption of industrialized and internationalized 'Western origin' goods and services has increased, but with significant fluctuations per region (locality) and type of area (urban or rural). The most important conclusion is that there is a convergence of rural to urban dietary patterns, particularly since the decade of 70s. However, this convergence of rural to urban dietary patterns presents some basic differences in terms of time ('lag'), manner ('asymmetrical convergence') and location (local particularities).

The time lag refers to fact that the industrial internationalized patterns appear one to two decades later in rural than in urban areas, and especially in the capital. Asymmetric convergence means that significant differences in convergence are observed, as well as particularities in the new dietary behaviours of farmers. The new industrial patterns in rural areas are different in many aspects from the corresponding in urban areas, mainly in the intensity of industrialization and internationalization. These particularities in many areas (islands, vegetables producers, semi-mountainous animal breeders) have specific characteristics which display small changes over time and where behaviours little change (e.g. preference to fish consumption in islands, vegetable consumption in vegetable producing Crete etc.). In conclusion, the industrial internationalized dietary patterns prevailed in modern Greece, but with significant differences and particularities in terms of time, manner and geographical areas.

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