

## Consumer expenditure relationship in both desert and non – desert governorates in Egypt

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**Abstract:** Local and international responsible for providing people welfare and keen on political and social stability interests on the subject of economic development. As human beings are the real wealth of nations, nations are progressing and growing with their qualified, trained and capable human beings to adapt and deal with any new efficiently and effectively. The research problem is represented different countries and states compete in the extent of the relationship between the total expenditure on the one hand, and spending on all goods and services on the other hand. Where the social justice is represented by the citizens' rights of this state over other states. In Egypt there is a clear variance between the consumption patterns of the different items in desert and non- desert governorates., In fact it is a pointer to the developmental strategy doesn't work in parallel to all geographic sectors, which leading to inequalities among individuals within the state, This leads to lower levels of human development and lower individual productivity, Which is reflected in the distribution of income between the necessary goods and services, Which shows the extent of welfare and urbanization. Therefore, the main objective of the research is studying structural differences in the pattern of expenditure distribution on the various consumption items between the desert and non- desert governorates in Egypt, In order to provide economic indicators of variation range between development processes in different geographic regions, which can be used to guide to the development policies, supporting policies, and price and consumer policies. By using the difference coefficients, Lorenz curves and Gini coefficient and study impact of expenditure percentage to each item, by time impact, geographical regions, degree of family head education, family individual's number, and housing type quality. The most important recommendations were represented are: There is a discrepancy in the geographical sectoral development between the different geographic regions in Egypt. Which leads to the lack of comprehensive and just development, and impedes the progress of development processes in sectors or areas that have been developed as required. The level of individuals welfare varies among different geographic regions, which is unfavorable inhabitants of the deserts and internal migration to non-desert governorates, so increasing support for the desert one is now more urgent than non-desert governorates. Use indicators and relations between the various expenditure items, to put balanced development plans between different geographical regions to improve the individual welfare in all geographical regions, and to reduce internal migration, and increase the localization in the desert governorates, and improve the individual's welfare in those areas, and increased prevalence of the population in those areas. Distribute support ratios must be based on, degree of household head education, family size, and house type for both desert and non- desert governorates. To provide labour to support investors who wish to invest in general and in agricultural sector, in private or national projects. To increase total GDP and growth rates.

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**Keywords:** Desert and non – desert governorates, consumption pattern variance, dummy variables, Lorenz Curve, Gini Coefficient, Justice between individuals, social adequacy, Coefficient of variation.

### Introduction:

Economic development is responsible for providing people with welfare and keen on political and social stability interests.

Many different definitions of development vary by the way they are viewed, But it can simply defined as moving from one state to another, or move society from the present situation to a better one, development can be considered from many angles such as, economic, social, environmental, cultural or political, are taking into consideration all these angles combined, we reach to overall development.

The concept of development after World War II and until the end of the 1980s was limited to the amount of material goods and services that the individual received. But by 1990 the United Nations Development Program (UNDP) has adopted a human development concept that "human beings are the real wealth of nations, and that human development is the process of expanding human choices".

Human development is not limited to providing more goods, improving health and developing knowledge and skills, but extends to more than that, to providing opportunities for creativity, enjoy leisure

time, enjoy self-respect, ensuring human rights And to contribute effectively to economic, social and political activities, especially what relating to adequacy of individual incomes to face the burdens of life and the extent of its fairness distribution of income among members of society. It should be noted that the challenges to development such as upgrading public services in education and health especially in rural and desert areas, As well as work to increase the proportion of learners and reduce the illiteracy rate among the population. The study will put in concern the degrees of justice between the desert and non-desert governorates in Egypt.

#### **Research problem:**

Different countries and states compete in the extent of the relationship between the total expenditure on one hand, and spending on all goods and services on the other hand. Where the social justice is represented by the citizens' rights of this state over other states. In Egypt there is a clear variance between the consumption patterns of the different items between the desert and non- desert governorates. In fact it is means that developmental strategy doesn't work in parallel to all geographic sectors, which leading to inequalities among individuals within the same state, this leads to lower levels of human development and lower individual productivity, which is reflected in the distribution of income between the necessary goods and services, which shows the extent of welfare and urbanization.

#### **Research objectives:**

Studying structural differences in the pattern of expenditure distribution on the various consumption items between the desert and non- desert governorates in Egypt, In order to provide economic indicators of variation range between development processes in different geographical regions, which can be used to guide to the development policies, supporting, price and consumer policies.

To achieve the main objective of the research there is a set of sub- objectives:

- Study the expenditure ratios for different spending items for Egyptian families in desert and non- desert governorates.

- Measure distribution of justice percentages of individual expenditure on various expenditure items in the desert and non- desert governorates.

- Study the structural differences in the pattern of spending distribution on the various expenditure items between the desert and non- desert governorates.

- Determine the factors affecting the percentage of expenditure on the various expenditure items relative to the total expenditure in both desert and non- desert governorates. And then study the various statistical relations between the most important items of spending and their relationship to each other.

#### **Research methodology and data sources:**

The research will depend on published and unpublished statistical data from governmental agencies and institutions, The Ministry of Agriculture, the Central Agency for Public Mobilization and Statistics, the Food and Agriculture Organization of the United Nations (FAO), studies related to research and related reports.

The research also use some methods of descriptive analysis and quantitative data analysis, as will be using some statistical analysis tools such as coefficient of variation, Lorenz curve was awarded, and Gini coefficient used to clarify the fairness of the distribution of spending on various spending items between the different governorates in Egypt. In order to estimate the factors affecting the distribution of the total household income on the different items in the desert and non- desert governorates. And to test the differences in total income distribution patterns between the different expenditure items for each of the geographical areas under study, Relationships were estimated using regression Analysis, and Dummy Variables also are used to find out the extent of difference in expenditure percentage of various items in the governorates.

#### **Theoretical framework:**

##### **Economic development and development strategies:**

As the research introduction explain the importance of justice of income distribution, development refers to the process to increase in real national output in a given period, Development according to this definition can be divided into three main elements, First: the process of interaction between available and real production inputs to meet the multiple and renewable needs of the growing population, Second, the increase in national output, Third: the continued increase in national output for long periods. The strategy is defined as a set of elements that illustrate the way to achieve desired general or sectoral objectives, and the method to achieve these goals, which all development efforts are carried out. Development is a war against the underdevelopment of poverty, ignorance, disease and the weak economic and political situation of the international community. This war is different from one country to another depending on the circumstances and nature of the state. It is necessary to study and analyze the economic, social, political and administrative of state conditions, to achieve the desired development goals by develop a long-term strategy, which represented in balanced and unbalanced growth strategies.

However, the followers of unbalanced growth strategy between different geographical sectors leading to the movement of individuals from areas

that have not been developed to other that have been developed, Due to poor conditions and inadequate health conditions, mainly associated with malnutrition, and the absence of clean water, health conditions, general environment, transportation and education. Which is upsetting theoretical conditions for time-bound logic to bring about their own development.

Therefore, reconciliation must be created between the desert and non-desert areas on relationship, there is a wide-ranging variation between both, therefore, the state must provide support to those desert governorates, to an achieve appropriate extent of annual expenditure, and different expenditure rates and items in comparison with non-desert governorates.

#### Mathematical models used:

To achieve the research objectives, it will calculate the Coefficient of Variation (C.V.) to determine the degree of variation between expenditure rates on different expenditure items in both desert and non- desert governorates of Egypt. Then second: Study Effect of different spending categories on the proportion of the outcast for each of the different spending items at the desert and non- desert governorates of Egypt in 2015: It will be based on these measures:

#### -Lorenz Curve:

One of the most popular methods of statistical analysis of personal income items, the first one use it is American inventor names M.O.Lorenz at 1950<sup>1</sup>. It is one of the most used graphs to express the size of inequality in the distribution of incomes among individuals, and express the justice in distribution of

Y	Percentage spent on various expenditure items.
D <sub>1</sub>	Dummy variable reflects the impact of the presence of individuals in the desert governorates on the various items of expenditure, where it takes (1) for the desert governorates, (0) for the non-desert governorates.
D <sub>2</sub>	Dummy variable reflects the effect of years, where it takes (0) for the year 2013, (1) for the year 2016.
D <sub>3</sub> , D <sub>4</sub> , D <sub>5</sub> , D <sub>6</sub> , D <sub>7</sub>	Dummy variables reflects the percentage of expenditure on food and drink, health care, transfers and transport, communications and culture and recreation respectively of total household expenditure on goods and services.

And finally studying the statistical relations between the different expenditure ratios of the total expenditure in both the desert and non- desert governorates of Egypt: Therefore, a mathematical model was used in the following form to express the

Y	The expenditure percentage of every item of household expenditure (from food and drink, housing, health care, transportation or education).
X <sub>1</sub>	An aggregate variable showing the effect of the variable under the study (From the degree of education of the head of household, the number of individuals per household, type of house) on the expenditure on each item of expenditure of the total monthly household expenditure.
X <sub>2</sub>	Percentage of total spent on various expenditure items.
X <sub>3</sub>	Number of family members within each category studied as a percentage of the total.
D <sub>1</sub>	Dummy variable reflecting the effect of time, taking (0) for 2013, (1) for the year 2016.
D <sub>2</sub>	Dummy variable that reflects the difference of geographical regions, where (1) is taken to the desert governorates, (0) to

income, it is the relationship between the cumulative rising frequency for both income and population, the closer Lorenz curved of the guide line evidence of a more equitable distribution, The greater gap between them, the greater injustice of income distribution. It is linked to many parameters such as coefficient of difference and Gini coefficient.

#### -Gini Coefficient:

Depends on Lorenz curve, it defined as the percentage of area confined between Lorenz curve and the equity line relative to the total area of the triangle 2, the value of this coefficient ranges from (0) in case of absolute equality, to (1) in the case of inequality.

To calculate the relation between the different items of expenditure the study used the dummy variables to estimate these relation:  $G = 1 - \sum (S_i + S_{i-1}) W_i$ , Where S<sub>i</sub>: Represent relative frequency cumulative to income for subsequent category, S<sub>i-1</sub>: Represent relative frequency cumulative to income for the previous category, W<sub>i</sub>: Represent relative frequency for family<sup>groups3</sup>.

Thirdly the variation of expenditure patterns on the various expenditure items between the Egyptian desert and non- desert governorates: This part will be specific to test the degree of differences in the proportions of expenditure on the various items of expenditure in both desert and non- desert governorates. Therefore, a mathematical model was used based on the following form to explain the expenditure on the different groups in each of the different geographical regions under study:

$$Y = a + b_1 D_1 + b_2 D_2 + b_3 D_3 + b_4 D_4 + b_5 D_5 + b_6 D_6 + b_7 D_7$$

Where:

determinants of the percentage of expenditure on each item of household expenditure in the desert and non-desert governorates in Egypt under study:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 D_1 + b_5 D_2.$$

Where:

non-desert governorates.

### Search Results and Discussion:

#### Test the levels of variation for expenditure items in both desert and non- desert governorates in 2015:

To explained the consumption pattern of the individuals in both desert and non- desert governorates, That Egypt is divided geographically into the desert governorates which represented by the border governorates in the family budget survey Issued by the Central Agency for Public Mobilization and Statistics, which including: Red Sea, New Valley, Matrouh and Sinai governorates. But the Non- desert governorates include urban, delta and Upper Egypt governorates.

To determine the degree of variation between the percentages of the different aspects of the items of expenditure between the population of each of desert and non- desert governorates of Egypt. Research results for estimation of Coefficient of Variation (C.V.). So the C.V. is used as a relative measure of dispersion, where divided standard deviation for each group on their arithmetic mean, and when eliminating discrimination and get an abstract ratio of discrimination <sup>4</sup>.

So the research calculate the value of the C.V. between percentage spent on food and drinks from

total household spending in both desert and non-desert governorates in Egypt, To determine the degree of differences between these two groups, The results are summarized in the table (1) which illustrate, the significant difference between those ratios in the two study areas, These results are also identical when applying the same tool on the percentage of family spending on housing and accessories, health care, transportation, and education from the total spending of the desert and non- desert governorates both separately, The high variance is clear in the values of C.V. for each of those items for individuals located in the two different geographical regions under study, which indicating heterogeneity and contrast in the expenditure of households on each of those items between the study areas, That is, the level of individual spending on each of those items in the desert governorates not identical to counterparty in non-desert governorates, This is due to the lack of balanced development between the different geographical sectors in Egypt, which makes individuals do not enjoy by the same standard of living.

**Table (1): Coefficient of variation for expenditure on various expenditure items in the desert and non- desert governorates of Egypt in 2015:**

Items of expenditure Areas of study	Spending on food and drink	Spending on housing and accessories	Spending on health care	Spending on transport	Spending on education
desert governorates	9.28	6.02	15.19	45.26	55.53
non- desert governorates	10.76	3.67	8.64	25.56	45.48

**Source:** Calculated from the data available by Central Agency for Public Mobilization and Statistics, Household Expenditure Patterns in the Geographic Regions of the Arab Republic Egypt, 2013 and 2016.<sup>5</sup>

#### Impact of different spending categories on the ratio of the expenditure for each of the different spending items in Egyptian desert and non-desert governorates in 2015:

If there are inequality in the percentage spent on the various spending items between the desert and non- desert governorates and refers to the various spending sets and proves the imbalance in the governorates development inside the country, to verify that will be based on Lorenz Curve and Gini Coefficient.

With the data in table (2) which explained for the various expenditure categories for desert governorates, divided into five categories, from the first which the poorest categories to the fifth one which have high income, and the number of families within each category, and the ratio expenditure of

each category on the different expenditure items food and drink, housing and accessories, health services, movements and education. The research applied both of Lorenz curve, and Gini coefficient to access the degree of variation in spending of each category on various items of household spending items for different spending categories, it explained that:

#### 1-The effect of different spending categories on the proportion of spending on food and drink between the desert and non- desert governorates in 2015:

From the data of spending ratio on food and drink from total expenditure on different items which will studies in desert and non- desert governorates, the results represents on table (2), It is clear that this percentage in the desert governorates is greater than that of the non- desert governorates, Which indicates the direction of the population of the desert

governorates to buy goods instead of producing them at home and self-sufficiency of most commodities as was the last case.

By applying the Gini coefficient, it is estimated by about 0.19% for the desert governorates, which indicates the equality of all spending categories in food and drinks in the desert governorates. In contrast, the value of the Gini coefficient for the non-desert governorates reached 0.47%, which means that there is no justice among those groups in spending on food and drink.

### **2-The effect of different spending categories on the proportion of spending on housing and accessories between the desert and non- desert governorates in 2015:**

The percentage spent on housing and accessories in the desert governorates greater than its counterpart for non-desert governorates for the first three categories of expenditure, while the fourth and fifth categories of expenditure which is the highest income, spending ratio rises in housing and related items In non-desert governorates compared to the desert governorates, this is a direct result of higher real estate prices in non- desert governorates.

By applying the Gini coefficient, it is estimated by about 0.15% for the desert governorates, which indicates the equality of all spending categories in housing and accessories in the desert governorates. In contrast, the value of the Gini coefficient for the non-desert governorates reached 0.38%, which means that there is no justice among those groups in spending on housing and accessories.

### **3-The effect of different spending categories on the proportion of spending on Healthcare between the desert and non- desert governorates in 2015:**

The percentage spent on Healthcare in the desert governorates is less than the non- desert governorates, which indicates the low interest in spending on health care in the desert governorates.

By applying the Gini coefficient, it is estimated by about 0.07% for the desert governorates, which indicates the equality of all spending categories in housing in the desert governorates. In contrast, the value of the Gini coefficient for the non- desert governorates reached 0.33%, which means that there is no justice among those groups in spending on Healthcare.

### **4-The effect of different spending categories on the proportion of spending on transportation between the desert and non- desert governorates in 2015:**

The percentage spent on transfers in the desert governorates less than its counterpart for non-desert governorates for the first three categories of expenditure, while the fourth and fifth categories of expenditure which is the highest income, spending ratio decreases in transportation In non-desert

governorates compared to the desert governorates, which can be attributed to the ownership of high-income groups in non-desert governorates of private cars.

By applying the Gini, the results estimated by about 0.10% for the desert governorates, which indicates the equality of all spending categories in housing and accessories in the desert governorates. In contrast, the value of the Gini coefficient for the non-desert governorates reached 0.24%, which means that there is no justice among those groups in spending on transportation.

### **5-The effect of different spending categories on the proportion of spending on education between the desert and non- desert governorates in 2015:**

The percentage spent on education in the desert governorates less than its counterpart for non-desert governorates for the first three categories of expenditure, while the fourth and fifth categories of expenditure which is the highest income, spending ratio decreases in education In non-desert governorates compared to the other aries, which can be attributed to the interest of the people of the non-deserts governorates in education more than the population of the deserts.

By applying the Gini, it is estimated by about 0.10% for the desert governorates, which indicates the equality of all spending categories in education. In contrast, for the non- desert governorates which reached to about 0.28%, which means that there is no justice among those groups in spending on education.

### **Main results:**

1-Gini coefficient for the desert governorates is lower than that of the non-desert governorates, this proves that the proportion of the expenditure on the various expenditure items between all the spending groups in the deserts is almostly equal, This indicates that poorer and richer spending groups almost equal proportions on different spending items, Which indicates the high ratio of poverty in desert governorates compared with non- desert governorates.

2-Differences between the population of the desert and non- desert governorates in spending on the various expenditure items:

a-Desert governorates population has tend to buy goods rather than producing them at home and self-sufficiency of most goods as was the same case before.

b- High expenditure of non- desert population on housing, health care, transfers and education, which indicating a rise in real houses prices, and the trend to own cars for non- desert population, and increasing interest to health and education Proves the high standard of living of non- desert population by comparing it with other desert counterpart.

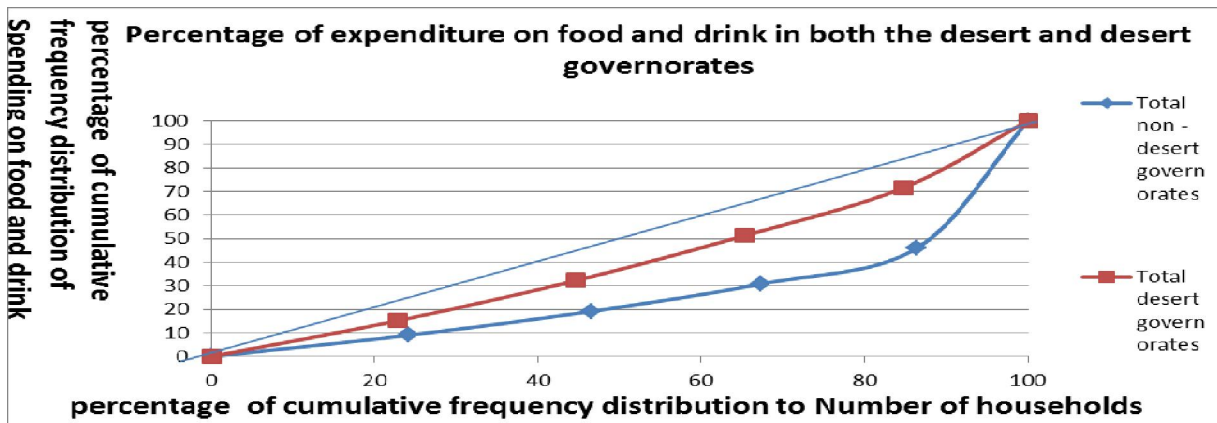
**Table (2): Number of households and expenditure items distributed according to the expenditure categories for the desert and non-desert governorates of 2015:**

Spending Categories	Governorates under study	Number of households	expenditure on food and drink %	expenditure on housing %	expenditure on care %	expenditure on health	expenditure on transfers %	expenditure on education %
First Category	Desert	52	48.1	20.5	4.7	3.5	1.9	
	Non- desert	5303	45.7	17.8	8.4	4.1	3.0	
Second Category	Desert	58	45.7	17.6	5.8	4.2	2.6	
	Non- desert	5917	42.1	17.4	8.3	4.5	3.9	
Third Category	Desert	65	43.4	17.3	6.2	4.3	3.9	
	Non- desert	6822	39.3	17.3	9.0	4.6	4.4	
fourth Category	Desert	69	40.7	16.8	5.8	5.4	4.8	
	Non- desert	8884	35.9	17.2	10.5	5.3	4.6	
Fifth Category	Desert	97	32.1	16.9	6.4	10.4	6.3	
	Non- desert	31613	25.7	18.1	10.9	8.8	6.0	
Total	Desert	341	42.0	17.8	5.8	5.6	3.9	
	Non- desert	58539	37.7	17.6	9.4	5.5	4.4	
Gini coefficient	Desert		0.19	0.15	0.07	0.10	0.10	
	Non- desert		0.47	0.38	0.33	0.24	0.28	

Source: Calculated from the data available by Central Agency for Public Mobilization and Statistics, Household Expenditure Patterns in the Geographic Regions of the Arab Republic of Egypt, 2016.<sup>5</sup>

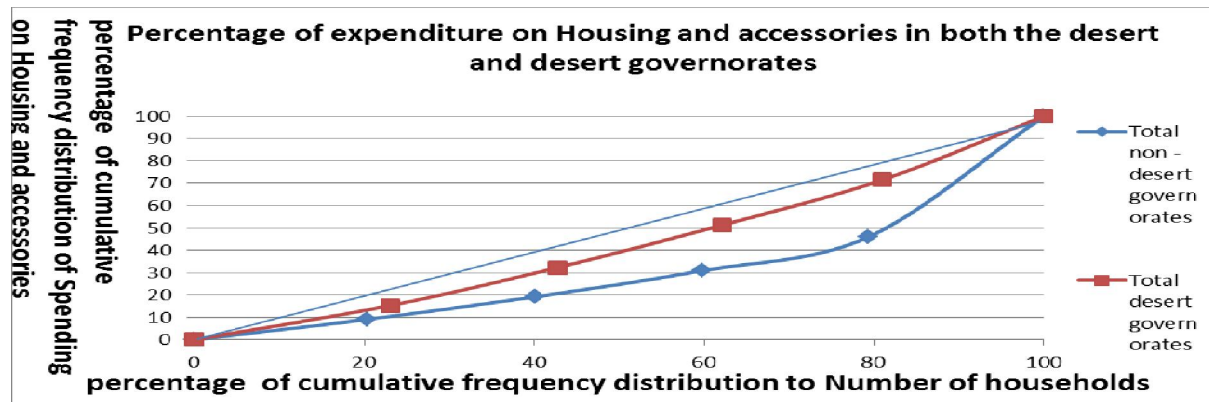
**Figure (1): Lorenz curve to distribute household's expenditure on the various e items in different categories through the family budget research for 2015:**

First: Spending on food and drink:



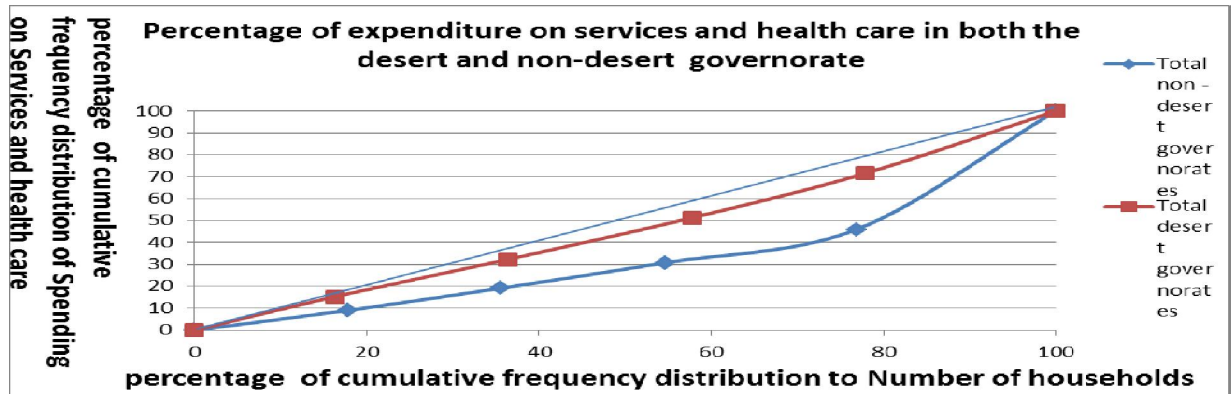
Gini coefficient in desert Governorates = 0.19, Gini coefficient in non- desert Governorates= 0.47

Second: Spending on housing and accessories:

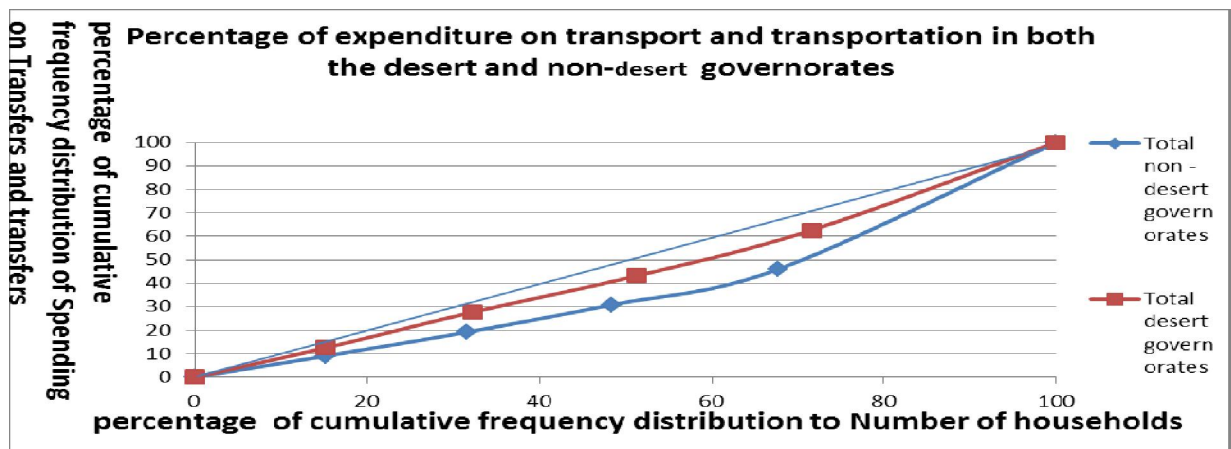


Gini coefficient in desert Governorates = 0.15, Gini coefficient in non- desert Governorates= 0.33

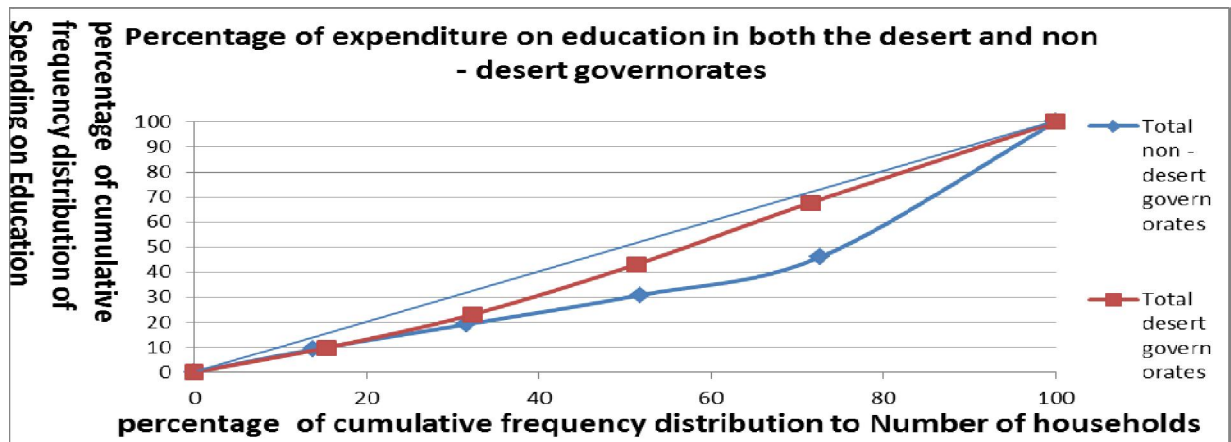
Third: Spending on services and health care:



Gini coefficient in desert Governorates = 0.07, Gini coefficient in non- desert Governorates= 0.33  
 Fourthly: Spending on transfers:



Gini coefficient in desert Governorates = 0.12, Gini coefficient in non- desert Governorates= 0.24  
 Fifthly: Spending on education:



Gini coefficient in desert Governorates = 0.10, Gini coefficient in non- desert Governorates= 0.28  
 Source: Collected and calculated from the table (2).

The use of dummy variables for studding the effect of some independent variables on the expenditure pattern in both desert and non- desert governorates regions:

This part will be specific to test the degree of variations or proportions differences in expenditure items between the desert and non- desert governorates. To estimate these items, it is more accurate as an explanatory variable in the statistical

relationships, as expenditure on each item of expenditure is affected by the proportion of expenditure on total expenditure and geographical scope and time for individuals.

In light of the theoretical framework of the research, One dummy variable has been developed to study the time effect for the years of 2013, 2016, and other to study the geographical impact between the two study regions, as well as the impact of the six basic items of family spending will be explained by five dummy variables, Thus, the number of dummy variables is always less than the phenomenon studied in order to avoid falling into dummy variable trap, It reflects the effect of the variable that is not represented by dummy variable in the function constant and the slope of the original function <sup>6</sup>.

The results in table (3), Show that the time has a positive impact on the increase of spend on various expenditure items, Where the average increase by about 22% for year 2016 over its counterpart for year 2013.

Also there was statistically significant effect of the geographical differences between the two studied areas, where expenditure on various expenditure items increased by about 2% in the desert governorates than non- desert governorates.

As for the distribution of total spent on different items in the study areas during 2013 and 2016, the analysis show that the percentage of expenditure on food and drink, health care and transport increased during this period, compared with the decrease in the percentage spent on communications, culture, recreation and education.

#### Main results:

Time between the period 2013 to 2016 have positive impact on Increase percentage spent on various items of consumer expenditure, Higher than their height with an impact different geographical regions of the governorates. The population general standard of living has decreased as a result of the decrease in spending on culture, recreation and education, versus increase spending on food, drink and health care.

**Table (3): Test the stability of expenditure patterns on the various items between the Egyptian desert and non- desert governorates:**

Independent variables of the study	$\beta$	(t)	$R^2$	F
Intercept	4.06	(1.19)	0.92	191.47
D <sub>1</sub> reflects the effect of the desert provinces	0.02	(1.72)		
D <sub>2</sub> reflects the effect of years	0.22	(1.93)		
D <sub>3</sub> Dummy variable reflecting the expenditure on food and drink of total	33.58	(28.27)		
D <sub>4</sub> Dummy variable reflecting the expenditure on Healthcare of total	3.88	(3.26)		
D <sub>5</sub> Dummy variable reflecting the expenditure on transfers of total	1.88	(1.58)		
D <sub>6</sub> Dummy variable reflecting the expenditure on Communications of total	-1.65	(-1.39)		
D <sub>7</sub> Dummy variable reflecting the expenditure on Culture and entertainment of total	-2.28	(-1.92)		

**Source:** Calculated from the data available by Central Agency for Public Mobilization and Statistics, Household Expenditure Patterns in the Geographic Regions of the Arab Republic of Egypt, 2013 and 2016.<sup>5</sup>

#### Statistical relations between the different expenditure ratios of the total expenditure on the various items between the desert and non- desert governorates of Egypt:

This part of the research is devoted to identifying the factors affecting the degrees of stability or difference of the expenditure on the various expenditure items on the total expenditure between the desert and non- desert governorates in Egypt, by examining the impact of the degree of education of household head, and the number of individuals per household, and the effect of housing type, both of these factors separate, beside, Number of individuals as percentage of total for each category on the spending percentage on each item of household spending. In light of the theoretical framework of the research, the results were as follows:

#### First: The impact of the education degree of the family head on the spending proportion in different expenditure items for each geographical area:

To study the impact of the education degree of the family head on the spending proportion on the various expenditure items in the Egyptian governorates in different geographic regions, which are divided into Illiterate, reads and writes, have a certificate of literacy, have a certificate below average, have an intermediate certificate, have above average certificate and have a university degree and higher, this are taken the numbers from 1 to 7 respectively. The results are presented in table (4):

The results explain that, by increasing the degree of education of the family head, the percentage of spending on food and drink will be decrease, while



spending on the rest of the items changing around the average.

The higher income is directed first to improve the type of housing, in addition to increasing expenditure on transfers. The number of individuals within each educational category did not have any effect on the proportion of the expenditure on the various items of expenditure. The expenditure on food and drink in the year 2016 was lower than that of

2013, while its percentage in the desert governorates is greater than its non- desert governorates.

#### Main results:

The high education degree of the family head, reduce the proportion of spending on food and drink against the other expenditure items, where increasing awareness of the need to pay attention to health, education, entertainment and transportation, to improve the general standard of living.

**Table (4): Effect of education degree of the household head on the various items of household spending in the desert and non- desert governorates:**

Independent variables of the study	Dependent variables of the study					
		Spending on food and drink	Spending on housing and accessories	Spending on health care	Spending on transport	Spending on education
Intercept	$\alpha$	16.39	-10.67	21.68	-49.34	21.93
	(t)	(0.71)	(-0.84)	(1.51)	(-2.28)	(1.57)
(X <sub>1</sub> ) Composite variable for the education of the head of household	B <sub>1</sub>	-1.56	0.06	-0.15	0.87	0.78
	(t)	(-8.49)	(0.06)	(-1.28)	(5.01)	(6.94)
(X <sub>2</sub> ) Total expenditure on various expenditure items	B <sub>2</sub>	0.36	0.38	-0.17	0.71	-0.28
	(t)	(1.16)	(2.22)	(-0.86)	(2.42)	(-1.50)
(X <sub>3</sub> ) Number of individuals as a percentage of the total	B <sub>3</sub>	0.04	0.01	0.02	-0.05	-0.02
	(t)	(1.00)	(0.33)	(0.84)	(-1.40)	(-0.64)
D <sub>1</sub> Reflects the years effect	B <sub>4</sub>	-2.08	-0.03	0.46	0.88	0.77
	(t)	(-2.92)	(-0.07)	(1.03)	(1.32)	(1.77)
D <sub>2</sub> Reflects the different geographic regions effect	B <sub>5</sub>	4.78	-0.45	-2.92	-0.59	-0.83
	(t)	(6.73)	(-1.14)	(-6.57)	(-0.88)	(-1.91)
R <sup>2</sup>		0.87	0.30	0.76	0.60	0.83
F		31.76	1.53	11.22	5.38	17.62

**Source:** Calculated from the data available by Central Agency for Public Mobilization and Statistics, Household Expenditure Patterns in the Geographic Regions of the Arab Republic Egypt, 2013 and 2016.<sup>5</sup>

#### Second: The impact of the family individuals' number on the spending proportion in different expenditure items for each geographical area:

To study the impact of the individuals number in each household on the spending proportion on the various expenditure items in the Egyptian governorates in different geographic regions, which are divided into, from 1-2, individuals 3-4 individuals, 5-6 individuals, And 7 individuals and more, this are taken the numbers from 1 to 4 respectively. The results are present in table (5):

To study the effect of family individuals number on the spending proportion in different expenditure items for each geographical area. The results explained that, the increase in family individuals' number, the percentage of spenders on food and drink, transportation and education will be increase, while spending on the housing will be decreasing, But other

categories of spending items revolves around the Mediterranean.

The higher income is equally allocated to all items of expenditure. As the increase in family individuals' number, the proportion of spending on food, drink, transport and education is increasing. And the proportion of spending on food and drink in 2016 compared to the 2013. While its percentage in the desert governorates is greater than its non- desert governorates, versus the decries of spending proportion on health care and education of by counterparts desert governorates with non-desert provinces.

#### Main results:

An increase in the family individuals' number, lead to increases in the expenditure on the main expenditure items, the overall level of the family is declining, As a result of decrease in the per capita share of the total spend.

**Table (5): Effect of family individual's number on the various items of spending in the desert and non- desert governorates:**

Independent variables of the study		Dependent variables of the study				
		Spending on food and drink	Spending on housing and accessories	Spending on health care	Spending on transport	Spending on education
Intercept	$\alpha$	26.09	14.89	-10.82	-21.38	-8.78
	(t)	(3.30)	(1.35)	(-0.65)	(-2.11)	(-0.59)
(X <sub>1</sub> ) Composite variable of individual's number per family	B <sub>1</sub>	1.08	-3.39	-0.62	1.10	1.83
	(t)	(5.29)	(-11.91)	(-1.45)	(4.23)	(4.75)
(X <sub>2</sub> ) Total expenditure on various expenditure items	B <sub>2</sub>	0.12	0.19	0.31	0.29	0.09
	(t)	(1.23)	(1.41)	(1.54)	(1.32)	(0.46)
(X <sub>3</sub> ) Number of individuals as a percentage of the total	B <sub>3</sub>	0.04	-0.08	-0.04	0.08	0.08
	(t)	(2.18)	(-1.43)	(-0.99)	(3.73)	(2.27)
D <sub>1</sub> Reflects the years effect	B <sub>4</sub>	-2.72	0.17	-0.04	1.60	0.98
	(t)	(-8.80)	(0.40)	(-0.05)	(1.46)	(1.68)
D <sub>2</sub> Reflects the different geographic regions effect	B <sub>5</sub>	5.12	0.28	-3.47	-0.45	-1.48
	(t)	(15.83)	(0.61)	(-5.11)	(-1.10)	(-2.42)
R <sup>2</sup>		0.98	0.98	0.84	0.79	0.85
F		86.13	82.39	10.21	7.23	10.98

Source: Calculated from the data available by Central Agency for Public Mobilization and Statistics, Household Expenditure Patterns in the Geographic Regions of the Arab Republic Egypt, 2013 and 2016.<sup>5</sup>

### Third: The effect of the house type on the different expenditure items for each geographical area:

To study the impact of the house type on the spending proportion on the various expenditure items in the Egyptian governorates in different geographic regions, which are divided into, villa, apartment, more than an apartment, a rural house, one or more rooms in a residential unit or a separate room, this are taken the numbers from 1 to 6 respectively. The results are present in table (6): To explain that, the lower the level of house type, the greater the expenditure on food and drink, and their spending on education declined.

And the high income is directed spend first to food and drink, then improve the type of housing and

health care, while continuing to lack interest in education. Time did not affect in the proportions of expenditure on various expenditure households items which divided by the type of housing. The results also agreed with the above of the increase in proportion of spend on food and drink, compared to spent decline on health care and education, of the desert provinces compared to non-desert.

### Main results:

The decrease in the type of housing leads to higher expenditure on food and drink from total consumption. This also proves the moral decline in all life aspects from spending on housing, health care and education.

**Table (6): The effect of the house type on the different expenditure items for each the desert and non- desert governorates:**

Independent variables of the study		Dependent variables of the study			
		Spending on food and drink	Spending on housing and accessories	Spending on health care	Spending on education
Intercept	$\alpha$	-14.59	13.01	-5.88	7.46
	(t)	(-2.61)	(3.33)	(-1.07)	(3.33)
(X <sub>1</sub> ) Composite variable of housing type for each family	B <sub>1</sub>	1.49	-1.55	1.06	-1.00
	(t)	(-2.26)	(-3.36)	(1.63)	(-3.78)
(X <sub>2</sub> ) Total expenditure on various expenditure items	B <sub>2</sub>	0.66	0.18	0.16	-0.01
	(t)	(12.05)	(4.80)	(3.06)	(-0.40)
(X <sub>3</sub> ) Number of individuals as a percentage of the total	B <sub>3</sub>	0.05	-0.07	0.04	-0.02
	(t)	(0.94)	(-1.42)	(0.83)	(-1.02)
D <sub>1</sub> Reflects the years effect	B <sub>4</sub>	-0.44	0.15	-0.82	1.11
	(t)	(-0.22)	(0.11)	(-0.42)	(1.37)
D <sub>2</sub> Reflects the different geographic regions effect	B <sub>5</sub>	5.19	-2.35	-2.16	-0.69
	(t)	(2.51)	(-1.62)	(-1.06)	(-0.83)
R <sup>2</sup>		0.87	0.71	0.39	0.48
F		29.61	11.03	2.76	4.01

Source: Calculated from the data available by Central Agency for Public Mobilization and Statistics, Household Expenditure Patterns in the Geographic Regions of the Arab Republic Egypt, 2013 and 2016.<sup>5</sup>

**Research results:**

1- Gini coefficient for the desert governorates is lower than that of the non-desert governorates, this proves that the proportion of the expenditure on the various expenditure items between all the spending groups in the deserts is almost equal, This indicates that poorer and richer spending groups almost equal proportions on different spending items, Which indicates the high ratio of poverty in desert governorates for non- desert governorates.

2- The time effect between the year 2013 to the year 2016 have positive impact on Increase percentage spent on various items of consumer expenditure, Higher than their height with an impact different geographical regions of the governorates.

3- The population general standard of living has decreased as a result of the decrease in spending on culture, recreation and education, versus increase spending on food, drink and health care.

4-Statistical relations between the different expenditure ratios of the total expenditure on the various items between the desert and non-Sahrawi governorates of Egypt, explained that:

a- The high education degree of the family head, reduce the proportion of spending on food and drink against the other expenditure items, where increasing awareness of the need to pay attention to health, education, entertainment and transportation, to improve the general standard of living.

b-An increase in the family individuals' number, lead to increases in the expenditure on the main expenditure items, the overall level of the family is declining, As a result of decrease in the per capita share of the total spend.

c- The decrease in the type of housing leads to higher expenditure on food and drink from total consumption. This also proves the moral decline in all life aspects from spending on housing, health care and education.

**Recommendations:**

1-There is a discrepancy in the geographical sectoral development between the different geographic regions in Egypt. Which leads to the lack of comprehensive and just development, and impedes the progress of development processes in sectors or areas that have been developed as required.

2- The level of individuals welfare varies among different geographic regions, which is unfavorable inhabitants of the deserts and internal migration to non-desert governorates, so increasing support for the desert governorates is now more urgent than non-desert governorates.

3- Use indicators and relations between the various expenditure items, to put balanced development plans between different geographical regions to improve the individual welfare in all geographical regions, and to reduce internal migration, and increase the localization in desert governorates, and improve the individual's welfare in those areas, and increased prevalence of the population in those areas.

4- Distribute support ratios must be based on, degree of household head education, family size, and house type for both desert and non- desert governorates. To provide labour to support investors who wish to invest in general or agricultural sector, in private or national projects. To increase total GDP and growth rates in general terms.

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