New Module to Forecast New Weights for CPI

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Abstract:

The Problem: As the CPI needs the weights to be constructed   (consumer baskets), the new system of weights will provide a new weight without going to a field survey and additional costs and allow the employee in the field of consumer price indices to use Pachee index (which needs new weights every year) instead of Laspeyer index (which changes the weights every 3 to 5 years. (i.e.: more reliable CPI)

The aim of this paper is to construct new weights (which means for a new quantity as well) for the groups of the Palestinian consumption baskets based on the price change, the national gross income and the weight of the previous year.

The idea is to forecast new weights based on the assumption that is the household consumes two types of goods (necessity and luxury goods) and assume   that the household does not change the consuming behavior for the quantity of the necessity goods but for the luxury goods Also, the change in the value of the necessity goods is due to the changes in prices, while the luxury goods value changes based on the savings remaining after   expending on   necessity goods by the consumer   . At the same time, the income is changing; so, the model will construct   new weights based on   changings in the two variables (price change and the income change) given the classification of the goods (necessity groups, luxury groups). The results (new construction of the weights) yield from the new model will be compared with the actual data of each consecutive year within the available data of PCBS.

 Based on the abovementioned, the household will consume a fixed quantity of the necessity goods and a variable amount of the luxury goods based on the price and the national income of a certain year.

Key Word: GNI, Luxury goods, necessity goods, consumer basket weights

Theoretical Background

This exercise considered as application of Angels law which stated that " the income affect the share of household expenditure on necessity goods in a decreasing manner" so as the household income increase the share of the necessity goods from total household expenditure decrease and the share of luxury goods increase.

To define Luxury goods and necessity goods; there is no formal definition with a specific goods and service to be considered as necessity goods or luxury goods; since what is considered luxury in a country might considered as luxury in another country and vise versa.

 Describing the module

The data used was the structure of the household expenditure based on the household expenditure and consumption survey, Gross national income, consumer price index CPI for the years 2004 (as base year), 2005, 2010.

The module for predicting the new weights is depending on 4 elements: a weights(share) of household expenditure a previous year and the change of CPI and the change of GNI as proxy of the income, and also the classification of the goods and services as necessity or luxury.

The Mechanism of the module is simply to multiply each weight of the necessity good(sub group) by the its own change of the CPI, then summing all the weights*CPI of the necessity sub groups together, then subtracting this summation from change of the GNI will left an amount of percent share which will be distributed in a fare way on the luxury goods(sub groubs) based on its previous share of the household expenditure.

From the 38 sub-groups of the Palestinian household expenditure basket , 10 were classified as luxury subgroups and 28 were defined as necessity goods.

The module were applied on two consecutive years 2004, 2005 assuming that there is no shocks in the household expenditure behavior(I.e: there is no structural change in the household expenditure on the subgroups). And then the same module were applied on two spaces year 2004 and 2010 to see if the module reflect the shocks in the household expenditure behavior.

Main result

Type 1: Implementing the module on two consecutive years assuming no shocks on consumer behavior 2004 and 2005.

Following the below result in table1 after applying the module, the module showing a high prediction ability in the main groups that considered as necessity main groups such as Food and non-alcoholic beverages, education , health, transport, communication, Furniture, furnishings and household goods and services and a low prediction ability in prediction in the main groups considered or which have luxury goods or services, which leads us to conclude that behavior of the household expenditure between the luxury goods might vary from year to year.

Table 1: actual and estimated weight for the household expenditure structure for the year 2005

	Main sub-groups	Actual weight for 2004	Actual weight for 2005	predicted weight for 2005
1	Food and non-alcoholic beverages	37.6%	32.9%	34.4%
2	Alcoholic beverages and tobacco	4.6%	4.6%	4.5%
3	Textiles and clothing and shoes	7.0%	7.1%	6.3%
4	Housing and related items	10.4%	9.1%	10.5%
5	Furniture, furnishings and household goods and services	6.3%	6.1%	5.7%
6	Health	4.5%	3.6%	4.1%
7	Transport	9.9%	9.5%	9.5%
8	Communications	3.8%	3.7%	3.6%
9	Goods and Leisure and Cultural Services	4.8%	2.8%	6.9%
10	Education	3.6%	3.3%	3.2%
11	Restaurants and hotels	2.2%	5.4%	3.3%
12	Miscellaneous goods and services	5.4%	11.9%	8.1%
	Total	100.0%	100.0%	100.0%

Type2: Implementing the module on two spaced years including shocks in the consumer behavior 2004 and 2010

Following the below result in table2 after applying the module, the module showing a middle prediction ability in the most of the main groups that considered as necessity main groups such as Food and non-alcoholic beverages, education , health, communication, Furniture, furnishings and household goods and services and a low prediction ability in prediction in the main groups considered or which have luxury goods or services and some main groups considered as necessity such as transport , between 2004 and 2010 there was a shock in the household expenditure behavior in the transport sector because the government and the bank sector policy of loan facilities for the households to buy cars (ie: the number of cars increase from 122,814 in 2004 to 182,466 in 2010: PCBS website) which considered as shock in the transport sector and accordingly a shock in the household expenditure on the transport as share of the total expenditure.

Table 2: actual and estimated weight for the household expenditure structure for the year 2010

	Main sub-groups	Actual weight for 2004	Actual weight for 2010	predicted weight for 2010
1	Food and non-alcoholic beverages	37.6%	38.5%	39.6%
2	Alcoholic beverages and tobacco	4.6%	4.8%	5.1%
3	Textiles and clothing and shoes	7.0%	7.0%	5.5%
4	Housing and related items	10.4%	9.8%	9.6%
5	Furniture, furnishings and household goods and services	6.3%	5.6%	5.3%
6	Health	4.5%	4.3%	3.7%
7	Transport	9.9%	13.3%	8.7%
8	Communications	3.8%	3.9%	3.0%
9	Goods and Leisure and Cultural Services	4.8%	1.5%	6.8%
10	Education	3.6%	3.7%	2.9%
11	Restaurants and hotels	2.2%	2.1%	3.2%
12	Miscellaneous goods and services	5.4%	5.6%	6.6%
	Total	100.0%	100.00%	100.0%

Conclusion

Using this model to predict the share of the necessity goods and luxury goods in general might work with or without shocks in the consumer behavior , but when applying it for the sub-groups level the differences get larger between the actual and the prediction, there is a need for more understanding for the consumer priorities in expenditure on the luxury goods, and the model need more modifications to increase its ability to predict under shocks in the Palestinian economy.