INFLATION DIFFERENCE BETWEEN POOR AND RICH EXCEEDED 20 POINTS IN 8 YEARS

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Executive Summary

Turkstat's inflation consumption index (CPI) reflects in fact the changes in the value of the representative household's consumption basket based on market prices. However, inflation faced by households which belong to different income and expenditure groups may differ since the composition of their consumption basket differs widely comparing to the basket of the representative household. In this research brief, different price indexes are calculated for each income quintile from the poorest to richest by using consumption data from the Household Budget Surveys (HBS) released by TurkStat for the period December 2003 – April 2016. The results indicate that poorer households faced higher inflation rates than richer ones during the last eight years. Inflation difference between poor and rich households increased by 3.3 percentage points compared to December 2014 and the cumulative difference reached 21.4 points since December 2003. This inflation gap against poor households is originated mainly by significant increase in food and housing-water-heating prices.

Different inflation for different income groups

Divergence in inflation rates across different income groups may be driven by both different consumption patterns and different changes in relative prices. Consumption patterns are clearly related to income levels. However, out of necessity, Turkish Statistical Institute (TurkStat) calculates the inflation faced by a representative household for the Consumer Price Index according shares of goods and services in the consumption basket of this representative household. Consequently, CPI captures the inflation of the representative household. On the other hand, price increases in each good and service differ considerably over time depending on their relative demands and production costs. Hence, inflation varies across households according to their income levels that by far the main determinant of the consumption basket composition.

Starting from mid-2007, energy and food price shocks have changed the relative price structures.[1]. Inevitably, there have been reflections of these shocks on the relative price structure in Turkey. The effects of the changes in relative price structure on the inflation rates faced by rich and the poor households in Turkey are important both socially and politically.

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[1]Box 2 presents detailed information regarding the effects of good and energy price shock on basic consumption products in Turkey.

Betam is following inflation rates for different income groups periodically. We published the latest research brief on this issue on the 5th of March 2015. In this research brief, we calculate inflation rates by different quintiles for the period December 2003 to April 2016[2].

Poor households face higher inflation rates

Figure 1 presents price indexes for each quintile calculated by using the prices index of main component of consumption baskets and their weights for different expenditure quintiles from December 2003 to April 2016. Our findings point out that price index increases significantly while moving from rich households to poor households. According to April 2016 data, inflation index of the richest attained 274,1 whilst the inflation of the poorest reached to 295,5. In other words, the purchasing cost of rich household's consumption basket increased by 174 percent whereas the poor's rose by 196 percent since 2003. The inflation difference between the richest and the poorest reached 21,4 points. Since the poor and middle expenditure groups' inflation rates are closer to the poorest (Figure 1), it is obvious that lowest expenditure group suffers more from the erosion of purchasing power caused by inflation.

Figure 1 Price indexes by different income groups (2003=100)
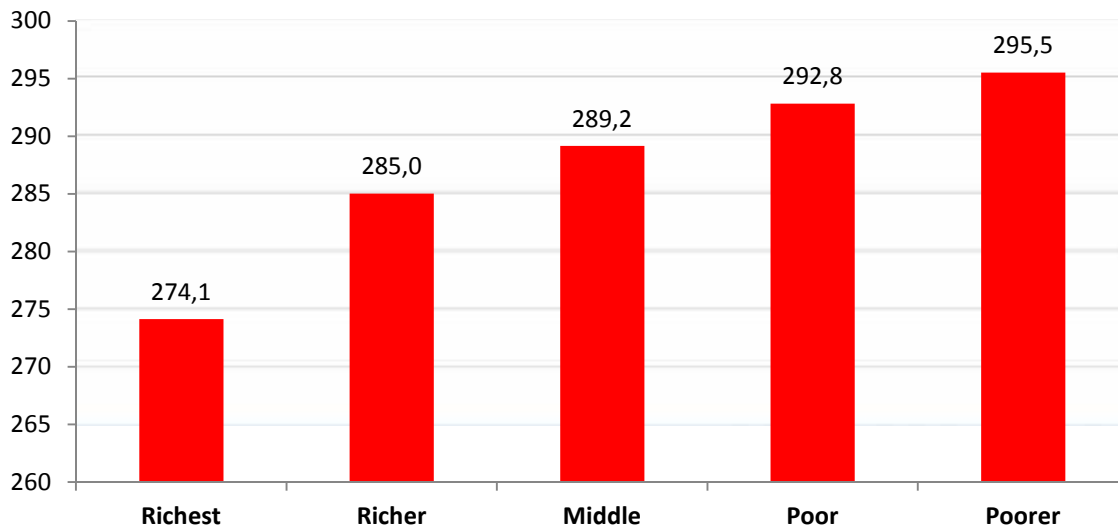
Source: Turkstat, Betam

We have already mentioned that the inflation difference between rich and poor is caused by the divergent composition of their consumption baskets. While poor households are more likely to spend much higher proportion of their income on basic needs like food and housing, these items constitute a smaller proportion of household income for the richest households. On the other hand, households in the richest 20% are more likely to spend more on transportation, clothing and footwear, entertainment and culture, education, furniture. According to 2014 Household Budget Survey, the proportion of food and housing are measured as 30.1 and 38.8 percent respectively in poorest quintile's budget while it remains at 13.6 and 18.8 respectively in richest quintile's budget. Hence, higher inflation of expenditures on basic needs has larger effects on poor's inflation.

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[2]Methodology for the calculation of inflation by different expenditure groups is presented in Box 3.

Poor households are affected by housing and food inflation while rich households by transportation inflation

Expenditures on 12 basic goods and services items provided by TurkStat may be examined in order to understand the causes of the inflation differences between the rich and the poor. One can decompose the inflation difference by using weights of goods and services in consumption baskets and the specific price indices of each item. Figure 2 provides the contribution of item category to the total difference of 21.4 per cent points between rich and poor[3].

In April 2016, housing, water, electricity and natural gas component contributed 114.8 and 51.6 points to poor's inflation and rich's inflation respectively. This component constitutes 38.8 percent of poor's budget while its proportion in rich's budget is 18.8 percent. Also, this component creates 63.2 points difference against poorest households[4]. Food and non-alcoholic beverages contributed 87.8 point to poor's price index while its contribution to rich remained at 36.8 points. Once again, the difference between rich and poor in this component is against poor households by 51 points. On the other hand, transportation component which has 27.2 and 5.5 percent shares in rich's and poor's budget respectively, contributes unfavourably 58.3 points to rich's inflation. This negative contribution narrowed the inflation gap between poor and rich. Unlike the other items, communications components contributed equally to rich and poor's price index since it has a similar share in both group's budgets. Besides, we would like to mention that increasing taxes on alcoholic beverages and tobacco partially increased the poor's price index (6.1 points)

Figure 2 Decomposition of inflation difference by expenditure groups*
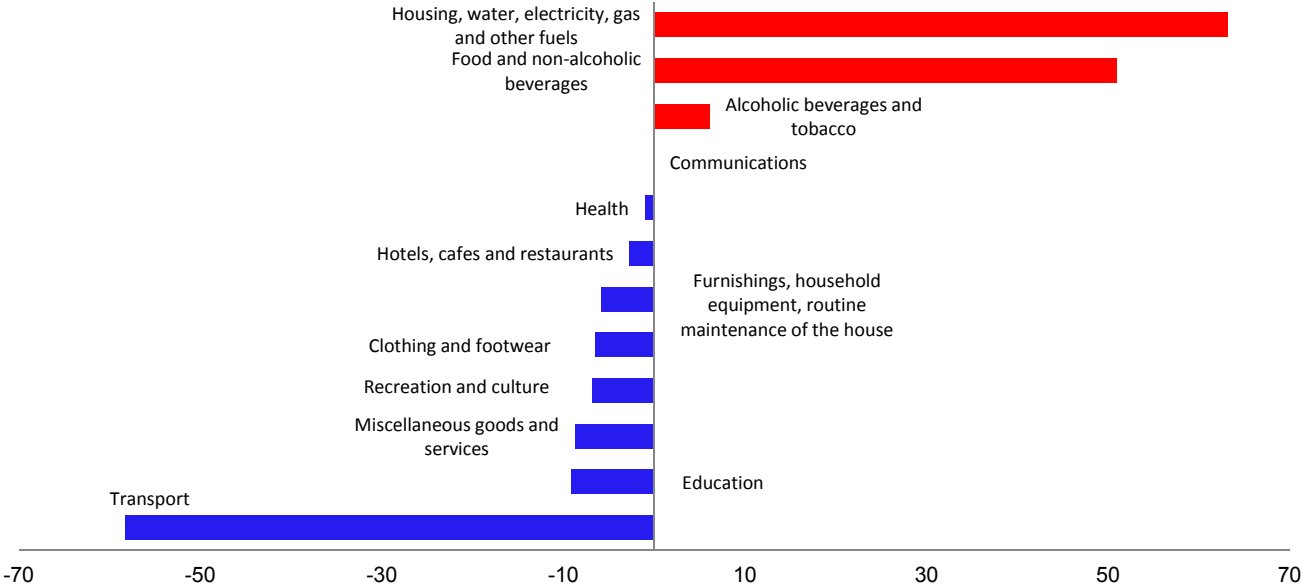
Source: Turkstat, Betam
* While red bars show that contributions of expenditure groups working against the poor in the total inflation difference, blue bars show those working against the rich

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[3]See Box 3 for details of decomposition
[4]Given that the rich and the poor do not consume the same food items, the food inflation will also differ by income levels. However, we think that this inflation difference is more likely to work against the poor. Global food price shock in 2007 had larger effects on basic food items. Needless to say, basic food items constitute a higher proportion in the bundle of the poor compared to the rich. On the other hand, we also expect the rich to consume organic products more and hence would be affected more by their price increases. However, we do not have price data on these products.

Inflation has been growing unfavourably of poor since 2007

As discussed above, while inflation faced by the poor is more likely to rise with price increases in basic needs (food, housing, energy), inflation faced by the rich is more likely to rise with luxury consumption items (transport, clothing and foot wear, education). One cannot ignore the detrimental effects of the global price increases in food and energy, starting in the second quarter of 2007, on the inflation difference between rich and poor. The time trend of the inflation gap confirms this fact.

Figure 3 presents the evolution of the inflation difference over time. As it may be observed, the inflation difference between rich and poor stays relatively small from 2003 to 2006 and is in favour of the lowest income quintile for almost two years. However, the inflation difference has risen consistently since the third quarter of 2005 and the increase has been against the poor. Increase in inflation difference remained stagnant and may have even decreased during the crisis in 2009 due to declining food and energy prices. However, the inflation difference has started to raise again due to increase in food and especially energy prices. Inflation gap became 11 points in May 2012 and then rose up to 18,1 points in December 2014 due to the significant increase in food prices. This difference continued to fluctuate because of the increase in food prices and decrease in domestic energy prices in 2015 and reached to 25 point at the end of May 2015 (Figure 3). Due to the decrease in food prices in early months of 2016, inflation difference between rich and poor regressed to 21.4 points as of April 2016. We will keep on monitoring to what extent this decline will be persistent in the future.

Box 1 Decomposition of Inflation difference between the rich and the poor

We only need the contributions of 12 items to general index in order to compute inflation difference between the rich and poor. Table below shows how we calculate their contributions to inflation difference presented in Figure 2.

	Contribution to Poor Household's Inflation	Contribution to Rich Household's Inflation	Contribution to Inflation Difference
(01) Food and non-alcoholic beverages	87.8	36.8	51.0
(02) Alcoholic beverages and tobacco	14.7	8.6	6.1
(03) Clothing and footwear	7.9	14.4	-6.5
(04) Housing, water, electricity, gas and other fuels	114.8	51.6	63.2
(05) Furnishings, Household Equipment, Routine Maintenance of the House	14.5	20.3	-5.8
(06) Health	5.5	6.5	-1.0
(07) Transport	16.2	74.5	-58.3
(08) Communication	9.3	9.3	0,0
(09) Recreation and Culture	3.8	10.5	-6.8
(10) Education	1.0	10.1	-9.1
(11) Hotels, Cafes and Restaurants	13.6	16.3	-2.7
(12)Miscellaneous Goods and Services	6.6	15.3	-8.7
Total	**295.5**	**274.1**	**21.4**

Figure 3 Inflation difference between the richest quintile and the poorest quintile

Inflation difference between the rich and the poor ——— Trend

Source: Turkstat, Betam

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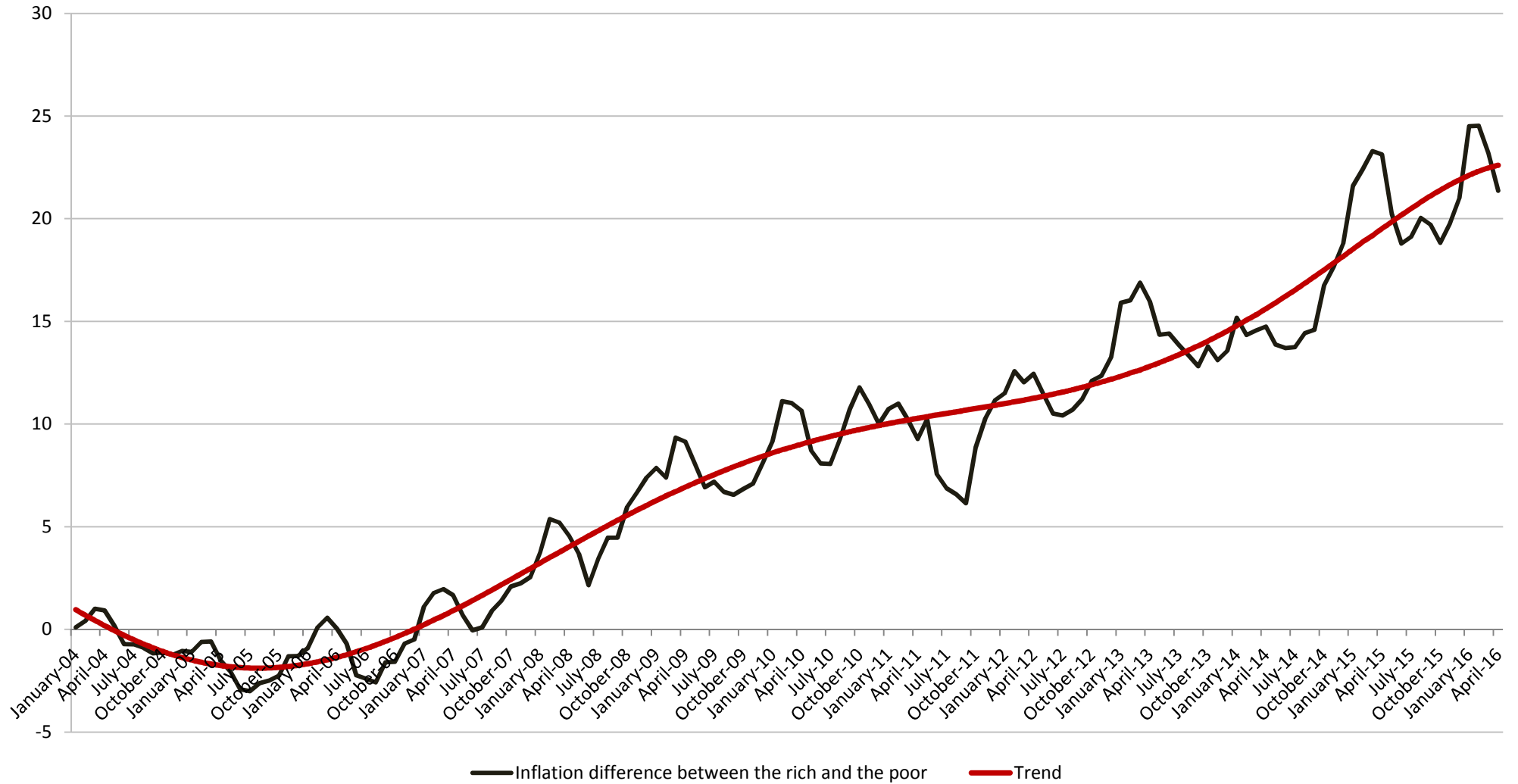
Box 2 The evolution of food and energy prices

Since the second quarter of 2007, relative price differences have been increasing rapidly due to food and energy price shocks at the global level.

Considering 2007 as the base year, we follow the CPI and the price indices of basic needs in order to shed light on the effects of relative price increases on the inflation difference between the rich and the poor. As can be seen in the figure below, price increases in dwelling energy (electricity, gas and other fuels) and in food are considerably above the average inflation in the years between 2007 and 2013. However, energy price index has recently moved in parallel with the CPI. In 2015, price indices of these two components got closer to each other due to mostly increasing trend of food prices and relatively slowing down energy prices. We observe that food price index somewhat surpass energy price index in 2016. Since the price of dwelling energy is closely related to prices of oil and natural gas and therefore to transport prices, it compensates the inflation difference between poor and rich to some extent due to its considerable contribution to the inflation of rich households. As a result, the increase in food inflation above CPI, turns out to be the most determinant factor of the inflation difference between the poor and the rich.

Price indexes of CPI and subgroups of food and dwelling energy (2007=100, 3 month moving average)
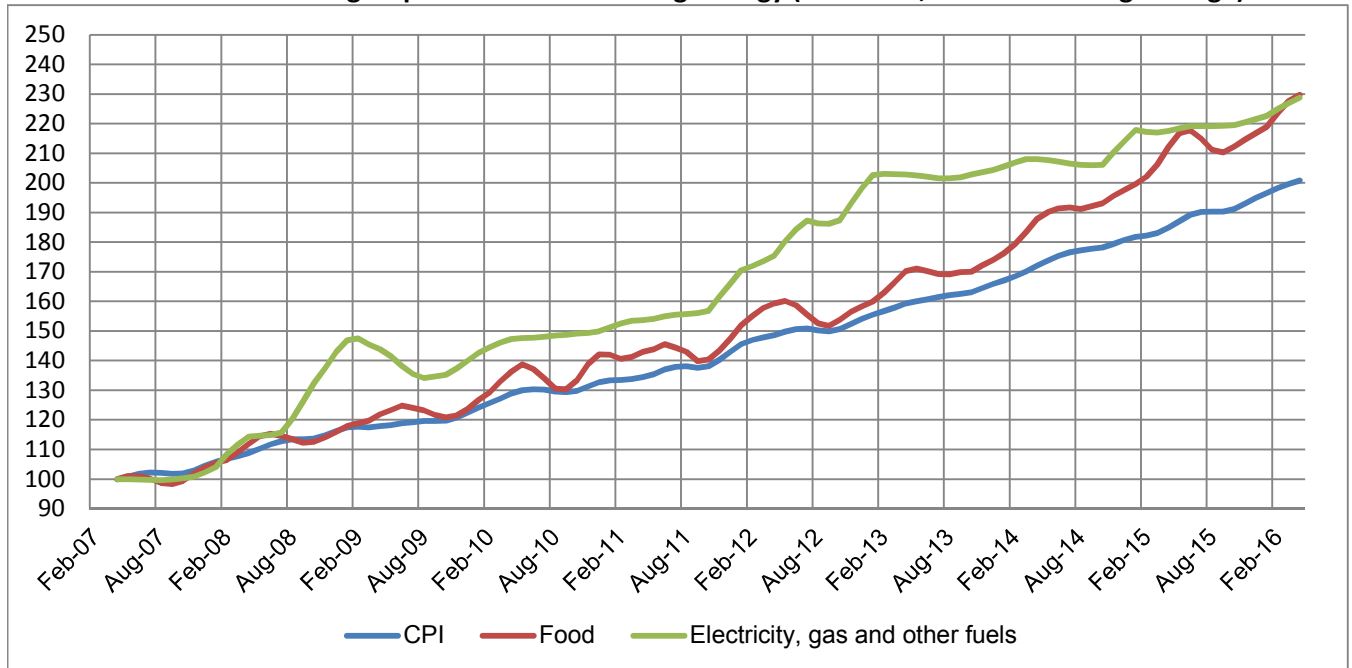
Source: Turkstat, Betam

Box 1 Methodology for calculation of price index according to expenditure groups.

We follow TurkStat's methodology in calculating the price indices for different expenditure groups. Choosing 2003 as the base year and weighting indices of sub-groups by expenditure quintiles, we find a price index for each group. We used weights of expenditure groups released by TurkStat for years between 2003 and 2014. However, we used weights of 2014 for the last 16 months since weights of 2015 have not been released yet. We would like to remind that using weights pertaining to 2014 will lead to only marginal bias since the weights of good and services in the consumption basket barely change over time.

We used Laspeyres formula in order to calculate price indexes and we designed this formula separately for the poorest and richest expenditure groups which is presented below:

Inflation of the poorest expenditure group	Inflation of the richest expenditure group
$E_t / E_{December(t-1)} = \sum_{i=1}^{12} E_{it} / E_{i\ December\ (t-1)} \times \alpha_{it}$	$E_t / E_{December(t-1)} = \sum_{i=1}^{12} E_{it} / E_{i\ December\ (t-1)} \times \beta_{it}$

E_t: Index at time t

$E_{December(t-1)}$: Index at December (t-1)

E_{it}: : Indices for each item. For example i=01, denotes index of food and non-alcoholic beverages

α_{it}: Subgroup weights of poorest quintile's budget at time t

β_{it}: Subgroup weights of richest quintile's budget at time t

These weights specific to 2014 are shown in the table below. For instance, the calculation of CPI April 2016 for both poor and rich households by using CPI December 2015 is as following:

	1	2	3	4	5	6	7	8	9	10	11	12	Inflation according to expenditure groups
2015 December	302,27	436,87	190,75	307,28	215,96	159,18	245,87	128,81	194,34	268,22	398,51	314,29	
2016 April	310,29	483,59	167,58	314,16	222,35	167,97	250,57	128,20	197,58	270,01	408,61	329,88	
α_{it}	30%	5%	3%	39%	5%	2%	5%	3%	1%	0%	5%	2%	
β_{it}	14%	3%	5%	19%	7%	2%	27%	3%	4%	4%	6%	5%	
$E_{it} / E_{i\ Dec\ (t-1)}$	1,03	1,11	0,88	1,02	1,03	1,06	1,02	1,00	1,02	1,01	1,03	1,05	
$E_{it} / E_{i\ Dec(t-1)} \times \alpha_{it}$	0,31	0,05	0,02	0,40	0,05	0,02	0,06	0,03	0,01	0,00	0,05	0,02	1,025
$E_{it} / E_{i\ Dec(t-1)} \times \beta_{it}$	0,14	0,03	0,05	0,19	0,08	0,02	0,28	0,03	0,04	0,04	0,06	0,06	1,026

Box 3 - Resume

In order to obtain April 2016 CPI for the poorest expenditure group, we multiply $E_{it} / E_{i\ December\ (t-1)} \times \alpha_{it}$ for each subgroups with December 2015 CPI calcuted by Betam

$$\text{CPI }_{poorest} \text{ (April 2016)} = \sum_{i=1}^{4} E_{it} / E_{i\ December\ (t-1)} \times \alpha_{it} \times E_{December(t-1)} = 1{,}025 \times 288{,}2 = 295{,}5$$

In order to obtain April 2016 CPI for the richest expenditure group, we multiply $E_{it} / E_{i\ December\ (t-1)} \times \beta_{it}$ for each subgroups with December 2015 CPI calcuted by Betam

$$\text{CPI }_{richest} \text{ (April 2016)} = \sum_{i=1}^{4} E_{it} / E_{i\ December\ (t-1)} \times \beta_{it} \times E_{December\ (t-1)} = 1{,}026 \times 267{,}2 = 274{,}1$$