

REGIONAL STRUCTURE OF HOUSEHOLD EXPENDITURE IN CZECH REGIONS

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Abstract

Final household consumption expenditure (FHCE) represents about a half of gross domestic product (GDP) at the national level in the Czech Republic. It is sometimes considered as an indicator of wellbeing of households. Regional FHCE is not officially published in the Czech Republic. We made an experimental estimate of the regional breakdown of FHCE as a part of our previous research; however, regional structure of FHCE in the CZ-COICOP classification has not yet been analysed. The aim of this paper is to estimate the regional structure of Czech FHCE for the year 2011. Various data sources (national accounts, social statistics, and administrative data) are used. The estimated regional expenditure allows analysis of regional wellbeing of households. Subsequently, the regional structure of expenditure is used to analyse the shares of consumption of essential and non-essential products in each region. The results may be also employed to estimate the regional consumption basket that can be further used in estimating the regional consumer price index (CPI).

Key words: *final household consumption expenditure, regional structure, regional consumption basket.*

1. Introduction

Final household consumption expenditure (FHCE) is one of the main components of gross domestic product (GDP), apart from gross capital formation (investment, inventories or valuables), general government final consumption expenditure, non-profit institutions' final consumption expenditure or external trade (exports less imports). In the Czech Republic FHCE represents according to Czech Statistical Office (CZSO) about a half of GDP (47.9 % in 2014, up to 2012 see also Vltavská and Sixta, 2015), but it is usually even higher. For example, in the United Kingdom this share is fluctuating slightly above 60 % (63.3 % in 2012, see Lequiller and Blades, 2014, p. 132) and in Japan around 60 % (59.2 % in 2012, see Lequiller and Blades, 2014, p. 172). In the USA this share is around 70 % (up to 2010, see Hindls and Hronová, 2012, p. 428).

FHCE is sometimes considered as an indicator of wellbeing of households, however, household wealth is better to measure by different indicators, also available in the system of national accounts (for particular examples see Ondruš, 2015). Deep analysis of FHCE in a long time series 1970-2012 was done by Sixta et al. (2014) and also in Sixta and Fischer (2014, pp. 190-194).

FHCE is in the Czech Republic officially published only at the national level. First attempts to regionalise FHCE were done by Kramulová and Musil (2013) for 48 groups of

CZ-COICOP classification. CZ-COICOP is a Czech version of Classification of Individual Consumption According to Purpose which is used in System of National Accounts (SNA). This work is step by step being improved by introducing better and more proper regionalisation keys.

The aim of this paper is to estimate regional structure of FHCE for the year 2011. Subsequent aims comprise analysis of differences between 14 NUTS 3 regions. The attention is paid also to analysis of shares of consumption of essential and non-essential products in each region.

This paper is divided into 5 sections. Next one describes data used for the analysis. Because of nature of this topic various data sources need to be used. Section 3 covers methods and computation procedures. Section 4 brings results of our research and answers to research questions. Section 5 concludes.

2. Data

Given our topic and originality of our research, we were forced to use many different data sources in order to cover all the consumption habits. Generally, three types of data are used – national accounts statistics, social statistics, and administrative data. These data are harmonised as for some CZ-COICOP groups only one source is available, for some more. For each CZ-COICOP group (see Table 1 below) we tried to select the most appropriate data source. We attempted to always assess the credibility and accuracy of the data, as it is not always the same at the regional level as at the national level.

For instance, household budget survey (HBS) as one of the social statistics sources is focused on household expenditure and consumption and is based on (intentional) quota sample of approximately 3 000 households. In the explored year 2011 the total count of households covered in the survey was 2 839. It is obvious that when this sum is divided by 14 regions, we have in average 203 households per region. In fact, the total count of households in 8 NUTS 2 regions oscillates between 317 and 428 households. NUTS 2 regions are constituted by 1 to 3 NUTS 3 regions (this level we analyse in this paper). It means that in some regions there may be around 130 households and we already must take care of the accuracy of generalised results. When it was possible, we chose different source or at least adjusted the results from HBS.

Another example form CZ-COICOP groups that are hard to statistically analysed, as narcotics (02300), prostitution (12200) or FISIM (12610). For these groups specialised statistics have to be used in order to regionalise the total number estimated at the national level in national accounts statistics.

Very similar situation is in case of imputed rent (defined as the benefit gained by the household compared with a corresponding household living in a rental dwelling with market rent (Statistics Finland, 2016)), that is finally sourced from national accounts, because for the regions of whole Czech Republic it is the most proper source.

From the point of view of administrative data especially data from Ministries of the Czech Republic were used (e.g. Ministry of Transport, Ministry of Education, Youth and Sports or Ministry of Regional Development), but also other offices e.g. from Energy Regulatory Office, Regional Public Health Authority, Institute of Health Information and Statistics of the Czech Republic or Czech Statistical Office.

The data sources are being constantly improved and they were more deeply analysed in Kramulová and Musil (2013) or in Musil et al. (2014) as well as of employed method of regionalisation.

3. Methods and Computation Procedures

When we collected all the data, it was necessary to decide about the computation procedure. The regionalization was done using top-down method, when national estimate is divided into regions by particular regionalization keys. This procedure was applied in case of all 48 CZ-COICOP groups (for all 48 groups and 12 sections of CZ-COICOP classification see Table 1 below). Sometimes expert adjustments needed to be done, when the keys gave not reliable results.

Household budget survey data are not fully consistent with national accounts. There are several methodological differences, coverage is also not the same as both statistics have different scopes. Therefore, HBS cannot be applied directly. Household budget survey provides average expenditure per capita in NUTS 2 digit region. Expenditure was multiplied by population in each region in order to obtain total consumption. However, total consumption in the Czech Republic varies to national accounts data. HBS data are used as regionalization key; national accounts data were allocated to regions applying structure estimated within HBS data. Calculation is carried out on detailed level of COICOP classification.

Generally, the principle is similar for other data sources. Using specialized statistics or data sources regional structure of an indicator is prepared. Expenditure that depends on number of households regardless number of people living there was regionalized by number of household in regions. Furnishings, household equipment and routine household maintenance are examples of this type of expenditure. List of data sources may be found in Musil et al. (2014).

Table 1: CZ-COICOP classification (Classification of Individual Consumption According to Purpose) used in research

Code of the section	Code of the group	Section / Group
01000		Food and non-alcoholic beverages
	01100	Food
	01200	Non-alcoholic beverages
02000		Alcoholic beverages, tobacco and narcotics
	02100	Alcoholic beverages
	02200	Tobacco
	02300	Narcotics
03000	03000	Clothing and footwear
	03100	Clothing
	03200	Footwear
04000		Housing, water, electricity, gas and other fuels
	04100	Actual rentals for housing
	04200	Imputed rentals for housing
	04300	Maintenance and repair of the dwelling
	04400	Water supply and miscellaneous services relating to the dwelling
	04500	Electricity, gas and other fuels
05000		Furnishings, household equipment and routine household maintenance
	05100	Furniture and furnishings, carpets and other floor coverings
	05200	Household textiles

Code of the section	Code of the group	Section / Group
	05300	Household appliances
	05400	Glassware, tableware and household utensils
	05500	Tools and equipment for house and garden
	05600	Goods and services for routine household maintenance
06000		Health
	06100	Medical products, appliances and equipment
	06200	Outpatient services
	06300	Hospital services
07000		Transport
	07100	Purchase of vehicles
	07200	Operation of personal transport equipment
	07300	Transport services
08000		Communication
	08100	Postal services
	08200	Telephone and telefax equipment
	08300	Telephone and telefax services
09000		Recreation and culture
	09100	Audio-visual, photographic and information processing equipment
	09200	Other major durables for recreation and culture
	09300	Other recreational items and equipment, gardens and pets
	09400	Recreational and cultural services
	09500	Newspapers, books and stationery
	09600	Package holidays
10000		Education
	10100	Pre-primary and primary education
	10200	Secondary education
	10300	Post-secondary non-tertiary education
	10400	Tertiary education
	10500	Education not definable by level
11000		Restaurants and hotels
	11100	Catering services
	11200	Accommodation services
12000		Miscellaneous goods and services
	12100	Personal care
	12200	Prostitution
	12300	Personal effects n.e.c.
	12400	Social protection
	12500	Insurance
	12610	FISIM (Financial Intermediation Services Indirectly Measured)
	12620	Financial services n.e.c.
	12700	Other services n.e.c.

Note: Groups 01-12 stand for Individual consumption expenditure of households, groups 13 (Individual consumption expenditure of non-profit institutions serving households) and 14 (Individual consumption expenditure of general government) are not mentioned.

Source: adapted from United Nations (2016).

It means that we have taken the total number from national accounts for each of 48 groups and using the regionalization key we computed regional number for all 14 NUTS 3 regions.

Furthermore, some other technics from descriptive statistics (relative shares, absolute differences or average values) and economic statistics (index analysis) were used as it will be clear from Tables 2, 3 and 4 below.

4. Results

Using above mentioned methodology regional FHCE was estimated. Average expenditure per capita in regional breakdown is shown in Table 2. The average expenditure per capita equals 181 739 CZK in the Czech Republic. However, regional differences are observed. The highest expenditure per capita is unsurprisingly found in Hlavní město Praha that is the capital city of the Czech Republic simultaneously forming one of the Czech NUTS 3 regions. This region is the most developed measured by GDP per capita. Similar results can be found also in other countries as the most developed region is usually the capital city. Moreover, in case of the Czech Republic the NUTS 3 region covers whole capital city and almost no potentially less developed suburb. Average expenditure in this region is almost 30 % higher than national average that at the same time forms the highest deviation from national average.

Table 2: Average expenditure per capita in regional breakdown in 2011

Region	Expenditure per capita (CZK)	Regional structure (%)
Hlavní město Praha	235 081	129.4
Středočeský kraj	185 138	101.9
Jihočeský kraj	170 668	93.9
Plzeňský kraj	171 572	94.4
Karlovarský kraj	171 782	94.5
Ústecký kraj	170 765	94.0
Liberecký kraj	173 450	95.4
Královéhradecký kraj	171 481	94.4
Pardubický kraj	172 175	94.7
Kraj Vysočina	171 683	94.5
Jihomoravský kraj	181 345	99.8
Olomoucký kraj	169 759	93.4
Zlínský kraj	171 935	94.6
Moravskoslezský kraj	171 920	94.6
Czech Republic	181 739	100.0

Source: the authors.

Středočeský region is the only other region where average consumption per capita exceeds national average. This region constitutes a surrounding area of the capital city and it is also seat of headquarter of worldwide famous Škoda Auto company, whose employees are very well paid.

All other regions are below the average, containing even Jihomoravský kraj, where the second biggest city of the Czech Republic – Brno – lies. This is not such a surprising fact, when we take into account that this NUTS 3 region, in the contrary to above mentioned Hlavní město Praha contains apart from a big city also its huge surrounding, which is mostly agricultural. However, it is still at the third place, just 0.2 p.p. under the national average.

The differences among the remaining regions are not significant. The results oscillate around 94 %. However, there is one reason that may cause regional differences. It was assumed that one crown (CZK) has the same power in all Czech NUTS 3 regions.

Nevertheless, this assumption might not be fulfilled. Čadil et al. (2014) proved that price level differentiates regionally in the Czech Republic. The highest price level was observed in Hlavní město Praha.

Though it should be mentioned possible mismatch when average expenditure is recalculated using regional price levels. On one hand expenditure is estimated in so called national concept, i.e. all expenditure of households is assigned to the region where the households reside regardless place where their expenditure was spent. On the other hand, regional price levels refer to prices in particular area irrespective place of residence of people spending money there (i.e. so called domestic concept).

Besides expenditure per capita regional structure of expenditure was analyzed. Differences in average expenditure can be caused by a particular category or consumption may vary in all categories. Regional structure of expenditure by 12 main categories of CZ-COICOP classification is shown in Table 3.

Table 3: Regional structure of expenditure by 12 main categories of CZ-COICOP classification

Region / COICOP	01	02	03	04	05	06	07	08	09	10	11	12
Hlavní město Praha	12.9	7.7	3.1	28.5	4.7	2.5	13.0	2.8	10.7	0.8	5.4	7.9
Středočeský kraj	15.7	9.3	3.1	29.1	5.0	1.7	9.5	2.9	9.2	0.7	4.8	9.1
Jihočeský kraj	15.7	10.1	3.2	26.5	5.7	2.2	8.9	3.4	8.8	0.6	5.3	9.5
Plzeňský kraj	15.6	9.9	3.2	27.3	5.8	2.4	9.0	3.4	8.8	0.6	5.3	8.8
Karlovarský kraj	15.8	9.8	3.0	26.9	5.8	2.1	8.4	3.4	10.1	0.7	5.1	8.9
Ústecký kraj	15.9	10.6	3.0	26.2	5.7	2.2	8.1	3.4	10.2	0.6	5.1	9.0
Liberecký kraj	15.5	9.7	3.2	27.2	5.6	2.2	8.6	3.3	9.4	0.6	5.7	9.1
Královéhradecký kraj	15.6	9.8	3.2	26.0	5.7	2.6	8.9	3.3	9.5	0.6	5.8	8.9
Pardubický kraj	15.6	9.5	3.2	27.3	5.5	2.3	8.8	3.2	9.5	0.6	5.7	8.7
Kraj Vysočina	15.4	10.5	3.6	26.4	5.5	2.2	8.9	3.2	9.9	0.6	5.1	8.8
Jihomoravský kraj	14.5	9.4	3.4	29.9	5.2	2.5	8.5	3.0	9.3	0.7	4.8	8.6
Olomoucký kraj	15.4	10.9	3.5	26.4	5.6	2.6	7.8	3.3	9.6	0.6	5.7	8.7
Zlínský kraj	15.2	10.1	3.4	28.2	5.4	2.3	7.9	3.2	9.4	0.6	5.6	8.7
Moravskoslezský kraj	16.6	9.9	3.2	26.9	5.7	2.4	8.2	3.3	9.5	0.6	5.1	8.6
Czech Republic	15.2	9.6	3.2	27.7	5.4	2.3	9.3	3.1	9.6	0.7	5.3	8.7

Source: the authors.

The highest consumption is observed for Housing, water, electricity and other fuels in all regions. Although average consumption per capita is about 33 % higher than the average of the Czech Republic, a share of COICOP 04 is only 0.8 percentage point upper. On the other hand, almost 30 % of expenditure is spent on Housing, water, electricity and other fuels in Jihomoravský kraj though expenditure per capita in this region is higher by amount 8 % in comparison to the average. The lowest share is observed in Ústecký region. Surprisingly the highest share is not observed in the capital city as it can be assumed. The highest living costs are observed in the capital city but households in Hlavní město Praha are not the most sensitive to changes in prices of housing services and energy.

The second highest category is COICOP 01 (Food and non-alcoholic beverages). The highest share is observed in Moravskoslezský kraj, the lowest in the capital city. It is proved

that households in more developed regions spend fewer portions on Food and non-alcoholic beverages.

Both above mentioned COICOP categories (01 and 04) can be considered as essential products as they cannot be substituted by any other product. The average share of these categories is 43 % in the Czech Republic. The lower share is observed in the capital city that may be not in line with expectations of expensive life in Hlavní město Praha. On the other hand, the highest shares are in Středočeský kraj and Jihomoravský kraj. These regions have common features. Středočeský kraj surrounds the capital city, Jihomoravský kraj includes also the second biggest city Brno and its surrounding. Living in these surrounding areas are expensive as rentals (imputed or actual) in houses are high as well as fuels.

Households in the capital city can afford to spend money on luxury products such as recreation and culture. They spend about 10.7 % on that and average expenditure per capita is 44 % higher. Similarly, expenditure on transportation has significantly higher share (13 %) in comparison to the average 9.3 %.

Estimated regional structure of final household consumption expenditure enables to analyze the impact of differences in regional structure on consumer price index (CPI). Weights in CPI are based on monetary expenditure of households and they are estimated using national accounts and household budget survey. It is clear that everybody has his / her rate of inflation which can be measured by his / her price index. The reason is that CPI is based on average structure of monetary expenditure though there may not be in theory any household with this structure of expenditure. Besides overall consumer price index the Czech Statistical Office publishes specific indices for households of pensioners and households living in the capital city. However, no other regional data are available. The aim is not to estimate regional consumer price indices but to assess the impact of regional differences on CPI. Regional structure of household expenditure was applied on price indices for each COICOP group published by the Czech Statistical Office. It means that price indices for COICOP groups are the same in all regions, but weights vary. More information about regional consumer price indices can be found in Kramulová and Musil (2011). The impact on average year-on-year CPI is shown in Table 4.

Table 4: Impact of differences in regional structure on average year-on-year CPI

Region	Impact on regional CPI (p.p.)
Hlavní město Praha	-0.04
Středočeský kraj	0.06
Jihočeský kraj	0.01
Plzeňský kraj	0.02
Karlovarský kraj	-0.03
Ústecký kraj	-0.02
Liberecký kraj	-0.01
Královéhradecký kraj	-0.01
Pardubický kraj	0.00
Kraj Vysočina	-0.03
Jihomoravský kraj	0.01
Olomoucký kraj	-0.02
Zlínský kraj	-0.01
Moravskoslezský kraj	0.02
Czech Republic	0.00

Source: the authors.

As seen in Table 4, the impact is almost negligible. Nevertheless, regional consumer price indices may differ due to different price development in regions.

5. Conclusion

This paper showed regional distribution of household expenditure in Czech NUTS 3 regions. Official statistics publishes FHCE just at the national level, therefore this paper aimed to analyse results of computation of regional FHCE and draw the attention to potential differences in consumption behaviour in regions.

The average expenditure per capita differs significantly, especially in Hlavní město Praha. Several reasons for this result were identified, such as e.g. level of income. However, another reason may be different price levels in the regions, mainly in Hlavní město Praha, whose impact should be examined. It will be subject to further research.

Besides Hlavní město Praha, Středočeský region has average consumption per capita above national level. This region forms surrounding of the capital city and many people daily commute to the capital, where salaries are significantly higher.

Consumption per capita is under the national average in all other regions. Jihomoravský region covers the second biggest town Brno and its surrounding. Although average expenditure per capita is under the national average there, the structure of expenditure is similar in some features to Hlavní město Praha, e.g. smaller share of food and non-alcoholic beverages.

Next important finding of our paper is that certain differences in structure of household expenditure exist. However, they are not huge and can be explained by regional specifics.

We also analysed household expenditure on so called essential products (food and non-alcoholic beverages and housing, water, electricity and other fuels) and emphasized the main differences in household expenditure behaviour in Hlavní město Praha as a specific region containing the capital city without its surrounding.

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