

# Comparing the Household Budget Survey and the Household Final Consumption Expenditure in National Accounts

Katri Soinne (Statistics Finland and University of Helsinki )

Paper prepared for the 35th IARIW General Conference

Copenhagen, Denmark, August 20-25, 2018

Session 7D-2: Well-being and Household Issues

Time: Friday, August 24, 2018 [14:00-17:30]

# Comparing the Household Budget Survey and the Household Final Consumption Expenditure in National Accounts

Paper for IARIW Conference 20-24 August 2018 in Copenhagen Katri Soinne, Statistics Finland and University of Helsinki (<u>katri.soinne@stat.fi</u> / <u>katri.soinne@helsinki.fi</u> )

## Contents

1.	Introduction	1	
2.	Household Budget Survey	2	
3.	Household consumption in National Accounts	3	
4.	Comparisons to be made	5	
5.	Data used in comparisons	6	
6.	Some ideas and graphs for comments and suggestions	7	
6	.1 The total level of household consumption	8	
6	2.2 Consumption at a more detailed level	9	
6	3.3 Average yearly changes	. 11	
7.	Conclusions	. 13	
Ref	References:		

### 1. Introduction

The System of National Accounts (SNA)<sup>1</sup> is probably the most widely used statistical system in the world. National accounts is based on a theory by Keynes, and it covers, for example, the supply and demand of goods and services. The first version of SNA was published in 1953 and already that version included the very basic idea: production, income and consumption are all equal. Revised versions of SNA have been published in 1968, 1993 and 2008, as an answer to changing economic realities. The very basic ideas are still the same, but since, for example, the production processes and international relationships are getting more complicated, the statistical system needs to be updated to be able to cover these changes. The role of household

<sup>&</sup>lt;sup>1</sup> The System of National Accounts (SNA) is an international recommendation for calculating certain economic figures based on different data sources. <u>http://unstats.un.org/unsd/nationalaccount/sna.asp</u>

final consumption has been constantly<sup>2</sup>, and, at the moment, it is the biggest single demand component almost all over the world<sup>3</sup>.

The challenge for all household calculations in the national accounts is that there is very little direct information about households, most of the sources are indirect. The most important source for household consumption calculations is the Household Budget Survey (HBS)<sup>4</sup>, which is conducted, for example, in Finland about every fifth year. Since HBS is available less frequently, but national accounts figures are calculated yearly, other sources and methods are needed to calculate household consumption in national accounts.

Part of my research is to compare national accounts figures based on other sources and methods to the figures from HBS to evaluate the quality and reliability of those other sources and methods. On the other hand, it is known that HBS is not reliable in all products – for example the amount of money used on alcohol is both historically and internationally known to be unreliable<sup>5</sup> - and I try to recognise those products, because other sources are needed for those even for the years of HBS. The fact that there are differences in definitions – for example in rents and in the purchase of transport equipment<sup>6</sup> – is also causing difficulties in comparisons.

#### 2. Household Budget Survey

The Household Budget Survey (HBS) is a sample survey, which produces data on the consumption expenditure of households, also according to household types and income groups. The data are usually collected with interviews (either by telephone or face-to-face), diaries and receipts. Often some data from administrative registers are used, too. The Household Budget

<sup>&</sup>lt;sup>2</sup> According to Berg (2012, 174) Keynes assumed in 1929 that rising productivity will lower working hours, since that will be enough to provide the necessities.

<sup>&</sup>lt;sup>3</sup> Although the whole world seems to be moving towards "consumer society" – at least in some form – there are differences between countries in the share of private consumption in GDP. (Trentmann, 2012, 16.)

<sup>&</sup>lt;sup>4</sup> The history of the household budget surveys is usually associated to Fredric le Play and his research published in 1855. During the late 19<sup>th</sup> and early 20<sup>th</sup> century, more and more such surveys were carried out, mainly by national statistical offices. (Shammas, 2012, 215.)

<sup>&</sup>lt;sup>5</sup> There are different reasons for this – for example people changing their behaviour for those two weeks, "forgetting" to write down the money used on alcohol, as well as sampling errors because of non-response, and also the fact that the homeless people, who might be using quite a lot of alcohol, are not included in the sample, which is based on housing data.

<sup>&</sup>lt;sup>6</sup> Used cars are treated differently in national accounts and HBS. In HBS, the important thing is the price of the car, it does not matter, from whom the car was bought. In national accounts the seller also matters – a used car bought directly from another household is not included in the figures at all, and if the car was owned by another household and bought from the store, only the so-called trade margin – meaning the difference between the price of the sold and bought car – should be included. If the car was owned by another sector than households, the whole price – and not only the trade margin – should be included.

Surveys have been conducted in Finland in comparable form since 1966, in about every fifth year.<sup>7</sup>

In the Finnish HBS, households are nowadays asked to collect their receipts and keep a diary for two weeks<sup>8</sup>, and the households in the sample are divided equally among those two-week periods during the research year. Households are offered some flexibility so that they can start little earlier or little later, if it suits them better. In the quality reports of HBS, attention has been paid to the fact that with this flexibility, a lot of people prefer not to record their consumption during vacation times or holidays like Christmas, and it is quite likely that there is under-coverage during those times, which can affect the reliability of the results.<sup>9</sup> Also, the non-response rate affects the results, both at the total, but especially at the more detailed level. Although the sample for HBS is planned very carefully, the non-response rate is causing bias to the sample. Non-response is not totally random, there are differences in relation to income levels, size of household, region and the education level, which affect the results.<sup>10</sup>

The sample of HBS covers basically all Finnish households living in Finland, but people living in different institutions, like nursing homes or prisons, are not included. Also foreigners – or non-residents, as they are called in national accounts – are missing from HBS. On the other hand, their consumption is included in the national accounts in the domestic concept of household final consumption expenditure, so to be able to compare figures to HBS, the consumption of those groups should be estimated and deducted from the national accounts.<sup>11</sup>

#### 3. Household consumption in National Accounts

According to the definition in SNA, household final consumption expenditure (HFCE)

<sup>&</sup>lt;sup>7</sup> HBS's have been conducted in Finland in 1966, 1971, 1976, 1981, 1985, 1990, 1994-1996, 1998, 2001, 2006, 2012 and 2016.

<sup>&</sup>lt;sup>8</sup> In the early versions of research of household consumption in Finland, the chosen households were asked to record their consumption for a whole year. Although this might seem like an ideal solution on one hand, in practice, getting people to participate even for two weeks is challenging nowadays. If the time period would be longer, the amount of participating households would be much lower and then the impact of non-response of one household would be higher.

<sup>&</sup>lt;sup>9</sup> Djerf & Linqvist 1993, 31.

<sup>&</sup>lt;sup>10</sup> The non-response rate seems to be biggest with households in the lowest and highest income class. (Statistics Finland Handbook 46; p. 32-34.)

<sup>&</sup>lt;sup>11</sup> Those calculations can be done, although they are quite "theoretical" – for the consumption of non-residents there is the total amount already with the very first calculations of national accounts, but no data on the structure of the consumption. From 2005 to 2012 there was a border interview survey in Finland, including data about the structure of tourist consumption, but unfortunately that survey was suspended. For more recent years, there is data on tax free shopping that gives some indication about the expenditure on goods by tourists. There is also data on the amount of people living in different institutions, but there is no actual data on their consumption, so that calculation is purely based on assumptions.

...consists of the expenditure, including imputed expenditure, incurred by resident households on individual consumption goods and services, including those sold at prices that are not economically significant.<sup>12</sup>

In SNA, the concept of HFCE is "national", talking about residents and including (explicitly) the goods and services residents have been buying abroad and excluding the products bought by non-residents in the domestic territory. In practice, the calculations at the detailed level are done according to a "domestic" concept, so that HFCE includes products bought by non-residents in the domestic territory and excludes the products bough by residents abroad. In the end, the "domestic" concept is transformed to "national" concept by adding the "net purchases abroad"<sup>13</sup>.

Until the 1990's, the main calculation method for household consumption on goods was the so-called product flow method, which can be calculated either based on volume or value.<sup>14</sup> With the product flow method, the challenge is that it ends up with total final consumption, but there is no data for dividing that between household consumption, government consumption and consumption of non-profit institutions. In the Finnish national account calculations, it has been estimated that eight per cent of the final consumption is by government or non-profit institutions, but there is no data indication on which products consumption is targeted, so for the calculation at the level of the whole economy, only 92 per cent of household consumption was included. In addition, the fact that national accounts figures include non-residents and people living in institutions, means that the national accounts figures are supposed to be clearly higher than in HBS especially at the beginning of the research period also in this calculation by production flow method.<sup>15</sup>

At the moment, there are a lot of different sources and methods used to compile household final consumption expenditure in annual national accounts. The statistics on turnover of trade is one of the main sources for products and the production calculations of the

<sup>&</sup>lt;sup>12</sup> For example SNA93: 9.44.

<sup>&</sup>lt;sup>13</sup> Net purchases abroad equals the purchases of residents abroad minus purchases of non-residents in the domestic territory. Usually there are data only about the total amount, not about the expenditures on product level.

<sup>&</sup>lt;sup>14</sup> When calculating using the volume, production and import of a certain product are summed up, and export, usage as raw materials and increase of stock are deducted to get the amount for consumption. This amount is then multiplied with the unit price to get the value of consumption. When calculated using the value, the calculation starts the same way by summing up production and import and then deducting export, ending with something called net supply. After that, the share of consumption of the net supply is needed to get the value of consumption. Trade margins and value added tax are added to get the value at current price, so the price that consumers are actually paying.

<sup>&</sup>lt;sup>15</sup> To get a comparable figure for the total household final consumption, the consumption of non-residents, people living in institutions, as well as consumption of government and non-profit institutions should be deducted, but there is no actual data for those calculations.

national accounts is one of the main sources for services. Furthermore, there are dozens of other data sources covering for example alcohol, tobacco, housing, cars, household appliances, travelling, etc.

#### 4. Comparisons to be made

In addition to the total levels, the yearly changes should also be compared between HBS and national accounts calculations. There are mainly two things I am trying to find out by comparing figures from HBS and figures produced by national accounts calculations: firstly, I would like to find out which products cannot be derived from HBS figures at all, which means we always need other sources for calculations. For example, besides alcohol, the consumption on sports betting and lottery cannot be found out reliably from HBS. Secondly, I would like to find out, in which products our existing method or source for calculations for non-HBS-years do not seem to be good, so that the change between years or the level seems to be very different from HBS. I am hoping to divide the goods and services into four groups:

- those, for which the level can be derived from HBS and the existing method is producing similar changes as HBS (meaning that both the source and the method are acceptable);
- those, for which the level can be derived from HBS, but our existing method for calculation in years in between does not seem to be correct, producing very different changes (meaning that we need a new method, but the source is acceptable);
- those, for which the level cannot be derived from HBS, but the existing method is producing similar changes as HBS (meaning that we need new source data for the level, but the method is acceptable); and
- 4) those, for which we do not get information about the level from HBS and our existing method for calculation in years in between does not seem to be correct, producing very different changes (meaning that we need both new source data for the level and a new method).

The same as a picture:

	Level equals HBS (=existing source is enough)	Level differs from HBS (=other source is needed)
Change equal to HBS (=existing method acceptable)		
Change differs from HBS (=new method is needed)		

National accounts figures are not independent from HBS figures, since HBS is used as a main source, but I am comparing figures from HBS to the figures calculated in national accounts based on other sources and methods during the years without HBS. Behind the national accounts figures, there is always the previous HBS, but I believe that especially for defining the quality of the existing method this data are sufficient; comparing the level is more questionable.

#### 5. Data used in comparisons

The data used in my calculations are the original HBS data, as an average per household. The data is a standardised time series so that all the years include – more or less – the same classes at the most detailed level.<sup>16</sup>

National Accounts figures are calculated yearly, but those figures are also revised backwards when more data are available or some bigger changes are made for the whole time series<sup>17</sup>. From National Accounts figures I have taken the first version of yearly calculations for comparison of the level<sup>18</sup>. I have used the first version of the latter year for the comparison

<sup>&</sup>lt;sup>16</sup> Some classes were added to HBS along the way, and those were added into the time series in these calculations, as well.

<sup>&</sup>lt;sup>17</sup> These bigger revisions have been done in about every 5 to 10 years, based on, for example, changes in classifications, methodology or data sources.

<sup>&</sup>lt;sup>18</sup> Right now I am wondering – without having a solution yet – how to deal with revised NA figures: should I look at those separately and if yes, then how to look at the revisions: by the levels, structure, shares or changes? As a whole, the changes are not very big (so for example in graphs the revisions are not seen, if the axis starts from 0).

of the yearly changes, but instead of using the first version of the previous year, I have taken the figures from the time series where the latter year was published for the first time<sup>19</sup>.

First I reclassified – as well as I could – the classes used in HBS according to the consumption classification used in national accounts at that time. Most of the classes used in HBS were easy to classify according to SNA classifications, but there were some exceptions, which were either missing from the SNA classifications or they included items from more than one SNA class.<sup>20</sup> After arranging the HBS data according to the SNA classification, I multiplied figures with the amount of households and divided with one million to get the total amount used by households in millions of Finnish currency, as it is calculated in the national accounts.

Since there are three different versions of the classification of household final consumption (based on the first three versions of SNA: SNA53, SNA68 and SNA93), producing time series for the whole period is very challenging for anything else than the total level.

#### 6. Some ideas and graphs for comments and suggestions

The following calculations and graphs are done at the 2-digit level. That level is too aggregated to find out problems with data sources or methods, but before I actually do the comparisons, I would like to figure out what to do and how to do it. There are no actual results to be presented, only my ideas and plans for comparisons.

The comparisons should be made with the most detailed level available. One of the challenges is the fact that in Finland the publication level of household final consumption expenditure in the National Accounts has always been more aggregated than the calculation level, and I have not been able to find all the original calculations. At the beginning, there was no IT system, just pen, paper and a calculator, and most of the original papers have been thrown away over the years.<sup>21</sup> Also the IT system has changed every now and then, and all the original calculations cannot be accessed with new programs. For newer years (starting from 1998), the National Accounts data are available on the calculation level (5-digit COICOP), but

<sup>&</sup>lt;sup>19</sup> National accounts figures are usually always published as a time series so that the figures are available at least for ten years.

<sup>&</sup>lt;sup>20</sup> Whenever there was a class in HBS which belonged to two (or more) classes in the NA classification, I divided the amount equally between the NA classes, since there was no real data about the division. For those classes that were not mentioned in the early version of the SNA classification, I tried to classify them the same way they were classified later, if possible.

<sup>&</sup>lt;sup>21</sup> The offices of Statistics Finland has moved from time to time, and, for example, at those occasions a lot of old papers have been thrown away.

for earlier years I am still trying to locate as detailed figures as possible for the National Accounts. The Household Budget Survey data are available at the level which it was collected.

#### 6.1 The total level of household consumption

The household consumption in HBS is calculated only at so-called current prices, meaning the actual amount of money used by households. The changes in current prices also include the inflation, which has been quite high especially earlier in Finland, so the actual consumption has not grown as fast as it might seem.

In national accounts, calculations are done also at so-called fixed prices, meaning that the changes in prices are eliminated. The fixed price calculations for consumption indicate the changes in the volume of consumption, although they are always "theoretical" – the only real data we have is at current prices. I wonder, if it would make sense to try to calculate the HBS figures at fixed prices as well from 2001, using consumer price indices?

Beside the price changes, also the currency has changed in Finland since 1966. Earlier the calculations were done in millions of Finnish markka (FIM), since 2002 they are done in millions of euros (EUR). There was a conversation rate between euros and Finnish markka (EUR 1 = FIM 5.94573), which I have been using for the whole time series in the following picture.

*Picture 1: The total level of household final consumption according to household budget survey and national accounts figures 1966 to 2016 (million EUR):* 



The total consumption has been from 11 to 23 per cent higher in NA than in HBS during this period. Since the concept of household in national accounts is more comprehensive than in HBS and the calculation method used earlier in National Accounts included all the final consumption, not only household final consumption, it is understandable that the total figure is

higher in national accounts. Also, the fact that not everything is covered reliably (for example alcohol) in HBS explains the higher result in NA.

The difference between these to sets has been growing since 2001 – at that time, the NA figure was 11 percent higher than the HBS figure, but in 2016 it was as much as 23 per cent higher. This means that the household consumption in national accounts calculations has been growing significantly faster than according to HBS.

#### 6.2 Consumption at a more detailed level

To compare the consumption at a more detailed level between NA and HBS, I firstly calculated the absolute difference on 2-digit level by deducting the HBS figure from the NA figure. The absolute levels – and this way the difference, too – includes also the changes in prices, so when the absolute level of consumption rises, also the absolute difference rises. To get rid of this problem, I calculated a "relative difference", so that I compared the absolute difference of levels to the original figures. Since the level especially for beverages and miscellaneous products is signifiganlty higher in NA, the results are more clearly seen when comparing the difference to NA figures.

In the following pictures, when the relative difference is positive, the absolute figure has been higher in the National Accounts than in the Household Budget survey (and vice versa with negative relative difference). The first graph covers years 1966, 1971 and 1976 when national account figures were calculated according to SNA53; the second graph covers the years 1981, 1985 and 1990 when national account figures were calculated according to SNA68 and the third graph covers the years 1998, 2001, 2006, 2012 and 2016, when national accounts figures have been calculated according to SNA93.



*Picture 2: The relative difference of levels 1966 to 1976 compared to the NA figures according to the classification used in SNA53 (%)* 

Since the consumption in beverages is widely underreported in surveys, it is natural that their level is higher in NA than in HBS. The different treatment of purchase of used cars in NA and HBS causes the level of transport and communication to be higher in HBS than in NA. In HBS, rents are calculated as actual costs and in NA as so-called imputed rents, so that owner-occupied housing is valued as rented at market price. Here, the level used for rent is higher in HBS than in NA, although is should not be like that. The level of "fuel and light" is higher in NA, but even when those to classes are summed together, the total amount used for housing is higher in HBS. The fact that "miscellanous services" are much higher in national accounts than in HBS might be partly because there are things which may have not been considered as "consumption" by the households and the researchers.<sup>22</sup> Researchers should always be aware of the quality of household budget surveys, since they are also "a picture of their own time". Different things has been emphasised and ignored, and people may try to "behave as expected" when they are under certain "surveillance".<sup>23</sup>

*Picture 3: The relative difference of levels 1981 to 1990 compared to the NA figures according to the classification used in SNA68 (%)* 



In the SNA68 classification, food, beverages and tobacco was combined into one class. The difference in handling the purchase of a used car cannot really be seen in this figure: the level is almost the same in both sets, although it should be higher in HBS. The level of housing is higher in NA, as it should be.

<sup>&</sup>lt;sup>22</sup> Daniel Horowitz (1985) paid a lot of attention to this topic in his famous book *The Morality of Spending:* Attitudes toward the Consumer Society in America 1987-1940. (Calder, 2012, 356-357.)

<sup>&</sup>lt;sup>23</sup> Calder, 2012, 357.

*Picture 4: The relative difference of levels 1998 to 2016 compared to the NA figures according to SNA93 classification: Classification of Individual Consumption According to the Purpose (COICOP)* 



With the COICOP classification, the Household Budget Survey is also calculating an imputed rent for owner-occupation, and the level for housing seems to be relatively close within these two sets. With transportation, the level should be higher in HBS, as it is with the exception of 1998. Other than that, it looks like in most 2-digit classes the level is clearly higher in NA than in HBS.

#### 6.3 Average yearly changes

To compare the changes in national accounts and HBS I have calculated the average yearly changes<sup>24</sup> from the HBS results, as well as from the methodologically produced calculations done in national accounts for the same years. Since inflation was very high in Finland during this period, I have compared the differences in changes (instead of the changes themselves) to leave the effect of inflation out.

Again, the first picture includes the results from 1966 to1976, when SNA53 was used; the second results from 1981 to 1990, when SNA68 was used and the third result from 1998to 2016, when SNA93 (COICOP) has been used.

The average change in HBS has been deducted from the average change in HBS, so if the difference is positive, the average change has been higher in NA (and vice versa).

<sup>&</sup>lt;sup>24</sup> Since the time period is different between these household budget surveys, I have calculated the average changes as "roots" (for example fifth root between 1966 and 1971 and fourth root between 1981 and 1985).



Picture 5: The differences in average yearly changes between 1966 and 1976 (NA – HBS)

At the total level, the average yearly changes are quite close to each other in NA and HBS, but at the more detailed level, the NA sources and methods seem to produce very different changes. Only in rents and household operation the difference is in the same direction in both comparisons, indicating that the NA calculations might under or overestimate. In other classes, the difference is contrary in both comparisons.



Picture 6: The differences in average yearly changes between 1976 and 1990

During these years, the changes have been even more contradictory than in the earlier period. Between 1981 and 1976 and 1990 and 1985 the change in total level has been – again – quite similar, although there are big differences at more detailed level. Between 1985 and 1981 the NA calculations have produced totally different changes.



Picture 7: The differences in average yearly changes between 1998 and 2016

Since 1998, the calculation methods in National Accounts have changed, and the product flow method has not been used any more. At such an aggregated level it is impossible to say anything about the methods and sources – the only consistent thing seems to be the fact that change in consumption on health is much higher in NA than in HBS every time.

#### 7. Conclusions

At the moment, I do not have any answers, only questions – are my ideas reasonable, does it make sense to continue with more detailed calculations. Should I do something totally differently or is there something missing that I should include? The three different classifications are not compatible, but should I try to make some kind of time series at a more

detailed level anyway. And then there is the big question about volume of consumption, is there something I could do with that based on HBS.

So far, HBS has been the main source – as being the only real data on household consumption – for the household final expenditure calculations in national accounts, but its value in future is unclear. The descending response rate, the more divergent consumption, the new family constructions, and the new environment (like the Internet and social media) might make the results less reliable. The reliability is questioned also by the fact that consumption used to be more clearly related with purchases – you paid and you received the product, which was kind of clear and easy to write down – but nowadays, the time between purchase, payment and receiving the product might be longer, and people are shopping through "apps" without thinking of it as shopping and consumption?<sup>25</sup>

The importance of consumption does not seem to diminish, rather the opposite. The yearly and quarterly calculations for household final consumption expenditure in national accounts will be done in the future, as well. At least some new data sources and methods will be needed, but I am hoping to find out, where to start – which are the goods and services that seem to need new sources or methods or both of them. With limited resources it would be best to start with products that actually need something new, not with products where the results are acceptable at the moment.

<sup>&</sup>lt;sup>25</sup> For example Trentmann (2006, 17) reminds that consumption includes the whole life cycle of products, not only the purchase.

#### References:

- Berg, Maxine. (2012). Luxury, the luxury trades, and the roots of industrial growth: a global perspective. In: *The Oxford Handbook of the History of Consumption*. Oxford: University Press.
- Calder, Lendol. (2012). Saving and Spending. In: *The Oxford Handbook of the History of Consumption*. Oxford: University Press
- Djerf, Kari and Linqvist, Markku. (1993). *Household Budget Survey 1990. Quality Report, Working Papers, 3/93.* Helsinki: Central Statistical Office of Finland.
- Shammas, Carole. (2012). Standard of living, consumption, and political economy over the past 500 years. In: *The Oxford Handbook of the History of Consumption*. Oxford: University Press.
- Statistics Finland. Handbook 46: Household Budget Survey 2012: Users manual. Available in Finnish:

http://www.stat.fi/tup/julkaisut/tiedostot/julkaisuluettelo/yksk46\_201200\_2014\_12 558\_net.pdf

- System of National Accounts. (1953 / 1968 / 1993 / 2008). United Nations, Eurostat, OECD, IMF, World Bank. Available at: <u>http://unstats.un.org/unsd/nationalaccount/sna.asp</u>
- Trentmann, Frank. (2006). Knowing Consumers Histories, Identities, Practices. In: Trentmann, Frank. (ed.). *The Making of the Consumer: Knowledge, Power and Identity in the Modern World*. New York/ Oxford: Berg.
- Trentmann, Frank. (2012). Introduction. In: *The Oxford Handbook of the History of Consumption*. Oxford: University Press.