

# The Weighting Structure of Consumer Price Indices: An Analysis of Two Possible Alternatives

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Abstract. The weighting structure is the distinguishing element of a CPI relative to the economic aggregate, to the population and to the geographic coverage. The accuracy and reliability of a CPI are determined by the weighting coefficients. For this reason the choice of the reference statistic according to which the weighting coefficients are constructed is crucial.

The possible alternative sources used internationally are:

- a) household final consumption (HFC) estimated in the National Accounts;
- b) household budget survey (HBS) or household consumption.

The two statistics cannot be used directly but must be corrected before attempting to estimate the weights for the CPI. The decision to use one source or the other depends on an analysis of the respective advantages and disadvantages.

The last section of the paper compares the two weighting structures that might result from each alternative and analyses the resulting CPIs. The aim is to evaluate whether the influence of the different weights in the calculation of the HCPI in the European Union respects the conditions of comparability established by the Regulations.

## Introduction.

Two factors must be considered in calculating consumer price indices -- the prices and the weights.

The price index is the ratio between the price of product  $p$  in reference basket  $P$  sampled in period  $t$ , usually one month, and the price, of the same product, as it refers to the base period 0:

$$(1) \quad I_{p,t} = \frac{P_{p,t}}{P_{p,0}}, \quad p \in P.$$

To obtain a summary of the price indices relative to each product  $p$  we must assign an importance, or weight, to each product:

$$(2) \quad I_t = \frac{\sum_{p \in P} W_p \times I_{p,t}}{\sum_{p \in P} W_p}$$

The weighting coefficients,  $W_p$ , defined for each product  $p$  in the basket, are an array of non-negative numbers that assign the relative importance of  $p$  compared to the total sum of the basket <sup>(1)</sup>.

In the procedure normally used to construct the national consumer price indices, weights are referred to an initial period - assumed to be the base period -

and they remain constant until a new base period will be considered (Laspeyres approach).

As a rule, once the structure has been established, the weight factor is considered a constant array, and the analysis of the temporal trend of the index emphasises the price factor, or, to be more precise, the variation in price registered for given products or categories of expenditure.

But we must remember that, first and foremost, the accuracy and reliability of a CPI depend on the structure of the weights, and that given choices in the construction of the weighting coefficients influence the CPI itself.

The importance to have a good weight structure increases with the duration of the base reference of the index. The duration is subordinate to the representativeness of the index itself, which can be measured in terms of the variation of weights compared to the base period. The decision to rebase the index derives, for the most part, from the difference recorded in the weighting structure compared to the base year.

In the CPI the weights are proportionate to the consumption or consumption expenditure of the reference population. Depending on the aim for which the CPI is constructed, some of these expenditures may be excluded, and others added.

A CPI may be constructed to satisfy different purposes. Without making a complete list, we will mention the main ones:

- a) deflator of final household consumption estimated in the National Accounts, for temporal comparisons in volume or at constant prices;
- b) indicator of the cost of living for households;
- c) estimator of inflation, for the part relative to consumption;
- d) revaluation coefficient of salaries or other monetary outlays.

After the scope of the CPI has been defined, the population, geographic coverage and reference aggregate must be established coherently.

For this reason the choice of the weights should be a consequence of the decisions made to circumscribe the purposes and limits of the CPI.

The optimal situation would allow us to construct as many CPIs as there are objectives to meet, but, as a rule, sets of information that are diversified and, simultaneously, mutually congruent are unavailable. For this reason, the CPIs produced by the National Statistical Institutes (NSIs) are required to satisfy several objectives at the same time. The resulting frame of reference is, consequently, not completely coherent.

In this paper we focus our analysis on the CPI weighting structure. The objective is to compare two different sources of weights, accenting the theoretical differences and their practical implications.

If the principal purpose of a CPI is the one listed under point a) above, we must utilise as the source of the weights household final consumption or the corresponding expenditures for final consumption estimated by National Account. But, the role of simple deflator is rather restrictive for a CPI and, for this reason, certain consumptions are added with respect to the National Accounts while others are excluded from the calculation.

If, instead, the main purpose of a CPI is the one listed under point b), the best source of weights is probably the household budget survey (HBS). In this case, as well, there is no absolute correspondence and certain expenditures must be excluded, while others are considered.

When CPIs responding to different prerequisites are compared, as occurs in the harmonisation process of CPIs among the member states of the European Union, the choice of the reference source for the construction of the weights is of vital importance to obtain indices that can be compared and contrasted.

EU Regulation no. 2494/95, which establishes the general norms for the construction of the HICP (Harmonised Consumer Price Indices), offers no indication on the choice of the type of information to consider in constructing the weighting coefficients. But art. 4 of the same Regulation, regarding comparability, has made it necessary, as a priority, to define guidelines for the homogenisation of the criteria used in constructing the weights.

The question was posed in terms of coverage of the harmonised index in regard to the territory and reference population. The following table, referring to Italy, may help to comprehend the different alternatives:

*Table 1 - Alternative Definitions of Final Household Consumption*

	Domestic Consumption	Resident Consumption	National Consumption
Italian households resident in Italy - expenditures in Italy	Y	Y	N
Italian households resident in Italy - expenditures abroad	N	Y	Y
Italian households resident abroad - expenditures in Italy	Y	N	Y
Italian households resident abroad - expenditures abroad	N	N	Y
Institutional households in Italy	Y	Y	Y
Foreign households resident in Italy - expenditures in Italy	Y	Y	N
Foreign tourists visiting Italy	Y	N	N

The concept of domestic consumption is linked to the economic territory of the state and considers the consumption of both residents and those temporarily present. On the other hand, the concept of resident consumption refers to the population that lives habitually in a given state, regardless of its nationality. Finally, the concept of national consumption takes into account only the citizens of the state, regardless of where the consumption or expenditure takes place.

Since the primary objective of the HICP is to determine a measure of inflation at consumption on a comparable base, it is clear that we must refer to the concept of domestic consumption.

The harmonisation process has thus led to the creation of a Commission Regulation <sup>(2)</sup> which defines more precisely the geographic coverage and the reference population.

So the HICP is linked, therefore, to the concept of domestic consumption, signifying by this the expenditure for final household consumption which is incurred in monetary transactions inside the economic territory of the state.

This means that are also included final consumption of institutional households (communities) and foreign tourists, while the expenditures for

business purposes made by residents and non-residents (intermediate consumption) are excluded.

In Italy consumer price indices have always been constructed with reference to household final consumption (HFC), estimated in the National Accounts in accordance with the definitions and classifications adopted by the ESA. In this respect they fully agree with the Community Regulation which adopts the concept of domestic consumption.

As we mentioned previously, the alternative would be to refer to household budget survey (HBS), which is also performed annually in Italy tracking the consumption of the resident population.

The preference given to the National Accounts lies in the need to have a deflator of household final consumption<sup>(3)</sup>, in the conviction that the definitions adopted in the National Accounts are closer to those for a CPI and in the greater reliability of these estimates compared to those of household budget survey.

The aim of this paper is to illustrate the differences existing between HFC and HBS in order to formulate the weighting structure for the CPI.

With respect to the method currently adopted in Italy, alternative weighting coefficients for the CPI were calculated on the basis of HBS and the corresponding price indices.

The results were compared in an attempt to discover whether there are significant and systematic differences.

#### The use of Household Final Consumption in the weighing scheme of the CPI.

HFC estimated by the National Accounts adopts a concept of domestic consumption. The reference population considered is the one resident on the national territory, including institutional households and individuals temporarily present for reasons other than work (private consumption).

Excluded from the final consumption of households are the expenses done abroad by Italians, regardless of the place they have established their usual residence.

The new ESA, which has not yet come into effect<sup>(4)</sup>, makes the distinction between household final consumption and household expenditures for final consumption. The first of the two aggregates is broader and includes private final consumption, regardless of the financial source: household, public administration, or non-profit institutions. Household expenditure for final consumption is limited to that portion of consumption financed directly by the households themselves.

For purposes of the CPI, in Italy the differences in definition are reflected only in the sector of the health spending of households, one part of which is borne by the National Health Service (NHS). It may be included to follow the concept of final consumption or excluded when the reference aggregate is the expenditure for final consumption.

Not every item considered in household final consumption is relevant for the construction of a CPI. Only the items resulting from monetary transactions are considered. In fact, the imputed values, dwellings occupied by their owners and self-consumption, are excluded, as are, customarily, illegal spending for consumptions, such as contraband cigarettes<sup>(5)</sup>. In addition, if we wish to refer to

expenditures for final consumption, we would also have to deduct expenditures borne by the NHS <sup>(6)</sup>.

The statistic on HFC is an integral part of the National Accounting system. These estimates are constructed utilising only partially the survey on household budgets <sup>(7)</sup>. The information considered principally regards food and beverage products, home rentals and a few other items relative to goods acquired by numerous households on a regular basis.

The reasons behind the limited utilisation of the survey on household budgets for NA estimates have to do with the differences in concept and definition, the high frequency of unanswered questions in the HBS and the consequent bias in the estimates produced, and the sometimes elevated underestimation of certain important items of expenditure (for example, tobacco, alcoholic beverages, meals consumed outside the home).

We must also add to this the fact that the results of the HBS cannot be used directly in the estimates of final consumption in order to take into consideration the differences relative to the reference population and the treatment reserved for certain categories of expenditure <sup>(8)</sup>.

In constructing the weighting coefficients for the CPI the greatest obstacle encountered utilising the National Accounting estimates is the inadequate level of disaggregation they provide.

The available data refer to only 50 consumption functions, while the CPI basket contains over 600 products to which a weight must be assigned.

The breakdown of the 50 consumption macrofunctions is made utilising sources of information organised according to a hierarchical structure. As we move down to the lower levels of the structure we gain detail but lose accuracy.

The main statistical advantage resulting from the utilisation of final consumption as the reference source for the construction of the weights is that the estimates of National Accounting are congruent over time. Consequently, the resulting weights do not present unjustified ups or downs from one base to another, thus guaranteeing the temporal congruency of the CPI.

#### The use of Household Budget Survey in the weighting scheme of the CPI.

The survey on household consumption is performed on a continual basis in Italy on a rotating monthly sample of approximately 3,000 households.

The household budget survey comes closer to covering a concept of resident consumption, even though individuals residing in institutional communities are not considered. In fact, the expenditures made by foreign tourists are not counted, while the expenditures made abroad for private reasons by resident households are. The object of the survey is the goods and services purchased for household consumption, regardless of the effective financial source of expenditure. HBS also collect household income, and other demographic and socio-economic variables for classification purposes.

The collection is made through a questionnaire and, although the instructions are clear, sometimes the answers invade the sector of intermediate consumption or the formation of capital.

5

In Italy the HBS has never been utilised to estimate the weights of a CPI<sup>(9)</sup>. The CPI has always been considered closer to the definitions of HFC, of which it is also the main source of data for constructing the deflator.

The reasons have to do, in part, with the low reliability usually attributed to the HBS, mainly because of unanswered questions, but also because of the systematic underestimation of certain items, especially those related to infrequent purchases (durable goods). The lack of coherence in the trend of the estimates is also a negative factor that does not enhance its possible utilisation.

Since the purpose of this paper is to compare the two possible alternative sources, it has been constructed weighting coefficients for the CPI based on HBS.

The consumer price index refers to the subset of expenditures or consumption for which monetary transactions have been recorded and in which the purchaser is the household and the seller a different economic operator: a business or public administration.

For this reason we must adjust the data from the HBS before attempting to calculate the weights. First, as we do with the estimates originating from the National Accounts, we must eliminate the expenditures imputed for owner-occupied dwellings, self-consumption and contraband cigarettes.

Second, we must deduct the expenditures borne for the purchase of used goods sold by other households (the most consistent case involves used cars).

In regard to insurance, the CPI follows the net approach principle, aiming to estimate the insurance service only. In the case of car insurance, for example, we must consider the premiums net of the claims distributed by the insurance companies to households in the form of repairs, purchase of a new car, or cash. In the HBS, the insurance item records the gross premium, including risk, service and company profit. In turn, the items purchase and repair of vehicles also include the expenditures resulting from an accident and, therefore, paid with a reimbursement received from the insurance companies. In certain cases, therefore, the same expenditure is recorded twice, although by different households.

An analogous principle is also adopted in the CPI for gambling and games of chance, in which the jackpot redistributed in the form of winnings is subtracted from the sum of the amount paid in.

The expenditures borne abroad by resident households must be deducted from the item all-inclusive tours in which they are recorded (domestic concept).

Gifts of money are not considered because they are not purchases, and also because they are movements within the household sector.

Likewise, intermediate consumption (expenditures made by the household for reasons of work or self-service) is not considered, nor is the formation of capital (extraordinary maintenance and repair of apartments), which is, in any case, difficult to identify.

The results of the HBS require numerous adjustments before they can be utilised in the construction of weights for a CPI. In fact, the adjustments required far exceed those made when HFC is utilised. In the case of complex estimates which simultaneously involve several items, identification of the individual components is usually a rather arduous task because of the lack of information.

## The Weighting Structures.

Table 2 summarises the treatment given to certain items of expenditure in, respectively, household final consumption (HFC), the household budget survey (HBS) and the consumer price index (CPI). For each item of expenditure the table indicates whether it is taken into consideration in the survey in question (Y) or not (N).

*Table 2 - Treatment of Certain Particular Items of Expenditure*

<b>Items of Expenditure</b>	<b>HFC</b>	<b>HBS</b>	<b>CPI</b>
Self-consumption (food products)	Y	Y	N
Tobacco (contraband)	Y	Y	N
Homes occupied by the owners (imputed rents)	Y	Y	N
Health expenditures not paid directly by the households	Y	N	N
Purchase of used goods (cars)	N	Y	N
Insurance (portion of the premium allocated for reimbursement)	N	Y	N
Gambling, casino, games of chance (portion re-distributed to the winners)	N	Y	N
All-inclusive tours (expenditure of Italians abroad)	N	Y	N
Money given to one's children	N	Y	N
Voluntary contributions	N	Y	N
Intermediate consumption (household expenditures for reasons of work)	N	Y	N
Capital Formation (extraordinary maintenance and renovation of apartments)	N	Y	N
Expenditures of foreign tourists in Italy	Y	N	N
Expenditures of institutional households for final consumption	Y	N	N

Clearly the CPI is closer to household final consumption than to household budget survey. Only in the case of health expenditures, for the portion borne by the NHS, would it be advantageous to utilise the HBS rather than HFC.

With reference to the 1994 estimates, two different weighting systems were constructed for the CPI, referring, respectively, to household final consumption and to household budget survey.

With regard to HFC, the weights coincide with those calculated for Italian CPI, 1995 base = 100, excluding health expenditures not paid directly by the households. Omitting this expenditure, borne by the National Health Service on behalf of the households, the aggregate we intend to represent is expenditure for household final consumption for goods and services available on the market.

The weights referring to the household budget survey were obtained by making various adjustments. In particular, we should point out that the same estimates of the National Accounts were utilised for self-consumption<sup>(10)</sup> and the purchase of contraband tobacco. A portion of the expenditures for car insurance

was attributed to the purchase, maintenance and repair of the vehicles; expenditures for the purchase of used cars were omitted from consideration. A portion of the expenditures for all-inclusive tours was transferred to air travel, and a portion was excluded from consideration.

The application of these guidelines produces the situation illustrated in Table 3. Analysis of the values considered and the resulting weights was conducted in regard to the first two levels of aggregation of the consumer price index: 10 main items of expenditure (in bold type) and 46 categories <sup>(11)</sup>.

The first part of the table (the first three columns) contains the absolute values, in other words, the expenditures deriving from HFC, from HBS, and the difference between the two values.

In absolute terms, the estimates of National Accounting are equal to 1.5 times those of the household budget survey. With the exception of expenditures for housing, the differences in the remaining items of expenditure are particularly marked. In certain cases, the estimates of the HBS do not approximate even 50 % of the value of the National Accounts (Furniture, furnishings and domestic services; Hotels,café, restaurant; Miscellaneous goods and services) or are just slightly more than 50% (Clothing and footwear; Health; Education).

The trend of the household budget survey to underestimate expenditures has a valid justification in certain cases like tobacco, purchase of durable goods, meals and snacks consumed outside the home, where, for a variety of reasons, the capturing procedures are inadequate. The same cannot be said for clothing because there is evidence, tied to external sources of information, that the value recorded in the HBS more closely approximates the actual situation.

If the analysis is pushed to a lower level the situation grows even more complex. Food, a sector in which the estimates of the HBS are considered valid, reveals sizeable differences (in lire, several thousand billion) for meat, fruit, vegetables and tobacco. For the other items the differences are even more accentuated, and the resulting situations are unacceptable. For example, there is a difference in excess of Lire 40,000 billion for expenditures made in café and restaurants <sup>(12)</sup>.

In certain cases the differences are of the opposite sort, for example, those regarding Home repair and maintenance and Operation of personal transport equipment.

If the differences in expenditure were mutually proportional, the two weighting structures would be equal. But, as we have seen, such is not the case.

The second part of the table (the second three columns) contains the percentage breakdown of expenditures in the HFC and the HBS and their difference.

In the items of expenditure in which the level registered is similar, the weight of the HBS is greater than that of HFC (Food: 5.5 points; Housing, water, electricity and fuel: approximately 5 points; Transport: 3.3 points). In the remaining items the weight of the HBS is always lower than that of household final consumption.

The differences between the two weight structures appear elevated. In this case the utilisation of one or the other for calculating total CPI is influent.

Table 4 contains the consumer price index obtained deriving the weighting structure from HFC expenditure estimated in the National Accounts. Compared to the official italian CPI published monthly by ISTAT, the index in Table 4 differs

only in regard to the item on Health. In fact, this latter index does not consider the expenditures borne by the NHS. The difference in weight is obviously divided proportionally among all the other items of expenditure. The indices are calculated with a 1995 base = 100, and the period considered is from January 1996 to June 1997.

Table 5 contains the consumer price index that would be obtained utilising a weighting structure derived from the annual survey on household consumption. In this case the reference population is the resident population, even though the representation is not perfect, since the final consumption of institutional households is not considered. As we previously mentioned, the expenditures made by resident households abroad were deducted from the raw data of the household budget survey to eliminate part of the differences in definition. As for the data in Table 4, the reference base for Table 5 is 1995 = 100, and the period considered is the same, from January 1996 to June 1997.

The elementary indices utilised to construct the two tables are identical, so the results are affected only by the weighting structure.

The HBS total index (Table 5) was higher than the HFC index by two-tenths of a point in April 1996. Subsequently, this difference become less in certain months or was nullified in the middle months of 1996 and at the end of the period considered.

To discover the causes of the different trend we must analyse the differences in the single components.

The analysis by item of expenditure reveals that in January 1996, although the total index was equal, the items presented different values, in some cases higher, in others lower. The difference in the Health is particularly significant. In fact, the greater weight of medicinal products in HFC is associated with a higher index level compared to the item average. Similarly, the lower weight of medical services is associated with a lower index level compared to the average.

The difference registered in April 1996 (two-tenths of a point) is essentially the result of three factors:

a) the food item, which showed a significant variation (0.8 points) in that month, accounts for approximately 22% of the weight of the HFC index, and approximately 28% in the HBS index. Thus, it has a different impact on the general index;

b) the transport item registers an increase in petrol, which in the HBS has a weight three times greater than that in HFC;

c) the education item registers a variation in secondary education with a weight four times greater in the HBS than in HFC.

For purposes of our analysis, another significant period was the final portion of the term considered, in which the indices return to the same level. The cause is the variation registered in May 1997 in postal services, which in HFC has double the weight than that in HBS.

The fact that the two indices coincide in June 1997 is only the effect of values which offset one another. The difference between the indices of the items of expenditure progressively increased over time, reaching as much as two points in the Education item.

A clear sign that the different composition of the weights within the items plays a key role is given by the sum of the squares of the differences of the indices by item, which grew from 1.41 to 9.71 during the eighteen months considered.

Table 3 - Weighting Coefficients by Items of Expenditure

Items of Expenditure	HFC Expenditure	HBS Expenditure	Difference in Expenditure	HFC Weights	HBS Weights	Difference in Weights
<b>Food</b>	<b>200396</b>	<b>168255</b>	32141	<b>22,2367</b>	<b>27,7962</b>	-5,5595
Bread and cereals	23647	26239	-2592	2,6236	4,3346	-1,7110
Meat	50392	41935	8457	5,5918	6,9280	-1,3362
Fish	11421	11245	176	1,2677	1,8578	-0,5901
Milk,cheese,eggs	26186	22953	3233	2,9058	3,7919	-0,8861
Oils and fats	6610	8321	-1711	0,7335	1,3746	-0,6411
Fruit	16290	11619	4671	1,8076	1,9195	-0,1119
Vegetables	20546	11045	9501	2,2799	1,8246	0,4553
Potatoes	2102	1524	578	0,2332	0,2518	-0,0186
Sugar	2418	1584	834	0,2683	0,2617	0,0066
Jam,honey,chocolate and confectionery	5268	3607	1661	0,5845	0,5957	-0,0112
Food products n.e.c.	824	1306	-482	0,0915	0,2157	-0,1242
Coffee, tea and cocoa	3996	4235	-239	0,4433	0,6996	-0,2563
Non-alcoholic beverages	4269	5475	-1206	0,4737	0,9044	-0,4307
Alcoholic beverages	9795	8254	1541	1,0867	1,3636	-0,2769
Tobacco	16632	8913	7719	1,8456	1,4727	0,3729
<b>Clothing and Footwear</b>	<b>93321</b>	<b>51809</b>	41512	<b>10,3553</b>	<b>8,5589</b>	1,7964
Clothing	74169	38828	35341	8,2299	6,4143	1,8156
Footwear	19152	12981	6171	2,1254	2,1446	-0,0192
<b>Housing,water, electricity, gas, other fuels</b>	<b>90047</b>	<b>90552</b>	-505	<b>9,992</b>	<b>14,9593</b>	-4,9673
Actual rentals for housing	28108	27769	339	3,1191	4,5875	-1,4684
Regular maintenance and repair	12521	18374	-5853	1,3894	3,0354	-1,6460
Other servixes relating to the dwelling	8546	8659	-113	0,9483	1,4305	-0,4822
Electricity, gas and other fuels	40872	35750	5122	4,5352	5,9059	-1,3707
<b>Furnishing,household equipment,services</b>	<b>95450</b>	<b>45890</b>	49560	<b>10,5915</b>	<b>7,5807</b>	3,0108
Furniture,furnishing and decorations,carpets	31042	13527	17515	3,4446	2,2347	1,2099
Household textiles	10802	4358	6444	1,1985	0,7199	0,4786
Household appliances	9753	5644	4109	1,0823	0,9324	0,1499
Glassware,tableware and household utensils	5375	1592	3783	0,5965	0,2629	0,3336
Tools and equipment for house and garden	1215	1653	-438	0,1348	0,2731	-0,1383
Goods and services for routine maintenance	37263	19116	18147	4,1348	3,1577	0,9771
<b>Health</b>	<b>38005</b>	<b>21559</b>	16446	<b>4,2172</b>	<b>3,5617</b>	0,6555
Pharmaceutical products,therapeutic applan	17255	10171	7084	1,9147	1,6804	0,2343
Medical and paramedical services	11932	10729	1203	1,3241	1,7725	-0,4484
Hospital services	8818	659	8159	0,9784	0,1088	0,8696
<b>Transport</b>	<b>107948</b>	<b>92960</b>	14988	<b>11,9783</b>	<b>15,3570</b>	-3,3787
Purchase of vehicles	33204	20025	13179	3,6844	3,3083	0,3761
Operation of personal transport equipment	55929	67026	-11097	6,2062	11,0727	-4,8665
Transport services	18815	5909	12906	2,0877	0,9760	1,1117
<b>Recreation and culture</b>	<b>75175</b>	<b>46200</b>	28975	<b>8,3417</b>	<b>7,6324</b>	0,7093
Equipment and accessories,including repairs	38411	19971	18440	4,2625	3,2992	0,9633
Recreational and cultural services	22191	13998	8193	2,4626	2,3126	0,1500
Newspaper, books and stationery	14573	10908	3665	1,6166	1,8021	-0,1855
Package holidays	0	1323	-1323	0,0000	0,2185	-0,2185
<b>Education</b>	<b>13853</b>	<b>7160</b>	6693	<b>1,5372</b>	<b>1,1830</b>	0,3542
Educational services	8827	4473	4354	0,9795	0,7390	0,2405
Books and educational materials	5026	2687	2339	0,5577	0,4440	0,1137
<b>Hotels, cafes and restaurant</b>	<b>96943</b>	<b>37984</b>	58959	<b>10,7572</b>	<b>6,2749</b>	4,4823
Restaurant and cafes	72656	32056	40600	8,0622	5,2957	2,7665
Accomodation services	24287	5928	18359	2,695	0,9792	1,7158
<b>Miscellaneous goods and services</b>	<b>90055</b>	<b>42952</b>	47103	<b>9,9929</b>	<b>7,0959</b>	2,8970
Personal care	34091	21093	12998	3,783	3,4847	0,2983
Personal effects n.e.c.	27029	3193	23836	2,9992	0,5275	2,4717
Communications	15252	14617	635	1,6924	2,4147	-0,7223
Banking services n.e.c.	5764	1029	4735	0,6396	0,1700	0,4696
Other services n.e.c.	7919	3020	4899	0,8787	0,4990	0,3797
<b>TOTAL</b>	<b>901193</b>	<b>605321</b>	<b>295872</b>	<b>100</b>	<b>100</b>	

Table 4 - Consumer Price Indices. Weighting Structure Derived from Household Final Consumption Expenditures in the National Accounts (period January 1996 - June 1997)  
1995 Base = 100

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Total</b>	<b>102,5</b>	<b>102,9</b>	<b>103,3</b>	<b>103,7</b>	<b>104,1</b>	<b>104,3</b>	<b>104,2</b>	<b>104,3</b>	<b>104,4</b>	<b>104,6</b>	<b>105,0</b>	<b>105,0</b>	<b>105,2</b>	<b>105,4</b>	<b>105,7</b>	<b>105,8</b>	<b>106,1</b>	<b>106,1</b>
Food, beverage, tobacco	102,6	103,0	103,4	104,2	105,0	105,3	105,1	104,8	104,7	104,6	104,5	104,6	104,6	104,4	104,8	104,9	104,9	104,8
Clothing and footwear	102,3	102,5	103,0	103,5	103,7	104,0	104,0	104,1	104,3	105,1	105,4	105,6	105,7	105,7	106,0	106,2	106,3	106,4
Housing,water,electricity, gas	103,2	103,3	103,4	104,6	104,6	104,5	103,0	103,3	103,8	104,9	105,8	105,9	107,0	107,4	107,7	108,2	108,3	108,2
Furnishing, equipment, services	102,2	103,0	103,1	103,2	103,7	103,8	103,8	104,2	104,3	104,3	105,1	105,1	105,1	105,4	105,5	105,5	106,0	106,0
Health	102,9	103,1	103,9	104,0	104,2	104,3	104,7	104,7	105,1	105,2	105,3	105,3	106,9	107,3	107,8	107,8	107,9	107,9
Transport	102,6	102,9	103,6	104,1	104,3	104,5	104,7	104,9	105,1	105,0	105,8	105,9	105,2	105,5	106,0	105,8	106,2	106,2
Recreation and culture	102,3	102,6	102,8	102,8	103,0	103,3	103,3	103,4	103,7	103,7	103,7	104,0	104,3	104,4	104,1	104,1	104,2	104,2
Education	102,5	102,7	102,9	103,2	103,3	103,4	103,4	103,5	104,0	104,6	105,5	105,5	105,5	105,7	105,8	105,8	105,9	105,9
Hotels, cafes and restaurant	102,2	102,8	103,1	103,5	104,0	104,2	104,4	104,7	104,9	105,0	105,1	105,2	105,7	106,0	106,3	106,6	106,8	107,0
Miscellaneous goods and services	102,2	103,0	103,2	103,2	103,6	103,7	103,7	103,9	104,0	103,8	104,0	104,0	104,1	104,3	104,6	104,7	106,3	106,4

Table 5 - Consumer Price Indices. Weighting Structure Derived from the Household Budget Survey (period January 1996 - June 1997) 1995 Base = 100

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Total</b>	<b>102,5</b>	<b>102,9</b>	<b>103,3</b>	<b>103,9</b>	<b>104,3</b>	<b>104,4</b>	<b>104,3</b>	<b>104,3</b>	<b>104,4</b>	<b>104,7</b>	<b>105,1</b>	<b>105,2</b>	<b>105,4</b>	<b>105,5</b>	<b>105,8</b>	<b>105,9</b>	<b>106,1</b>	<b>106,1</b>
Food, beverage, tobacco	102,7	103,2	103,7	104,5	105,2	105,5	105,2	104,8	104,6	104,5	104,5	104,6	104,7	104,4	104,7	104,9	104,9	104,8
Clothing and footwear	102,4	102,7	103,1	103,6	103,9	104,2	104,3	104,3	104,6	105,3	105,6	105,9	105,9	106,0	106,2	106,5	106,6	106,7
Housing,water,electricity, gas	103,1	103,3	103,4	104,5	104,6	104,6	103,7	104,1	104,5	105,5	106,4	106,5	107,7	108,1	108,6	109,1	109,2	109,1
Furnishing, equipment, services	102,3	102,9	103,0	103,1	103,7	104,0	104,0	104,2	104,3	104,3	104,8	104,8	104,8	105,1	105,1	105,1	105,4	105,4
Health	102,0	102,3	102,6	102,7	103,0	103,1	103,5	103,6	104,0	104,1	104,2	104,2	105,8	106,3	106,7	106,8	106,9	106,9
Transport	102,4	102,7	103,4	104,3	104,4	104,3	104,5	104,6	104,8	104,9	105,8	105,8	105,4	105,7	106,0	105,5	105,8	105,8
Recreation and culture	102,6	103,0	103,2	103,2	103,5	103,8	103,9	104,0	104,4	104,4	104,5	104,8	105,1	105,3	105,1	105,0	105,3	105,3
Education	102,1	102,2	102,4	103,7	103,8	103,8	103,9	104,0	104,6	107,1	107,5	107,6	107,6	107,8	107,8	107,8	107,9	107,9
Hotels, cafes and restaurant	101,9	102,4	102,7	103,1	103,5	103,7	103,9	104,1	104,4	104,5	104,6	104,7	105,1	105,4	105,6	105,8	106,0	106,2
Miscellaneous goods and services	101,8	102,3	102,6	102,5	102,8	103,0	103,0	103,4	103,5	103,1	103,3	103,4	103,6	103,7	104,1	104,3	105,1	105,2

## Conclusions.

Certain countries of the European Union utilise National Accounting estimates to generate the weighting structure of the harmonised consumer price indices. Others derive their weights from the survey on household consumption.

If we took the data in Tables 4 and 5 as the element of evaluation, we would have to conclude that the different method of constructing the weighting coefficients is an important factor of non-comparability in the HICP. In fact, if we consider the annual average for the year 1996, we have values of 104.0 (HFC) and 104.1 (HBS), which exceed the threshold of comparability established by the Regulations.

With the coming into effect of the Regulation, which adopts the concept of domestic consumption, the countries utilising household budgets must review their weights, adding the final consumption of persons living in institutions and the expenditures made by foreign tourists.

Although these sources of consumption were not considered in compiling Table 5, there is reason to believe that they have no influence on the general index. In Italy, in fact, only the expenditures of foreign tourists have a certain impact. These expenditures are concentrated in the item Hotels and Public Establishments, which has an index that remains at a level slightly below that of the general index.

The process of harmonisation continues on its path to uniform the methodologies and procedures employed in the countries of the European Union. The objective of the index is to measure inflation, so it is inevitable that the choice falls on the concept of domestic consumption and that the reference statistic for construction of the weighting structure must be the HFC estimated in the National Accounts.

The National Accounting statistics and, in particular, HFC have a consolidated tradition in the EU countries. These estimates are produced in accordance with guidelines, definitions and classifications that have long been standardised and available in all the countries having an annual periodicity and with a level of detail not lower than the one utilised in Italy for the CPI (50 consumption functions).

If all the countries were to uniform their choice in this direction, there would be an undeniable advantage in terms of comparability and an increase in the reliability, accuracy and temporal continuity of the indicators produced.

## NOTES

- (1) The total sum of the weights,  $\sum_p W_p$ , can be set equal to any number. In this paper the sum of the weights is considered equal to 100 (percentage weights).
- (2) Approved by the Eurostat Working Group on 24-25 April 1997 and awaiting approval by the SPC in November.
- (3) The consumer price index is a partial deflator of household final consumption and, for this reason, certain adjustments must be made.
- (4) The first estimates will be made in 1999.
- (5) In 1994 the items excluded amounted to just under 10% of the total, of which 9.2% was related to imputed rents.
- (6) In 1994 expenditures borne by the NHS amounted to 3.2%.
- (7) Only 25% of the National Accounts estimates come from the HBS. The other sources utilised are retail sales and other business statistics (40%), the data provided by industry or private companies (22.5%), public administration statistics (10.1%), and other sources (1.9%). The situation is, of course, highly diversified in terms of types of consumption [EUROSTAT - Task Force on the Use of Household Budget Surveys for National Accounts - Final Report, September 1996].
- (8) With the estimate of household final consumption set equal to 100, the raw data of the HBS reach 62.8 and increase to 81.7 after a series of adjustments. Particularly significant, although not in terms of determining the CPI weights, are the adjustments made to notional rents [EUROSTAT, see previous note].
- (9) The use of the consumer price index makes in regard to blue- and white-collar households is secondary. The only factor considered is the ratio of spending of the reference population in the index in proportion to total households; this ratio serves to reduce the value resulting from HFC.
- (10) In the household budget survey self-consumption is estimated at the purchase price, while in the National Accounting estimates it is evaluated at the cost of the factors.
- (11) The 1994 version of COICOP is the reference classification. The harmonised consumer price index utilises a subsequent version of COICOP that is divided into 12 main items.
- (12) We should point out that the household budget estimates, unlike those of HFC, do not include the spending of foreign tourists in Italy. In any case, this does not provide a sufficient explanation of the difference.