05

Prices

855-1500

Consumer Price Index (December 2015 = 100)

Methodological foundations

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
Federal Statistical Office FSO

Neuchâtel 2016

Topic of Prices

Current publications linked with this topic

Almost all publications published by the FSO are available in electronic form on the website www.statistics.swiss free of charge (not all of them in English). Print publications can be ordered by telephone on 058 463 60 60 or by emailing order@bfs.admin.ch.

Landesindex der Konsumentenpreise (LIK) – 2016,
Neuchâtel 2016, 6 pages, free of charge,
FSO number: 527-1600

Landesindex der Konsumentenpreise: Dezember 2015 = 100,
Neuchâtel 2016, 28 pages, free of charge,
FSO number: 387-1600

Teuerung in der Schweiz – 2008, Neuchâtel 2009, 92 pages,
CHF 32.00, FSO number: 932-0800

Topic of Prices online

www.statistics.swiss → Look for statistics → 05 – Prices

Inflation in Switzerland
www.CPI.bfs.admin.ch

Swiss Consumer Price Index (December 2015=100)

Methodological foundations

Editors Sandrine Roh, FSO
Contents Project team,
Revision 2015 of the Consumer Price Index, FSO
Published by: Federal Statistical Office (FSO)

Neuchâtel 2016

Published by: Federal Statistical Office (FSO)

Information: Hans Markus Herren, FSO, tel. 058 463 68 72, hans-markus.herren@bfs.admin.ch; Sandrine Roh, FSO, tel. 058 463 67 24, sandrine.roh@bfs.admin.ch

Editors: Sandrine Roh, FSO

Contents: Project team, Revision 2015 of the Consumer Price Index, FSO

Series: Swiss Statistics

Topic: 05 Prices

Original text: French

Translation: FSO language services

Layout: DIAM Section, Prepress/Print

Graphics: DIAM Section, Prepress/Print

Map: DIAM Section, ThemaKart

Front page: FSO; Concept: Netthoevel & Gaberthüel, Biel; Photograph: © Gina Sanders – Fotolia.com

Printed: Cavelti AG, Gossau

Copyright: FSO, Neuchâtel 2016
Reproduction with mention of source authorised (except for commercial purposes).

Print format orders: Federal Statistical Office, CH-2010 Neuchâtel, tel. +41 58 463 60 60, fax +41 58 463 60 61, order@bfs.admin.ch

Price: CHF 15.– (VAT not incl.)

Downloads: www.statistics.swiss (free of charge)

FSO number: 855-1500

ISBN: 978-3-303-05748-3

Table of contents

Graphics, tables and map 4

1 Definition and scope of application of the Swiss Consumer Price Index 5

1.1 The Consumer Price Index 5

1.2 Applications and user groups 5

1.3 The CPI, an index calculated since 1922 5

1.4 History of CPI revisions 6

1.5 The CPI as an integral part of the national/international statistical system 6

2 Methodological foundations 7

2.1 Scope of application 7

2.2 The basket of goods and services and its weighting 8

2.3 Prices 12

2.4 Calculation method 16

3 A closer look at some specific indices 18

3.1 The rental index 18

3.2 The owner-occupied dwellings 22

3.3 The price collection of clothing 23

3.4 The tariff survey: the examples of gas and outpatient services 23

3.5 The price of medicines 24

3.6 Hospital tariffs 24

3.7 The price collection for international package holidays 25

3.8 The price survey of air fares 26

3.9 The insurance premium survey 27

3.10 The price survey of consumer electronics 27

4 The modular index system 28

4.1 The health insurance premium index 28

4.2 The harmonized index of consumer prices 28

4.3 The individual inflation calculator 31

4.4 The additional classifications 31

4.5 The regional price movement 31

5 Quality management system 32

6 Publication 34

7 Glossary 35

Appendix 37

Appendix 1: The basket of goods and services and its weighting 2016 38

Appendix 2: Frequency of survey 42

Appendix 3: Hotels sampling 43

Appendix 4: Aggregation of the hospital services index 44

Appendix 5: Additional classifications 46

Appendix 6: Differences between the CPI and the cost-of-living index 57

Appendix 7: Socio-economic consumer price indices 57

Graphics, tables and map

Tables

T 1: Ex-post stratification matrix and cells weighting in the rental index 18

T 2: Cell weights in the index of imputed rent for owner-occupied housing 22

T 3: Comparison of the Swiss CPI with the HICP 29

Graphics

G 1: Example of the hierarchical structure of the basket of goods and services 9

G 2: Stage 1: From HBS data to critical expenditure for the CPI 10

G 3: Stage 2: From HBS expenses to CPI basket of goods and services weights 10

G 4: Price update 11

G 6: Stages of aggregation of the Swiss CPI 16

G 7: Cell subdivision used in rental index calculation 20

G 8: Price collection for package holidays until end of 2015 26

G 9: Price collection method for package holidays from 2016 26

G 10: Modular index system 28

G 11: Comparison of Swiss CPI and HICP weighting (2016) 30

G 12: Evolution of the Swiss CPI and the Swiss HICP since 2010 (base: December 2010) 30

G 13: Quality assurance system for the CPI production 33

G 14: Evolution of consumer price indices for different population groups 57

Map

G 5: The eleven price collection regions of the Swiss Consumer Price Index and their respective weights 13

1 Definition and scope of application of the Swiss Consumer Price Index

1.1 The Consumer Price Index

The Consumer Price Index (CPI) measures inflation. Specifically, it measures the average change in the prices of goods and services consumed by private households over a given period.
The CPI covers every segment of private consumption such as food, alcoholic and non-alcoholic beverages, clothing, rents, routine household maintenance, healthcare, telecommunication services, leisure, etc. (see Chapter 2.2.1).

It is published every month by the Federal Statistical Office based on a sample of some 80 000 prices collected monthly throughout Switzerland from 2 700 sales outlets (see Chapter 2.3.7).

To better meet the needs of users, the CPI is supplemented by other indices such as the Health Insurance Premium Index and the Harmonised Index of Consumer Prices (HICP) (see Chapter 4).

Price or cost-of-living index?
The Consumer Price Index is a price index, not a cost-of-living index.

A price index measures the price change of a fixed basket of goods and services over a given period. In contrast, a cost-of-living index measures the minimal cost change of a basic set of goods and services which are of constant utility to households. This set of goods and services is not fixed but varies according to the shifts in relative prices. By its very nature, constructing a cost-of-living index is very complex, and no country has yet headed down this road.

In 2000, aware that producing a true cost-of-living index was impossible, the FSO nonetheless aligned the CPI closer to its theoretical foundations. The Laspeyres chain index formula and the geometrical average have been in use since that year. The first takes into account the changes in household consumption patterns annually while the second partly factors in the effects of substitution (see Chapter 2.4).

For more information about the differences between price and cost-of-living indices, see Appendix 6.

1.2 Applications and user groups

The CPI, allowing the calculation of the inflation rate, is one of the most important and most widely sought economic indicators in economic, political and academic circles. It is also of interest to private households.

It has a variety of uses:
- It is used to track the value of a certain amount of money to keep purchasing power constant. Hence wages, rents and living allowances can be indexed to price variations.
- It forms the basis for economic policy decision-making. For example, the Swiss National Bank uses the CPI as a guide for monetary policy.
- It is used for analytical purposes or for forecasting by various academic and business circles.
- It is used as a deflator for economic values such as wages, income and various National Accounts items, so that their real trends can be traced.

1.3 The CPI, an index calculated since 1922

The Consumer Price Index has been compiled since 1922. The longest available series of indices date back to 1914, the initial index base (June 1914 = 100).

Given the importance of this indicator, the theoretical methods and foundations on which it is based are regularly reviewed and updated. The latest revision was completed in December 2015, resulting in the adoption of a new index base (December 2015 = 100).

The new index (rebased to 100 in December 2015) is chained to indices on previous bases to calculate long data series.

Long series should be interpreted by taking into account that each time data series are chained together, dissimilar components (e.g. expenditure items, expenditure items weightings, and changes in collection and calculation method) are being interlinked.

1.4 History of CPI revisions

Since 1922, the CPI has been revised on ten occasions: in 1926, 1950, 1966, 1977, 1982, 1993, 2000, 2005, 2010 and 2015.

From a methodological standpoint, these periodic reviews are needed so that the latest research findings, both national and international, can be taken into account. Revisions are also required from a practical point of view in order to factor in the shifts in market structures and consumer behaviour so as to ensure that results match market reality. Furthermore, technological advancements afford opportunities for optimising the collection of data and the dissemination of results. The benefits available from technological advances in regard to the index are also examined during revisions.

Regarding methodology, the most recent revisions of the CPI have made it possible to:

- adopt new methods for adjusting the quality of sub-indices, e.g. use of hedonic models for the quality adjustment in the rental index and in the price collection of personal computer (2010).
- adapt the reference month used for price-updating the weights of the basket of goods and services (2010).
- review the fundamentals of the rental index (sample size, stratification, follow-up calls, new sampling frame, quality adjustment) (2010/2015).
- develop new sub-indices, e.g. an index of imputed rents for owner-occupied dwellings (2015).
- develop new ways of measuring price change for air fares, package holidays, consumer electronics, etc. (2015).
- correct the apparent underweighting of tobacco in the index by adopting a new weighting source (2015).

For practical purposes, a host of improvements were made to the price-collection process, including:

- Adoption of a monthly price collection frequency for most of the goods and services (2008), and the definition of a price-collection frequency that corresponds to the period for which a product is available on the market (2010).
- The basket of goods and services was adapted to comply with the European classification of individual consumption according to purpose (ECOICOP, at five-digit level) and updated through to its lowest level (2015).
- New price-collection techniques were adopted and enlarged upon to save time in collecting data and to improve data reliability. This included using scanner data from four of Switzerland's major retailers (from 2008), using touch-screen tablets for field data collection (2011), making greater use of the internet for collecting prices (2015) and introducing online surveys (2015).

Lastly, every revision provides an opportunity to factor in shifts in market structures and consumer behaviour. For example, the definitions and weightings of distribution channels are updated with each revision then remain established for five years. The same principle applies to the weighting of CPI regions.

In addition, starting in 2000, a modular index system was introduced to meet the needs of various CPI users. The CPI is the core to which other supplementary modules providing information not offered by the CPI are attached (see Chapter 4).

1.5 The CPI as an integral part of the national/international statistical system

1.5.1 Legal basis

The legal basis for the Consumer Price Index is the Federal Statistics Act of 9 October 1992, the Ordinance of 30 June 1993 on the Organisation of Federal Statistics and the Ordinance of 30 June 1993 on the Conduct of Federal Statistical Surveys, according to which participation in price surveys is mandatory for businesses whenever this is requested.

The Federal Statistical Office is observant of the Confederation's data protection laws, as set forth in the Federal Statistics Act as well as the Federal Act on Data Protection of 19 June 1992. The names and other personal data of those supplying data are treated confidentially and used for statistical purposes only.

1.5.2 National standards

The CPI is a component of the Swiss statistical system whose overall framework is defined by the National Accounts (NA). CPI concepts, definitions and demarcations must as far as possible correspond to those of the National Accounts. Thus, it is the latter which defines the concept of "private household consumption expenditure" determining the CPI's scope of application.

1.5.3 International standards

By ratifying Convention No. 160 of the International Labour Organization (ILO), Switzerland has pledged to comply with its standards for establishing labour statistics, which include the CPI.

Consequently, CPI calculations follow the recommended methodology contained in the Consumer Price Index Manual, drafted by six international organisations under the aegis of the Intersecretariat Working Group on Price Statistics. This manual provides an overview of the theoretical concepts used in the construction of consumer price indices.

Lastly, Eurostat regulations and directives used in the Harmonised Index of Consumer Prices (HICP) are also taken into consideration wherever possible, despite not being mandatory for calculating the Swiss CPI. Changes to the basket of goods and services during the 2015 revision were, for that matter, strongly influenced by Eurostat's wishes to see released indices harmonised all the way down to expenditure items (ECOICOP).

All of the above framework conditions significantly influence the conceptual foundations of the CPI, promoting consistency between various statistics at a national level and, where possible, their international comparability.

2 Methodological foundations

As is the case for many economic statistics, the CPI construction is not easy, given the complexity of the economic and commercial fabric and the fact that it is constantly changing. A whole set of parameters therefore have to be defined in order to ascertain what is to be measured and how it can be measured.

2.1 Scope of application

The Consumer Price Index tracks changes in the prices paid for goods and services by private households in Switzerland. This definition, often cited to explain the purpose of the index, marks out the population coverage as well as the expenditure and prices covered.

2.1.1 Population coverage

The CPI covers consumption expenditures of **private households that are permanently resident in Switzerland.**

Consequently, tourists, cross-border workers and households residing in Switzerland in the short term (foreign students, temporary workers, etc.) are excluded. Collective households, such as residents in homes for the elderly or in student hostels are not part of the population covered either, as little information is available about their expenditure.

2.1.2 Expenditure coverage

The goods and services considered are demarcated by **final consumption expenditure.**

According to the National Accounts definition, the following are not regarded as consumption: transfer payments[1] such as direct taxes, social security contributions including the compulsory health insurance, as well as expenditure on investments and savings. Moreover, the CPI is confined to **monetary transactions**[2]**,** so it excludes self-subsistence, barter and services in kind.

The consumption expenditure considered is spent by the population covered in **Switzerland and abroad** (national concept for expenditure).

2.1.3 Price coverage

Prices considered are those **paid in Switzerland** for the goods and services defined in the basket of goods and services. They are collected on Swiss territory. The domestic concept is applied for prices.

Why are compulsory health insurance premium development not factored into the CPI calculation?
Compulsory health insurance premiums are transfers from households to insurances. In cases of illness, most of these payments are returned to insured persons as reimbursements for costs incurred. So while insurance premiums are mandatory, they are not part of final consumption and hence are left out of the CPI. Conversely, the medical services funded by these premiums (medical care, hospital services, medication, etc.) are included in the CPI basket of goods and services.

Furthermore, changes in health insurance premiums depend not only on prices in the healthcare sector but also on the frequency with which people use these services. As such, even if prices are held constant, costs rise in tandem with the higher frequency of doctor visits and hospital stays, and with the increasing complexity of medical examinations and treatments. This, in turn, leads to higher health insurance premiums. This volume effect runs counter to the purpose of the Consumer Price Index, which is to measure pure price changes.

Apart from this conceptual, methodological consideration, there is no doubt that rising health insurance premiums are weighing down household budgets. The solution in this instance is not to amend the Consumer Price Index, which is designed to measure changes in prices, but to factor in higher healthcare costs through economic policy, e.g. in connection with wage negotiations and pension revisions. Those wanting a view of healthcare costs should consult the Health Insurance Premium Index, which measures the change in premiums and its impact on the disposable income (see Chapter 4.1).

[1] A transfer payment is an obligatory expenditure for households. Such payments are managed by the State or by private non-profit-making institutions.

[2] The only non-monetary transactions, which are included in the CPI, are the expenditures made for owner-occupied dwellings. This is consistent with the way they are dealt with in the National Accounts.

2.2 The basket of goods and services and its weighting

2.2.1 The basket of goods and services

The basket of goods and services contains all the goods and services considered to be representative of the consumption expenditure of private households. It covers a wide range of products, from food, clothing, housing and furnishings to healthcare services, transport and communication.

Though exhaustiveness is a definite aim, it is not practical to survey the prices of every single product or service on the market because consumers have access to an innumerable range of offers.

Choices therefore have to be made, largely on the basis of three criteria: the importance of the products in private household consumption expenditure, the existing statistical series and the effort which has to be made to collect prices. The following goods and services are included in the baskets of goods and services:

- those accounting for at least 0.1% of the private consumption expenditure (this corresponds to an average expenditure of CHF 6.– per month and household).
- those being part of existing series in the current CPI. As a rule, series are maintained even if their weighting is temporarily less than 0.1% of the private consumption expenditures.
- those that can be collected without an excessive workload.

Products and services accounting for less than 0.1% of the private consumption expenditures are generally not included in the basket of goods and services (for instance the renting of durable goods or the funeral services). An exception is made in the case of some staples, such as rice, flour, tea, and certain fruit and vegetables, which, despite their slight importance for household expenditure, are nevertheless part of the basket of goods and services. This choice is justified by the historical continuity of the statistical series and by users' interest for this kind of products.

The main source used to construct the basket is the Household Budget Survey (HBS), which provides highly detailed information about the consumption expenditures of private households and their importance. Data from associations, distributors and market research companies with experience in the various markets concerned[3] are also used.

The basket of goods and services is updated every time the index is revised. This consists of updating the sample of products whose prices are collected as well as expenditure items for which indices are released. For example, the 2015 revision introduced data collection on driving lessons and two-step driving instruction, audio and video streaming, beauty salon services, spa admission prices, and more besides.

Once the products have been selected, a structure has to be defined. This is important in order to classify the products as coherently as possible and to provide aggregated results, which match user needs. The international classification COICOP[4] has been used since 2000; all European countries apply this classification to calculate inflation and for other surveys. It allows international comparison of the detailed results for the twelve main groups and jointly defined product groups.

The twelve main groups are as follows:

- Food and non-alcoholic beverages
- Alcoholic beverages and tobacco
- Clothing and footwear
- Housing and energy
- Household furniture and furnishings and routine maintenance
- Health
- Transport
- Communications
- Recreation and culture
- Education
- Restaurants and hotels
- Other goods and services

Expenditure items are found at the lowest level of detail, followed by varieties (see G1). In 2015, the basket of goods and services was adapted to comply with ECOICOP down to the expenditure item level. Varieties are defined nationally depending on spending patterns in each country. The upper strata of the basket of goods and services must preferably be kept unchanged between revisions, but varieties can be adapted annually. The 2016 basket of goods and services can be consulted by visiting Appendix 1.

Various additional classifications are published in addition to the basic COICOP classification (chapter 4.4).

[3] Switzerland has many associations representing various sectors. Thus, for instance, in order to construct the standard fruit and vegetable basket, the FSO consulted "Fruit-Union Suisse" and the "Union maraîchère suisse."

[4] Classification of Individual COnsumption by Purpose (COICOP), Eurostat, Compendium of HICP reference documents (2/2001/B/5),2001, page 281 Commission regulation (CE) No. 1749/1999 of 23 July 1999

Example of the hierarchical structure of the basket of goods and services **G 1**

Type of position	Total	Main group (MG)	Product group (PG)	Product group (PG)	Expenditure item (EI)	Intermediate aggregate (IA)	Variety (V)	Weight in %
Total	**Total**							**100.000**
MG		Food and non-alcoholic beverages						10.333
PG			Food					9.382
PG				Bread, flour and cereal products				1.583
EI					Rice			0.043
V							Rice	
V							Rice specialities	
EI					Flour and other cereals			0.055
V							White flour	
V							Other flours and starches	
[..]								
EI					Pasta			0.124
IA						Dry pasta		
V							Spaghetti	
V							Elbow macaroni	
V							Other pasta	

Main group	=	First level of the private consumption in 12 main groups.
Product group	=	Grouping of expenditure items resp. product groups in the next aggregate (product groups can be found at different level of the hierarchical structure). There are 122 product groups in the basket of goods and services 2016.
Expenditure item	=	Lowest weighted position, component of the basket of goods and services and weighted scheme that is fixed over a certain period of time. Expenditure items are the lowest positions for which index series are published. There are 267 expenditure items in the basket of goods and services 2016.
Intermediate aggregate	=	Grouping of varieties in unweighted aggregates.
Variety	=	Lowest level of the basket of goods of services. Determine the goods and services for which prices have to be collected. Those positions can be adjusted continuously following the changes in the consumer behaviour and in market offers. There are 1120 varieties in the basket of goods and services 2016.

Source: FSO – Consumer Price Index, Basket of goods and services 2016

© FSO 2016

2.2.2 The weighting

Not all the components of the basket of goods and services are equally important for household budgets. For example, households do not spend the same amount on housing (18.1%) as on clothing (3.8% in 2016). To achieve economically correct results, the various price movements recorded must be weighted by the importance of the corresponding expenditure items[5]. The detailed weighting for 2016 is given in Appendix 1.

The Household Budget Survey (HBS), conducted every year by the FSO among private households with permanent residence[6] in Switzerland, is the main source for weighting the CPI components.

The HBS is considered the best source of information for weighting the basket of goods and services because:

- It covers all private household consumption expenditure;
- Its results are recent, with a time-lag of only two years. For example, 2016 weights were calculated using HBS findings from 2014;
- It uses the same classification as the CPI (i.e. COICOP – see Chapter 2.2.1);
- It offers indications regarding data reliability (coefficients of variation);
- It can be scaled to the specific needs of the CPI and provides results with a high degree of granularity.

The HBS is conducted using a randomised sample selected from the population survey sampling frame and stratified by the seven major regions of Switzerland. The randomly selected private households are interviewed about their daily, regular and irregular expenditures during the month in which they are

[5] For instance, if rents increase by 2% and are weighted at 18.1%, rents contribute 0.36% to the price increase.

[6] This naturally excludes tourists and short-stay households.

participating in the survey as well as about their income. For infrequent purchases (e.g. motor vehicles or household appliances), the number of entries recorded in the HBS is generally low and shows a high degree of variance. Hence the survey period is extended to the past 12 months, which results in more observations and lower variance.

HBS data are mined specifically for the CPI, tested for reliability and analysed, only after which do they serve as the basis for weighting the basket of goods and services.

First, expenditure that is not within the CPI's scope of application (see Chapter 2.1.2) must be eliminated, leaving only consumer spending that is significant to the CPI.

Once this expenditure has been ring-fenced, the weights of the various expenditure items can be calculated.

Although the HBS is the main source used for calculating the weights, the results provided may not always be detailed enough for some product groups or they may under-estimate actual consumer spending on them. This is the case for tobacco, for example. Other sources of information (trade data or market research) must then be found to distribute HBS expenditure.

A typical example of it is the weighting of energy: the HBS does not provide detailed information about households' energy expenditure on electricity, gas, heating oil, remote heating and wood. This is because much of this expenditure is part of the all-in incidental rental charges billed by the landlord. So households often do not know what they actually spend on heating. Federal Office of Energy statistics are used to distribute this energy expenditure over the various basket items as they provide detailed information about private households' final consumption of energy, thus making it possible to calculate a distribution key.

For tobacco, HBS data are replaced with data from another reliable source. Since 2016, information on tobacco duties levied by the federal customs administration is used to determine household spending on tobacco items. This decision was made on the basis of the probable underestimation of consumption expenditure on tobacco products in the HBS.

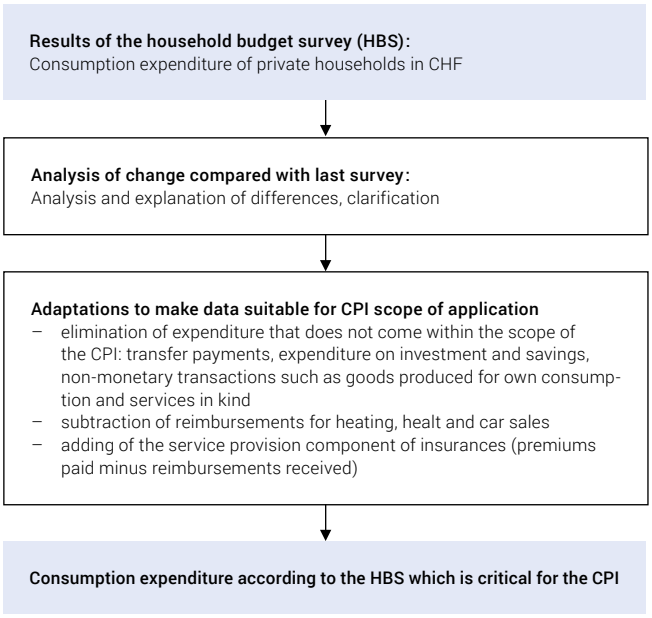
Graph 2 and graph 3 present the different steps leading from the HBS data to the final CPI basket of goods and services weights.

As the HBS is conducted annually, the basket weights have been updated every year since 2002, making it possible to take fast account of changes in household consumption habits and to have weights that more closely reflect the actual consumption patterns of private households.

To obtain the final CPI weights used in year t, a price-update is made between the HBS year (t-2) and the CPI reference period (December t-1) in order to ensure consistency between the base period (CPI=100) and the reference period (for which weights are valid). To do this, the weights of each expenditure item calculated using HBS t-2 are adjusted using the price developments in these same expenditure items between t-2 (using annual average) and December t-1 (see G 4).

For example, to calculate weights for December 2015, HBS results from 2014 were adjusted to take into account price changes between 2014 (annual average) and December 2015.

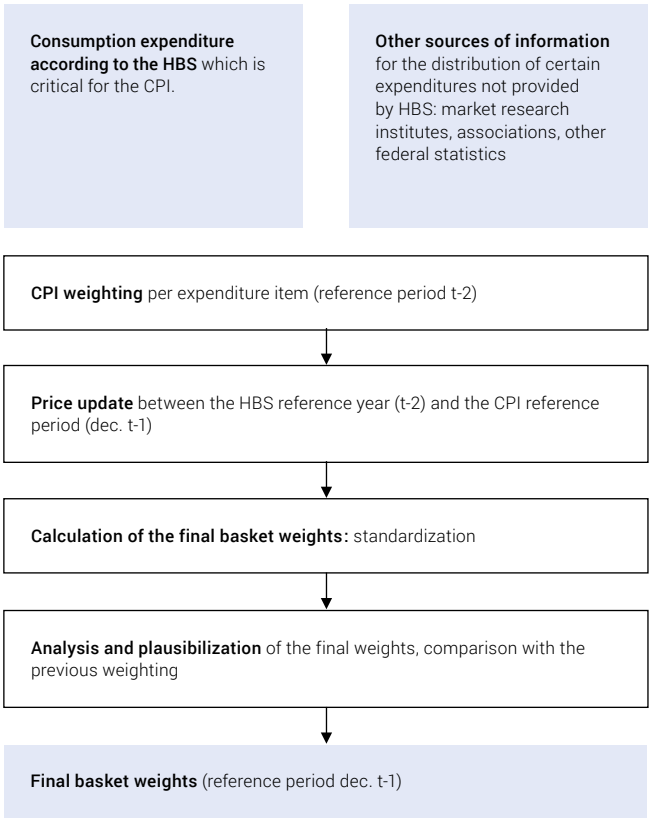
Stage 1: From HBS data to critical expenditure for the CPI — G 2



Source: FSO – Consumer Price Index

© FSO 2016

Stage 2: From HBS expenses to CPI basket of goods and services weights — G 3



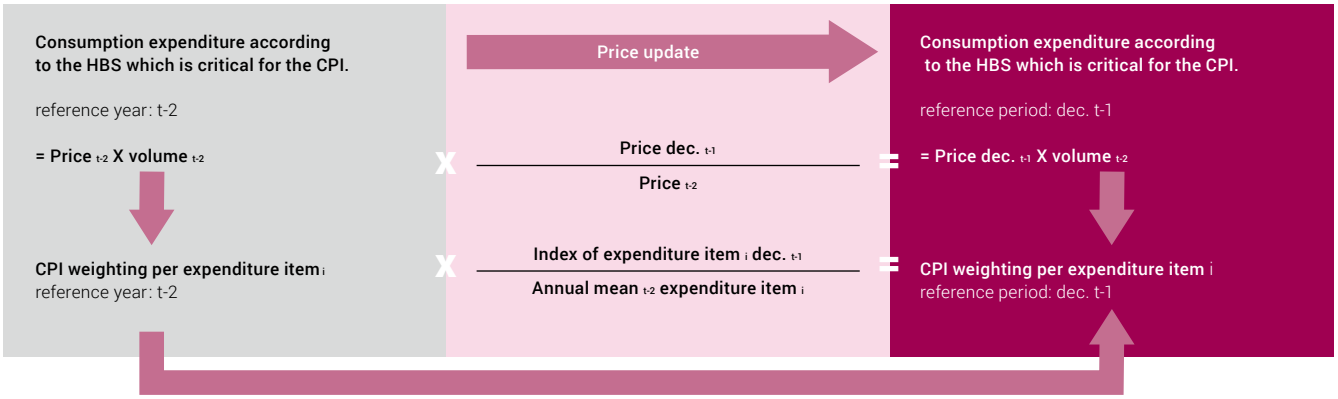
Source: FSO – Consumer Price Index

© FSO 2016

This method, used frequently at international level, is easily applicable, unambiguous and intelligible. However, it assumes price-demand inelasticity: if the price of a certain product doubles, so does household spending for the same product. This may well be true for goods with low or no elasticity such as fuel and energy sources, but it hardly applies to most other goods. According to research carried out during the revision 2010 of the CPI, this drawback has barely any impact on the results, or at the very least on total inflation[7], which is why use of the method is upheld.

Price update

G 4



Source: FSO – Consumer Price Index

© FSO 2016

[7] Indices from 2002 to 2009 were recalculated ex-post using effective weights, i.e. using the HBS findings of the previous year. Although weights vary considerably in some product groups, the simulated inflation rate is identical to the official one.

2.3 Prices

2.3.1 Relevant prices

Decisive for calculating the CPI are **transaction prices**, i.e. the price paid by consumers for a specific good or service, including indirect taxes (chiefly VAT and incentive fees), customs duties, environmental taxes and subsidies. Credit or interest costs are not taken into account.

2.3.2 Price reductions

Price reductions (special offers, promotions, discounts, sales) are taken into account subject to the following conditions:

- the reduction must apply to a precisely defined good or service which is part of the CPI product sample and whose quality is identical on all counts with that in the previous period; the following are therefore excluded: closing-down sale prices as well as articles which are discounted because they are defective or past their sell-by date.
- it must be on offer to all consumers, without discrimination; price reductions for certain population groups (pensioners, those on military service, students, etc.) are in general excluded[8].
- it must not be subject to any conditions; price reductions linked to an obligation to purchase (for instance, buy one book and get the second half price) are excluded too.
- discounts for bulk purchases must not exceed three times the quantity sold during normal periods (for instance, three bottles of shampoo for the price of two).

2.3.3 Tariffs

Tariffs are "special prices" in the sense that there is not just one price for a product but several, and that this set of "prices" is linked to conditions. Tariffs are found for electricity, gas and telephone consumption as well as for public transport.

The problem with this type of product is that the tariff structure alters over time, making it difficult to follow its developments. For instance, the price of a "short trip" bus ticket may remain the same but the distance that can be travelled for this fare may be different.

To deal with this specific characteristic, service packages corresponding to consumer models are defined. The cost of these packages is taken to be a price and is measured over time. An example of how price movements are calculated with tariff-based products is given in Chapter 3.4.

[8] With the exception of certain services for which price reductions for specific population groups can be considered, such as cinema admissions or public transport.

2.3.4 Timing of price introductions

Prices are introduced into the calculation when products are purchased, thus applying the **acquisition concept**.

Most goods are bought, paid for and consumed virtually simultaneously or in any event during the current month. For these, no special problems need to be addressed. On the other hand, in other cases, the date of purchase may differ considerably from the date of payment and use, especially for services such as package holidays and air fares. The trip or flight may be booked in February (date of acquisition), paid in May (date of payment) and consumed in July (date of use). For such services too, the date of acquisition is what counts: thus, the prices are valid for the month of purchase.

This concept has crucial practical implications. To be able to apply it, the service has to be defined extremely precise. The package holiday price survey is presented in Chapter 3.7.

2.3.5 Structuring and sampling: choice of regions, sales outlets and products

The price collection is structured at three levels: regional, sales outlets and the products themselves.

At each of these levels, a representative sample of the total population is constructed. With the exception of rents, sampling frames are not reliable enough for random selection. Hence, in all other areas, sampling is non-random. The sampling method used for hotels, for example, is shown in Appendix 3.

Price collection regions

Prices are collected in **11 regions** (see G5) selected using the following criteria:

- One to three price collection regions are chosen within the seven major regions of Switzerland[9];
- A single region per canton is considered;
- All language areas are represented;
- They span the Swiss territory, although price collection mainly takes place in and around large and medium-sized urban centres, which are focal points for consumer spending.

Each region is weighted on the basis of consumer spending by private households, taken from the HBS[10] (i.e. the same source as for the basket of goods and services weighting).

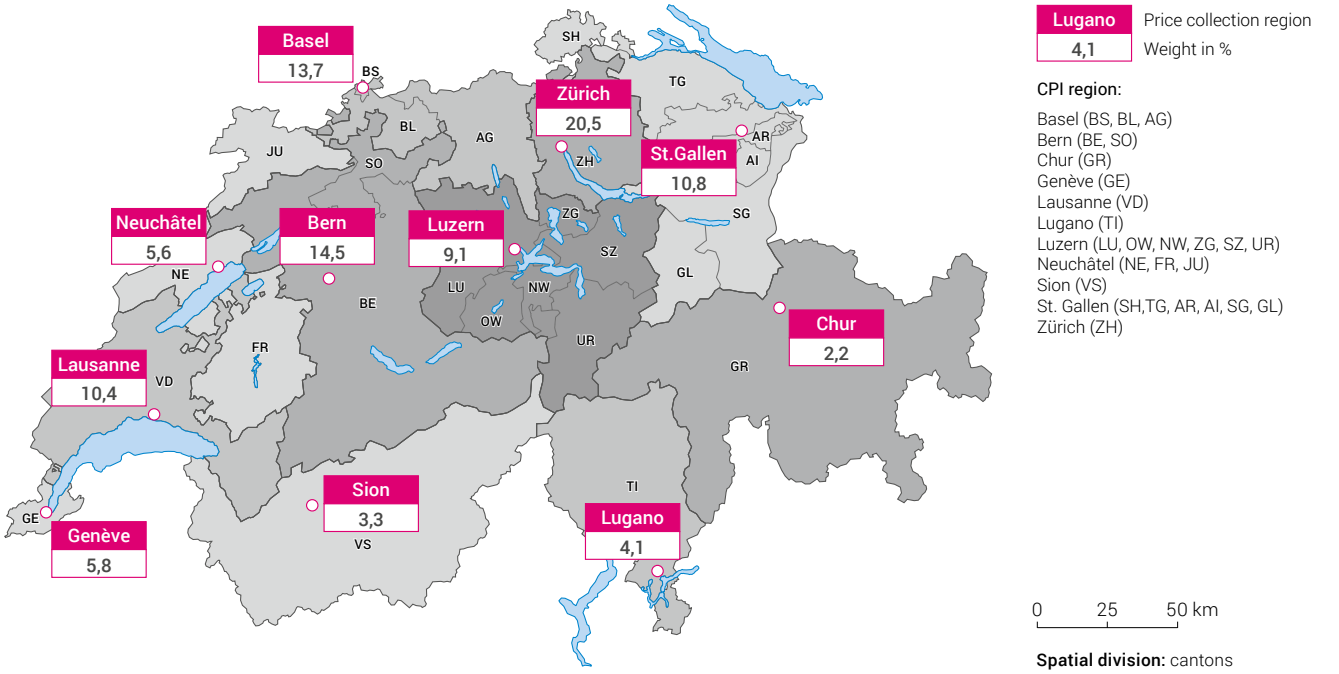
Sales outlets

Sales outlets offering products found in the basket of goods and services are selected in each region. The index contains both major sales outlets established nationwide and regional sales outlets, which are chosen by regional price collectors in consultation with the FSO. In all, approximately **2700 sales outlets** participate in

[9] The major regions are supraregional areas established in 1997 for the purpose of regional and international statistical comparisons. They are the Lake Geneva region, Espace Mittelland, North-Western Switzerland, Zurich, Eastern Switzerland, Central Switzerland and Ticino.

[10] Regions' weights are adjusted every five years, in connection with each CPI revision. To ensure the representativeness of the findings over a relatively long period and for smaller regions, the averages of HBS data between 2010 and 2014 are applied.

The eleven price collection regions of the Swiss Consumer Price Index and their respective weights **G5**



Source: FSO – Household Budget Survey, part of the consumption expenditure by CPI region 2010 – 2014

© FSO 2016

the successive surveys. Most of the sales outlets are grouped in distribution channels[11], which are in turn weighted according to the consumer expenditure of private households. The sales outlets sample is permanently updated, in line with outlet market development.

Goods and services

In each of the sales outlets selected **products** are chosen (also on a purposive basis) whose price developments are included in the CPI calculation. These products are defined by the varieties that make up the basket of goods and services and are chosen by regional price collectors and by the FSO. They must be widely sold and remain on shop shelves for a comparatively long period to allow changes in their prices to be monitored over the months. Some 840 000 prices in all are collected every year.

2.3.6 Price-collection frequency and coverage over time

Since January 2008, the prices of most products have been collected on a **monthly basis**. Exceptions are:

- Goods and services whose prices have been shown to change less frequently. These prices are collected on a quarterly basis (e.g. rents)
- Seasonal products for which the collection months are determined by availability
- The prices of products for which pricing changes are known in advance and broadly communicated (e.g. postal services and public transport) are surveyed aperiodically (when they change).

Appendix 2 gives the detailed frequency for collecting price data in each product group.

The prices of the selected items are surveyed **in the first two weeks of each month**. Given their sharp fluctuations, the prices of petroleum products (heating oil and fuel) are surveyed twice a month (based on set days, at the beginning and middle of the month). Price data for fruit and vegetables are partly collected over the first week and partly over the second week of the month.

2.3.7 Price-collection organization and techniques

The price collection is divided into two categories:

- A **regional collection** is conducted in the 11 selected regions. It concerns only part of the basket of goods and services, namely products whose prices are set at regional level, such as fresh products and petroleum products for instance. This regional collection guarantees the presence in the sample of regional sales outlets such as bakers, butchers and specialized shops. Regional price collectors also collect data at selected retail chains. As these prices undergo the same shifts nationwide, they can be collected in any region. Since 2000, collection work has been contracted out to a private market research institute, which has a network of 40 regional price

[11] Among others, Migros, Coop, discount retailers, hypermarkets, specialized shops and mail-order companies are singled out.

collectors who collect prices in about 1 000 sales outlets. These regional collectors live in the region they survey and are familiar with its commercial structure and local consumer habits. Their work is regularly monitored by the mandated institute and by the FSO, and they are given training twice a year which makes it possible to constantly upgrade the quality of their work and to standardize collection practices (especially as regards quality adjustments).

– A **central collection** is carried out mainly by the FSO. It concerns groups of products whose prices are administered or semi-administered (for instance, health and public transport), products whose prices are identical throughout Switzerland (such as telecommunications) and major distribution chains whose prices are set at national level. The FSO collects prices in more than 1 700 sales outlets.

Various **techniques** are used **to collect prices**. The vast majority of data is collected in the field. The process was optimised in 2012, when touch-screen tablets were introduced. As such, it is possible to test data for plausibility directly as information is being input at the shelf. As early as 2008, price data from major retailers started being collected in part through scanner data[12]. The price collection with scanner data is managed by the FSO. This improved way of collecting prices is likely to be extended to other retailers and assortments in the coming years. A considerable amount of data is still collected on paper forms, through email, by phone or over the internet.

Special attention was paid to price-collection techniques during the 2015 revision. For example, much of the data previously collected in the field, by email or on paper forms was migrated to the internet. As well as yielding efficiency, online price collection offers considerable benefits as regards the availability of important information for price statistics, such as key details necessary for product substitutions and quality adjustments. Some prices of clothing, footwear and furnishing items are collected online nowadays. For consumer electronics, the rate of online survey is now 100%. Additionally, as part of its 2015 revision, the FSO added an online survey for landlords who participate in the follow-up surveys of the rent data collection. As well as reducing the time needed to process questionnaires, this interface includes sets of rules for plausibility testing and validation, thus substantiating the quality of the data collected. In the years to come, the FSO will continue optimising price collection techniques by collecting more prices over the internet and giving respondents greater access to online surveys.

[12] The data in this instance is obtained through the reading of product barcodes by cash registers. It contains important information for consumer price statistics and has led to a strong qualitative improvement in the index. Since the turnover generated by each item is known, it is possible to select the best-selling goods using objective criteria, then calculate the price actually paid by consumers for a given item during the month. This is done by averaging data for the first two weeks of the month. Discounts, promotions and the like are also taken into account. For more information: Reto Müller, *Scanner data in the Swiss CPI: An alternative to price collection in the field,* Federal statistical office, 2010. Jean-Michel Zürcher, *New experiences with scanner data in the Swiss CPI,* Federal Statistical Office, 2012.

2.3.8 Handling of changes in quality

For calculating inflation, theory requires composition of the basket of goods and services to remain the same for a certain period so as to measure only pure price movements. However, in reality, products change over time – improving, following fashion trends and technological advances. For instance, it is difficult to monitor the price of a computer for longer than three months. Similarly, clothing generally has a life of just one season. Under these conditions, it is essential to establish rules for product substitution and for making quality adjustments.

Once a product is no longer part of a sales outlet's range, there are six techniques which can be used to replace it:

– **Direct substitution:** This method is used when the old and new products share the same features or are very similar. The new product thus replaces the previous one and any price difference is taken fully into account in the calculations. In the following example, the whole of the 30-cent increase between January and February 2016 is considered as inflation.

Article / Price	December 2015 (Base 100)	January 2016	February 2016
Price of A	2.00	2.50	
Price of B			2.80
Price Index	**100**	**125**	**140**

– **The overlapping method:** This method applies to products that may have changed but whose primary function is the same. For this method to work, both the old and new product must be on the market simultaneously for no less than one month. The noted price difference between the two is broken down into a qualitative difference and a price difference, but only the price difference is included in the calculation. In the following example, the price difference between the two products in January is considered as a qualitative difference. The 30-cent increase between January and February 2016 is therefore split into two: 20 cents are considered as quality enhancement while 10 cents are seen as a price increase.

Article / Price	December 2015 (Base 100)	January 2016	February 2016
Price of A	2.00	2.50	Difference in quality
Price of B		2.70	2.80
			Difference in price
Price Index	**100**	**125**	**129.63**

– **The option price method:** In some areas, quality change can be directly estimated on the basis of product components. It is then deducted from price so that the qualitative difference has zero impact on the index. This method is particularly

suited to the new car market, where technological innovations are often introduced first as options before being offered as standard features.
In the following example, item B, whose price is known, has options that confer upon it a higher value than item A. The value of these options can be estimated at 25 cents. With similar options, item A would have cost CHF 2.75 in January. The 30-cent increase between January and February 2016 is split into two: 25 cents are considered as quality enhancement while 5 cents are seen as a price increase.

Article / Price	December 2015 (Base 100)	January 2016	February 2016
Price of A	2.00	2.50	Difference in quality
Price of B		*(2.75)*	2.80
		Difference in price	
Price Index	**100**	**125**	**127.27**

– Explicit quality adjustment using **class mean imputation** (bridged overlap): This method involves imputing price development of items of the same variety which have not been replaced to replacement items whose quality is not comparable to the replaced items.
In the following example, item A and item B, though used for the same purpose, are of differing quality. Using the bridged overlap method, the price change between the two items from January to February is the same as for items of the same variety. In this instance, it is 5.66%. Item B would have cost CHF 2.65 in January. The price increase between the two items, A and B, is then split into a 15-cent quality enhancement and a 15-cent price change.

Article / Price	December 2015 (Base 100)	January 2016	February 2016
Index of variety	100	100	105.66
			The index increases by 5,66%
Price of A	2.00	2.50	–
Price of B	–	*(2.65)*	2.80
Price Index	**100**	**125**	**132.08**

– Explicit quality adjustment using **hedonics**: Such methods use a hedonic function to estimate quality change, which is then removed from the index. Hedonic methods have been in use to adjust for quality change in PCs and rents since 2011.
In the following example, item B does not have the same characteristics as item A. A hedonic function is used to estimate the prices of items A and B based on their features, thereby measuring the difference in quality. For example, it can estimate the price of item A in January 2016 as if it had possessed the characteristics that item B has in February 2016, which is tantamount of estimating the price of item B in January 2016. This is estimated at CHF 2.90, corresponding to a 16% quality-related increase relative to item A, which has a lower characteristic-based value. The estimated price of item B in January is higher than its actual price in February. The end result is a 3.45% decrease in the index between January and February 2016.

Article / Price	December 2015 (Base 100)	January 2016	February 2016
Price of A	2.00	2.50	Estimated difference in quality 16%
Price of B		(2.90)	2.80
			Difference in price
Price Index	**100**	**125**	**120.69**

– **Non-replacement:** Lastly, if none of the above methods are applicable, the price series of the product taken off the shelves (item A) is discontinued and a new price series begins (item B). No price comparison is carried out.

Article / Price	December 2015 (Base 100)	January 2016	February 2016
Price of A	2.00	2.50	–
Price of B	–	–	2.80
Price Index A	**100**	**125**	
Price Index B			**125**

As a closing point, it should be noted that product replacement and quality adjustments are one of the most problematic areas for price statistics. It is extremely difficult to measure a quality differential between two products in terms of utility. That is why particular care is given to plausibility testing and the quality screening of replacement items.

The **bridged overlap** method has been used by the FSO since 2011 to obtain quality-adjusted prices for clothing items. Because the decision to apply the bridged overlap method is based on a comparison of qualitative features, product characteristics must be noted at the time of basic price collection and each time there is a substitution. Price collectors no longer have to judge the comparability of products and instead can concentrate on selecting replacement items. Quality adjustments are then conducted directly at the FSO using strict criteria. By opting for centralised quality adjustments, the FSO ensures that replacement items are assessed using the same procedure in what are often complex fields.

To qualify as comparable, the item being replaced and the replacement item must have characteristics that vary in only a small proportion. For example, two items not of the same brand would be deemed non-comparable. When these characteristics are so different that quality cannot be considered comparable, the bridged overlap method is used. In practice, no price change is calculated directly between the old and new items. Simply, the price development affecting items of the same variety that have not been replaced is imputed to the item that has substituted another. Excluded from the imputed-price calculation, however, are missing items (for which pricing cannot be sampled immediately) and items whose prices have dropped temporarily through the effects of sales.

2.3.9 Handling of observations that are lacking: seasonal products

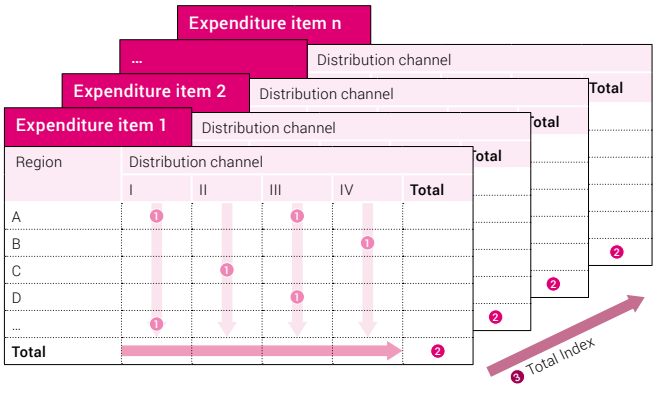
The consumption of certain products fluctuates with the seasons, for natural and climatic reasons. In particular, these include fruit and vegetables, as well as clothing and sports articles. For instance, it is hard to find strawberries or peaches in winter, and skis and ski accessories are sold only from October to spring. As these products are not part of shop ranges all year round, their prices cannot be collected each month. Given that interrupting the price series is undesirable, the last price collected is carried forward until the article reappears in the shops. This means that, outside the collection periods, there is no change in the prices of the missing products. This technique tends to make the results less volatile.

2.4 Calculation method

Once prices have been collected and quality adjustment made, the sets of prices are converted into series of indices. How are the indices arrived at? How are elementary indices aggregated?

The prices are attached to three weighted levels: regions, distribution channels and the basket of goods and services, as illustrated in G 6.

Stages of aggregation of the Swiss CPI **G 6**



1 Basic aggregation
2 Intermediate aggregation
3 Upper-level aggregation

Source: FSO – Consumer Price Index © FSO 2016

Each cell (1) contains observations of non-weighted prices attached to a region, distribution channel and expenditure item (for instance, the price of flour collected in Neuchâtel in specialized shops). The first step in aggregation – **the basic aggregation** – consists of aggregating all these prices with the aim of obtaining one index per cell. **The geometric mean (GM)** is used for this purpose:

$$GM = \left[\prod_{i=1}^{n} \left(\frac{p_i^t}{p_i^0} \right) \right]^{\frac{1}{n}}$$

where:

n = the number of price observations

p_i^t = the price of commodity i during the month under review t

p_i^0 = the price of commodity i during the basemonth p_i

The geometric mean is greatly valued in price statistics because it has interesting mathematical properties, such as transitivity[13], which is very important in a chain concept (see upper-level

[13] The transitivity axiom requires that an index between T0 and Tn can be calculated by passing through the intermediate steps Tn-1, Tn-2, Tn-3….

aggregation below). Moreover, the results it provides take account of an elasticity substitution equal to 1 of individual items inside the cell which is more realistic economically speaking than the inelasticity translated by the Carli arithmetic mean[14].

The second stage in aggregation – **intermediate aggregation** – comprises aggregation of the indices obtained during basic aggregation. Regions and then distribution channels are aggregated using a weighted arithmetic mean, thus obtaining an index for each expenditure item (for instance, the index for the price of flour):

$$I_i^t = \sum_{l,k=1}^{x,z} g_l \times g_k \times I_{lk,i}^t$$

where:

I_i^t = the index of expenditure item i at the month under review t

$I_{lk,i}^t$ = the index of expenditure item i at time t by distribution channel l and region k

g_l = the weighting assigned to distribution channel l (l=1,...,x)

g_k = the weighting assigned to region k (k=1,...,z)

The third and final aggregation phase – **upper-level aggregation** – enables calculation of the CPI at the total level. The index for each expenditure item, obtained during the second phase of aggregation, is weighted by the latter's respective weight in the basket of goods and services. Aggregation of these weighted indices gives, in hierarchical terms, a price index by product group, by main group and finally the total index. The formula used to calculate this aggregation is the **Lowe formula** (which is derived from Laspeyres formula):

$$I_{LO}^t = \sum_{j=1}^{n} g_j^{0b} I_j^t$$

where:

$$g_j^{0b} = \frac{q_j^b p_j^0}{\sum_{j=1}^{n} q_j^b p_j^0} \quad \text{and} \quad I_j^t = \frac{p_j^t}{p_j^0}$$

g_j^{0b} = the weight of commodity j during the base period

I_j^t = the index of commodity j for the month under review t

q_j^b = the quantity of commodity j surveyed during the base period (year t-2)

p_j^0 = the price of commodity j during the base period (December t-1)

$q_j^b p_j^0$ = the expenditure on commodity j during the base period (December t-1)

p_j^t = the price of commodity j during the month under review t

In a classic Laspeyres context, the weighting is kept constant for a comparatively long period of time. However, in reality, household consumption structure changes considerably from year to year. In order to take account of this change, the formula for the **chained index according to the formula of Lowe** has been used since December 2001. A chained Lowe index is a series of direct Laspeyres indices whose weighting is updated annually and whose results are linked up in order to produce long series of indices:

$$I_{T,m/0}^{LO} = I_{T,m/T-1,b}^{L} \times I_{T-1,m/T-2,b}^{L} \times .... \times I_{2,b/1,b}^{L} \times I_{1,b/0}^{L} \times \frac{1}{100^{n-1}}$$

where:

$I_{T,m/0}^{LO}$ = the chained index for month m of year T compared with the base period

$I_{T,m/T-1,b}^{L}$ = the Laspeyres index for the month m of year T compared with reference month b of the most recent period (T-1)

T = the year of reference

b = the month of reference (constant)

n = the number of links

The weights have been updated each year (see Chapter 2.2.2) in December (which represents „b" in the above formula), since 2001.

Using the chained index formula therefore makes it possible to update the basket weights annually and to incorporate changes to private household consumption structures quite fast.

[14] The Carli arithmetic mean or the mean of price relatives (MPr) consists of calculating an index for each set of prices and aggregating these indices arithmetically: This method assigns the same importance to each price variation.

$$MRP = \frac{1}{n} \sum_{i=1}^{n} \frac{p_i^t}{p_i^0}$$

3 A closer look at some specific indices

3.1 The rental index

3.1.1 Scope of application

The rental index measures inflation in the rents of long-term lets in the Swiss housing market. It does not aim to measure the profitability of property investments made by institutional investors, nor to measure only the shifts in rents of new builds or of currently available housing on the market. As such, the rental index sample must encompass a range of accommodation that is representative of the total rental stock in Switzerland (new and old buildings, new and old leases, housing let by private and institutional landlords).

With a weight of approximately 13%, it is the largest sub-index in the Swiss CPI.

3.1.2 Rotating panel principle and sample size

To keep track of changes in the rental market, and specifically the construction of new dwellings, rental index sampling uses a rotating panel, one-eighth of which is renewed every quarter.

During the 2010 revision, the sample size was doubled, from 5 000 to 10 000 housing units, with a view to improving the accuracy of results.

3.1.3 Post-stratification principle and cell weighting

The housing market has its own particularities and does not function like markets for other products in the CPI basket of goods and services. Each dwelling is a 'one-off' commodity as regards size, age and location. Moreover, the rental stock does not remain constant over time: new dwellings are built, some are renovated while others are left to the effects of passing time.

To measure changes in rents sensibly, a post-stratification strategy is used. To create groups of dwellings that are as homogeneous as possible, the rental index is structured using broad variables that have a decisive influence on the level of rents, namely the number of rooms and the building age. A matrix of 24 cells is thus determined, on the basis of 6 categories for number of rooms (1 – 6 rooms) and 4 for building age (0 – 5 years, 6 – 10 years, 11 – 20 years and over 20 years).

Each cell has a weight according to its share of household expenditure on housing. From 2016, cell weighting have been calculated on the basis of the structural survey of the 2011 national census. The total index is then compiled by aggregating the 24 cells using their respective weights.

Ex-post stratification matrix and cells weighting in the rental index **T 1**

		0 – 5 years	6 – 10 years	11 – 20 years	>20 years
Number of rooms	1	0.0764%	0.0285%	0.1778%	3.6067%
	2	0.8527%	0.2595%	1.4939%	12.8074%
	3	2.3294%	0.9769%	3.1131%	27.9874%
	4	3.2725%	1.7431%	4.0713%	24.5810%
	5	0.9651%	0.7259%	1.3073%	7.0153%
	6	0.1639%	0.1585%	0.3146%	1.9727%

Source: FSO – rental index, 2016

© FSO 2016

Post-stratification is commonly used at international level; the results it supplies are relatively close to those produced using hedonic methods, provided that post-stratification characteristics genuinely affect the level of rents.

3.1.4 Sample selection

The rental index is the only sub-index within the Consumer Price Index based on a random sample. The new housing units replacing one-eighth of the existing sample each quarter are selected on the basis of a survey framework designed by the FSO specifically for use in the rental index. It is adapted from the FSO's sampling frame used in population-based surveys[15], which is initially based on the data from population registers and the Federal Register of Buildings and Dwellings.

Since the 2015 revision, the selection of the rental index sample has been stratified according to the age of the building and the number of rooms. Using stratification, it is easier to represent the various categories of dwelling, especially recent housing

[15] Stichprobenrahmen für Privatpersonen und Haushalte (GE) – Cadre de sondage pour les enquêtes auprès des ménages (FR)

with few rooms (which are relatively scarce on the market), and to take into account their specific response rate. This avoids having poorly populated cells in the post-stratification matrix.

3.1.5 Sampling weights

With the 2010 revision, sampling weights were introduced to factor in the selection process and non-response in connection with the survey. Previously, observations incorporated into the rent-index calculation were weighted exclusively in relation to a change of tenants. Deemed superfluous, this has been discontinued.

3.1.6 Survey procedure

Data on rents are collected quarterly from landlords, using paper forms or online survey. Landlords are preferred over tenants insofar as they possess precise information about the accommodation that they let, are generally better equipped administratively and are used to participating in the survey regarding the rental index. Moreover, development of rents occurring as tenants change can be observed.

Data collected from the survey include not only rent information (gross rent, incidental charges, net rent, all-inclusive rent), they also comprise information on lease terms (duration, changes of tenants, type of lease, grounds for rent adjustments) and structural details about the accommodation (type of building, number of rooms, surface area, year of construction, storey, renovations). Since the 2010 revision, information on owner type, number of bathrooms, inclusion of a balcony, a lift and Minergie certification for the building has also been collected.

Every quarter, one-eighth of the sample is replaced. This takes place in a preliminary stage of the survey process, called screening, and is based on data collected from tenants. Where sources of information are inadequate, screening is required to filter out accommodation that does not fall within the survey framework – namely chiefly owner occupied dwellings – and to obtain the address of the landlord. Following screening, an initial survey is carried out in contact with the landlord, who is requested to fill out a detailed form, indicating in addition to the rent all the characteristics of the dwelling. For dwellings covered by the previous quarter's survey, a shorter, follow-up survey is conducted to compile any changes relative to the information collected in the previous period[16].

To improve response rates, reminders are issued at every phase of the survey. In the screening stage, an initial written reminder is sent to tenants. If there is no reply, they then receive a telephone reminder. The written reminder was added to the screening stage as part of the 2010 revision after a prior analysis had shown the measure as effective. The telephone reminder is conducted by a specialist research company under contract with the FSO for five years. Only a written reminder is sent for the initial and follow-up surveys.

The questionnaires used in each of the three survey stages were revised as part of the 2015 revision to improve comprehension of questions and make the form easier to complete. This was done by changing the sequence of questions and explaining certain variables more clearly. Additionally, the changeover to a new booklet format allowed for the inclusion of detailed information about the rent survey, how it works and its purpose. It can be addressed directly to the respondents for screening and follow-up surveys.

The process of compiling the rental index is relatively long as it comprises the renewal of one-eighth of the sample, the screening phase, the initial survey, the follow-up survey, checking and the calculation of the findings. All in all, it takes three months from start to finish.

3.1.7 Quality adjustments

Given that a rotating panel is used (one-eighth of which is replaced each quarter), quality adjustments can be considered from two different angles.

The first concerns dwellings remaining within the sample between periods. Here no quality adjustments are carried out. This had previously been the case until the end of 2005, when account was taken of renovations, but the practice was discontinued at the start of 2006 because it was difficult to establish a straight correlation between renovations and rent levels. An in-house study demonstrated that renovated dwellings might be cheaper than non-renovated accommodation in the same size category. Moreover, renovation work is not so much designed to modernise dwellings as to keep them in good enough condition so they can continue to be rented out.

By contrast, quality adjustments are conducted in connection with sample rotation, when dwellings removed from the sample are replaced with new ones. Using simple post-stratification when selecting new dwellings cannot eliminate all effects related to differences in quality as it does not factor in all the variables likely to influence price. As such, the characteristics of dwellings leaving and joining a cell might be markedly different, e.g. in terms of surface area, location or view.

To overcome this issue, a quality-adjustment procedure was integrated as part of the 2010 revision. It is based on a calculation of estimated rents that uses a hedonic model (commissioned by the FSO from a Swiss property market researcher) for incoming and outgoing dwellings[17].

[16] Since 2014, landlords have had the option of completing the rent survey online.

[17] For more information: Lüscher, Salvi, Bröhl et Horehàjovà, *Qualitätsbereinigung im Mietpreisindex: Schlussbericht,* Zürcher Kantonalbank, 2010.Christophe Matthey, Corinne Becker Vermeulen, *Limitations and impact of hedonic adjustment for rent index,* Federal Statistical Office, 2014.

3.1.8 Treatment of all-inclusive rents

The calculation of the rental index is based on net rent, before costs. However, roughly 12% of landlords are unable to provide details of net rent and incidental charges, simply supplying an all-inclusive rent instead.

To resolve this problem, a method for imputing net rents was developed in connection with the 2015 revision, converting the all-inclusive rents supplied on a quarterly basis into estimated net rents.

This is done by grouping the net rents for a homogenous category of dwellings, using this to calculate ratios between net and gross rents for each one. Every quarter, the category-specific ratio is applied to all-inclusive rents that have entered the sample or those which have undergone change. The impact of this process on the rental index's findings is extremely limited.

3.1.9 Calculating the rental index

Basis

Each observed rent is attributed to a cell in the post-stratification matrix. Two sub-indices are calculated for each cell: one for the panel segment, i.e. observations included in both the current and previous period, and one for the rotating segment, i.e. observations coming into and leaving the panel. These two indices are then aggregated to determine the cell's overall index.

The indices of the various cells are then aggregated using their respective weighting. The result represents the change in rents relative to the previous quarter. This is then linked to the total chained index from the previous quarter, which provides the chained rental index for the current quarter, taking as basis December 2015 = 100.

Two-way breakdown of cell observations

In the current period (t), the cell is divided in half: segment B contains observations already present in the previous quarter's sample (follow-up survey). Segment C encompasses dwellings just added to the sample. In the previous period (t-1), the cell comprises dwellings that will be covered by the survey for at least another quarter (segment B) and dwellings for which this is the final quarter (segment A).

Cell subdivision used in rental index calculation G 7

	Previous period t-1	Current period t
Dwellings present in t-1 only	A	
Dwellings present in t-1 and in t	B	B
Dwellings present in t only		C

Source: FSO – rental index

© FSO 2016

Segment B index

The calculation uses a ratio of weighted geometrical averages and is limited to observations within segment B. No quality adjustment is made.

$$L_B^t = \frac{\tilde{x}_B^t}{\tilde{x}_B^{t-1}} \cdot 100 = \frac{\left(\prod_{i=1}^{n_B^t} \left(x_{iB}^t \right)^{p_i^t} \right)^{1/\sum_i p_i^t}}{\left(\prod_{i=1}^{n_B^{t-1}} \left(x_{iB}^{t-1} \right)^{p_i^{t-1}} \right)^{1/\sum_i p_i^{t-1}}} \cdot 100$$

where:

L_B^t = Index of segment B in period t, in comparison with the previous period

$\tilde{x}_B^t$ = Geometrical average of rents in cell B in period t

$x_{iB}^t, i = 1, \ldots, n_B^t$ = Observations made (rent) in period t for cell B

n_B^t = Number of observations in cell B in period t

$p_i^t, i = 1, \ldots, N^t$ = Weight of observation i in period t. This is the sampling weight adjusted for non-response

C/A index calculation

The estimated rents taken from the hedonic model are used to calculate the relationship between the estimated average rent in segment C and the estimated average rent in segment A.

$$\hat{g}^t = \frac{\hat{x}_C^t}{\hat{x}_A^{t-1}} = \frac{\left(\prod_{i=1}^{n_C^t} \left(\hat{x}_{iC}^t \right)^{p_i^t} \right)^{1/\sum_i p_i^t}}{\left(\prod_{i=1}^{n_A^{t-1}} \left(\hat{x}_{iA}^{t-1} \right)^{p_i^{t-1}} \right)^{1/\sum_i p_i^{t-1}}}$$

where:

$\hat{g}^t$ = Relationship between the estimated rents in segment C in period t and estimated rents of segment A in period t-1

$\hat{x}_C^t$ = Geometrical average of estimated rents in segment C in period t

$\hat{x}_A^{t-1}$ = Geometrical average of estimated rents in segment A in period t-1

This relationship conveys the change in quality at constant prices since the previous quarter. As such, it can be used as an adjustment factor for taking into account the qualitative shift between the two quarters. Rents in t-1 can accordingly be corrected so that their underlying quality becomes comparable with that of segment C, meaning that a quality-adjusted index can be calculated for segments C as well as A.

$$L_C^t = \frac{\widetilde{x}_C^t}{\widetilde{x}_A^{t-1} \cdot \hat{g}_c^t} \cdot 100 = \frac{\left(\prod_{i=1}^{n_C^t} \left(x_{iC}^t \right)^{p_i^t} \right)^{1/\sum_i p_i^t}}{\left(\prod_{i=1}^{n_A^{t-1}} \left(x_{iA}^{t-1} \right)^{p_i^{t-1}} \right)^{1/\sum_i p_i^{t-1}} \cdot \hat{g}_c^t} \cdot 100$$

where:

$\widetilde{x}_C^t$ = Geometrical average of observed rents in segment C in period t

$\widetilde{x}_A^{t-1}$ = Geometrical average of observed rents in segment A in period t-1

L_C^t = Segment C index in period t, in comparison with segment A in period t-1

Calculating the cell index

The cell index is calculated using a weighted arithmetical average of two sub-indices for segments B and C/A. Weights are determined by the respective number of observations.

$$L^t = \frac{n_B}{n_B + n_C} \cdot L_B^t + \frac{n_C}{n_B + n_C} \cdot L_C^t$$

where:

L^t = Overall cell index for period t

n_B n_C = Number of observations in segments B and C

Total index and chaining

The total index conveys the change in rents between period t-1 and t (but is not chained). It is compiled through an arithmetical aggregation of various cell indices using their respective weighting.

$$I_{nc}^t = \frac{\sum_i \left(L_i^t \cdot PC_i \right)}{\sum_i PC_i}$$

where:

I_{nc}^t = Non-chained rental index for period t

L_i^t = Index in period t for cell i

PC_i = Weight of cell i

Finally, the chained index for period t is obtained by linking the non-chained index to the chained index of period t-1.

$$I_c^t = \frac{I_c^{t-1} \cdot I_{nc}^t}{100}$$

where:

I_c^t = Chained rental index for period t

I_c^{t-1} = Chained rental index for period t-1

I_{nc}^t = Non-chained rental index for period t

3.2 The owner-occupied dwellings

Owners living in their own homes over time use them as tenants use rented accommodation. Since there are no market prices for this type of dwelling, we assume that the price change is the same as the price change for rented accommodation (this is known as rental equivalence). Other commonly used methods (e.g. user cost approach, payments approach or acquisition concept) are currently not applicable to the CPI.

Until 2015, the change in the rental index was imputed to owner-occupied dwellings. From 2016, an enhanced rental equivalence method is being used. A specific index of owner-occupied dwellings called the Index of Imputed Rents for Owner-Occupied Dwellings has been released since then. The index is calculated based on the particular structure of this market (source: 2011 structural survey). Table 2 shows the weight of cells of imputed rents for owner-occupied dwellings. Larger dwellings consequently have a greater influence in the imputed rental index (compare with T 1). Furthermore, dwellings with a special rental status (subsidised housing, co-operative housing or dwellings with lower rents through family ties) are not used for this imputation.

Cell weights in the index of imputed rent for owner-occupied housing **T 2**

		0 – 5 years	6 – 10 years	11 – 20 years	>20 years
Number of rooms	1	0.0115%	0.0073%	0.0140%	0.1554%
	2	0.1287%	0.0648%	0.2328%	1.3033%
	3	1.4008%	0.7453%	1.3777%	6.4728%
	4	4.3962%	3.1814%	5.1143%	17.7630%
	5	4.9680%	4.1480%	6.1680%	20.4584%
	6	2.7468%	2.2671%	3.5766%	13.2978%

Source: FSO – Consumer Price Index

© FSO 2016

From 2016, housing rental therefore contains two sub-indices: the rental index (weight: 13.4%) and the imputed index for owner-occupied dwellings (weight: 4.7%). As with the overall CPI, weights are calculated on the basis of the 2014 Household Budget Survey.

This is a better solution, as it is more transparent and clearly shows where price change has been measured as opposed to simply imputed. Additionally, the increasing proportion of owner-occupied dwellings can be taken into account, with their particularities considered in the calculation, meaning that inflation in housing rental is more accurately measured overall. However, it should be said that this change has a limited impact on overall findings insofar as the two indices are based on the same methods and observations.

Why choose rental equivalence as a method for owner-occupied dwellings?

Rental equivalence has been the method used for the Swiss Consumer Price Index for decades. Here it is assumed that, in the long run, price changes for owner-occupied dwellings will mirror those of ordinary rents. Changes in rents are imputed to prices "paid" for the usage of owner-occupied housing – something which is not readily measurable.

This method is particularly well suited to the Swiss market, where over 60% of households are tenants. The rental market is liquid, diversified, relatively free of regulation and it meets the needs of a large portion of the population. As such, observations of the rental market provide an accurate idea of shifts in the housing market in general. Rental equivalence is also the method used in Germany and the US, as well as in a host of other countries.

Various alternatives were investigated as part of the 2015 revision and all were deemed unsatisfactory or impossible to implement:

Screening out owner-occupied dwellings from the index: This solution would reduce the weight of housing within the CPI, thus excluding a sizeable portion of consumption expenditures from the index. This is currently the approach used by Eurostat and the HICP as well as for France's consumer price index.

The *user cost approach* tracks the costs relating to financing, depreciation, maintenance, insurance, taxes and opportunity costs. Considering that the Federal Statistical Office still does not have a house price index[18], this approach is for now not feasible.

The *payment approach* focuses on costs relating to the purchase, financing, loan repayments and maintenance of a property. This approach is inconsistent with the definition of consumption used for the CPI. It is moreover hard to apply without having a house price index to hand.

Lastly, the *net acquisition* concept treats dwellings the same as other durable goods such as cars and refrigerators. The net acquisition price is noted to calculate the index. This method does not tally with the definition of consumption as used in the National Accounts. It also requires a house price index to be able to function.

[18] Work is under way, and a house price index is expected for 2018. For more information: Fischbach, Becker Vermeulen, Brand, Carpy, *The creation of an official house price index in Switzerland: objectives and challenges,* Federal statistical office, 2016.

3.3 The price collection of clothing

Conditions on the clothing market – seasonal collections, the continuous arrival on the market of items and collections and the big influence of fashion – make the collection of clothing prices one of the most complex in CPI.

To minimise the difficulties of price collection and to conform with Eurostat regulations, since 2011 clothing prices have been collected on a monthly basis.

As the clothing market is a seasonal one, monthly collection of prices is only possible for items available on the market all year round, as is the case with jeans, for example. For seasonal items, the following question has to be answered: "When is it relevant to collect prices for seasonal items ?" Two points of reference are used to determine the frequency at which the prices of seasonal items are collected: first, availability – most items of the variety in question should be in the shops and second, sales figures – these items should make substantial turnover during the months when prices are collected. In all cases the price of items from the spring/summer collection are collected at the earliest in March and no later than July whereas the prices of items from the autumn/winter collection are collected at the earliest in September and no later than January.

Apart from the question of frequency of price collections, the following question also arises: "How can quality within a sample be kept constant when items from the previous season are replaced on the market by items reflecting new fashion trends?"

To reduce the number of replacements, thus avoiding the inconvenience of changing quality within the sample, the FSO asks price collectors to choose mainly classic items that remain constant over time – a white cotton t-shirt for example. Although this solution is particularly suited to year-round items, seasonable items, which are more affected by fashion trends, have to be replaced more often. To maintain quality within a sample, price collectors have to choose for each replacement an item with the same quality characteristics as the item that has disappeared. The brand and the fibres should, where possible, be the same. What happens if this is not possible? If the shift in trend is such that the brand and the fibres (to a certain degree) cannot be kept the same, the price collector chooses a representative article that is selling well.

With regard to items of clothing, the processing of replacements and therefore quality adjustment are undertaken entirely by the FSO, on the basis of characteristics collected by the price collectors. Replacements whose quality is deemed inconsistent are processed using a bridged overlap, whereas equivalent replacements are processed using direct comparison (see chapter 2.3.8).

3.4 The tariff survey: the examples of gas and outpatient services

Gas

The cost to a household of gas consumption for heating and hot water depends on its consumption behaviour. Therefore, in order to measure change in the price of gas, the four most common types of consumption have been defined, in cooperation with the Swiss gas producers' association:

- Consumption type II: 20 000 kWh
- Consumption type III: 50 000 kWh
- Consumption type IV: 100 000 kWh
- Consumption type V: 500 000 kWh non-interruptible gas supply

Each type of consumption is detailed and includes all costs invoiced to consumers. Example: Consumption type II: 20 000 kWh, customers whose average annual consumption is 20 000 kWh. The total cost and cost per kWh is calculated by adding together:

- the basic charges
- the performance charges
- the consumption price for 20 000 kWh, comprised of 3 000 kWh at summer tariff and 17 000 kWh at winter tariff
- the CO_2 tax
- the VAT

The price collection is made when tariffs change among the 27 main gas suppliers.

Medical services

As is often the case with outpatient services, what the patient pays depends on the treatment they receive. Treatment can be defined as the sum of different services and therefore the price of treatment is the sum of the prices of services which it comprises. The price of a service is obtained by multiplying the number of points that have been allocated to it, most often established at national level, by the value of the tariff point, which has most often been established at cantonal level.

Measuring change in the price of medical services is done on the basis of the prices invoiced (i.e. the value of the tariff point multiplied by the number of points) which are the result of the Tarmed tariff. Prices are collected for the 50 medical services with the highest amounts invoiced at cantonal level. Prices are collected aperiodically when price changes come into effect.

Physiotherapy

The same principle applies to physiotherapy. Price collection involves two main services, i.e. the flat-rate charged per session for general physiotherapy and the additional fee for the initial treatment. All values for the cantonal tariff points are collected. Price changes are taken into account at the time that they come into effect.

Home care services

Home care services (Spitex) are invoiced on the basis of hourly tariffs which vary depending on the service provided:

- Tariff a: Assessment and advice
- Tariff b: Examination and care
- Tariff c: Basic care

A patient co-payment invoiced on the basis of treatment day is additionally charged in most cantons.

Two service packages reflecting the average consumption of a representative client (average number of hours during which a patient uses home care services) have been defined for long-term care using the FSO's Spitex statistic. These tariffs are collected four times a year from home care associations in all of the 26 Swiss cantons.

The same principle applies to tariffs for housework services.

Dental services

A similar principle applies to dental services: what the patient pays depends on the treatment received. Accordingly, 10 services have been defined in cooperation with the Swiss Dental Association:

- Initial consultation
- Radiography
- Anaesthetic
- Treatment by dental hygienist
- Tooth extraction
- Root canal treatment
- Composite filling, 2 sides, on molar
- Proximal composite, anterior teeth
- Moulded denture
- Prefabricated resin crown

Prices are collected every six months among some forty dental practices in the eleven regions surveyed. They announce any changes to the tariff point value or/and to the number of points, when changes come into effect.

3.5 The price of medicines

The prices of medicines covered by the compulsory health insurance are established as part of the market approval process. As a rule, prices are observed to fall when a patent expires or when a competitive generic product enters the market.

Until 2007, changes in medicines prices were measured on the basis of a selection of the most sold products. Collecting prices on the basis of the best sales approach made it impossible to factor in the substitution of products by a different size of packaging or by a comparable, subsequent product, even though this might lead to a rise in prices.

In 2007, a revised medicines index was introduced. This recorded the price of a medication rather than the price of a precisely defined pack of medicines. Each of the calculation cells group together all medicines based on the same active substance and which meet the same therapeutic indications (according to the product information). All varieties of products (original preparation, subsequent products, generic medicines) in all sizes of packaging available are taken into account. The quantities correspond to the volume delivered the previous month to chemists, doctors and hospitals in Switzerland. Initially a standardised price per active substance unit is calculated based on this database, then converted into an elementary index. The aggregation of these elementary indices takes place in several stages, from weighted groups of therapeutic substances to the partial medicines index. The total medicines index is formed by incorporating the partial index of chemists' fees.

The selection process for creating the calculation cells was revised in 2010. The selection which had hitherto been non-random and established on an annual basis was expanded to include all groups of measurable products. The chosen procedure enables real price changes to be measured as well as taking continuously into account any price effect caused by the replacement of products.

3.6 Hospital tariffs

3.6.1 The introduction of DRGs

SwissDRG, the new tariff system (Swiss Diagnosis Related Groups) was introduced in 2012. This system regulates the remuneration of hospital inpatient services at Swiss level by a per-case flat rate.

3.6.2 The price of cases

The DRG system is based on a catalogue of tariffs that shows a single classification of cases (DRG), weighted in accordance with their complexity (relative weight of cost, hereafter referred to as cost-weight). These cases are remunerated in the form of a base price (hereafter referred to as base rate) set down in agreements on the coverage of costs concluded between service providers and the health insurances. In the DRG system, the base rate corresponds to the treatment whose standardised cost-weight equates to one. In theory the base rate is negotiated individually between the insurances and the service providers. In practice, the insurances do not negotiate the contracts individually but cooperate to do so. If (as is currently the case in several cantons) no agreement can be made, the canton decides the base rate.

To invoice hospital treatment, the base rate is multiplied by the cost-weight of the treatment according to the current tariff version. For cases whose cost-weight is less than 1, the amount to be paid is lower and for cases with a higher cost-weight, the amount will be higher. Only the amount paid by the private household (payment by the patient or the insurance) for the treatment is taken into account. Cantonal contributions to hospital funding are excluded from the price statistics.

3.6.3 Measuring price change in the CPI

For each hospital, comparable cases between the current period and the previous one are grouped in a basket of goods and services, as for the CPI, and weighted individually according to the FSO costs per case statistics. Only cases that correspond to services actually provided by the hospitals concerned are selected on the basis of weighting information. The basket of goods and services of a university hospital is therefore, of course, fuller than that of a regional hospital.

Once the cases have been selected, the prices relevant to the CPI have to be calculated. Similarly to the hospital invoicing, the cost-weight of DRG cases is multiplied by the base rate negotiated. The participation of cantonal funding through taxes is not taken into consideration. This is currently between 45% and 55%. By 2017 at the latest, it will be at least 55% throughout Switzerland.

The prices calculated in this way for t and t-1 are then converted into elementary indices and aggregated. Aggregation is carried out in several stages (see Appendix 4):

- Calculation of inpatient hospital services indices by hospital and by insurance: cases are weighted in accordance with the FSO costs per case statistics.
- Calculation of the inpatient hospital services indices by hospital: the aggregation of the indices by insurances is carried out in accordance with the premium volume per insurance (FINMA/FOPH).
- Calculation of inpatient hospital services indices by canton: the indices of different hospitals are weighted in accordance with the FSO hospital statistics.
- Calculation of the Swiss index of hospital services: the cantonal indices are weighted in accordance with the FSO hospital statistics.

A stabilisation phase, which should last until 2017 and during which the tariff system should be assessed, is expected after the introduction of the SwissDRG. The adjustments made will influence how price changes are measured in the CPI.

The index of inpatient hospital services based on the DRG system was first published in July 2013. Since then, the index has been published once a year in summer.

Tariff systems pose a problem to price statistics as the tariff positions established can change making comparison of the different versions sometimes impossible. This is why a comparison could not be made between the many different invoicing methods for hospital services that were used up until 2011 and the first version of SwissDRG in 2012.

3.7 The price collection for international package holidays

Package holidays are by definition service packages including at least two of the following services: transport, accommodation and other tourist services, and which last for more than 24 hours or include at least one overnight stay. The service packages must, therefore, be very well-defined so that the collection of prices does not record in the index price changes that are due to a change in the services included in the package.

For the purposes of price collection, the holiday packages selected are defined so as to maintain the following characteristics over time:

- destination
- hotel
- type of double room (e.g. standard, superior, deluxe, junior suite, etc.)
- type of board (e.g. breakfast, half-board, all inclusive)
- length of stay
- airport of departure
- departure date

The price of each package defined in this way is collected over time to measure price change. The destinations and length of stay were chosen after consulting the largest tour operators in Switzerland.

An important methodological change was introduced in the 2015 revision in order to reconcile the concept of acquisition used for taking prices into account in the CPI with the concept of utilisation used for prices in the HICP, thus avoiding duplicate price collections.

Hence, a new definition of "departure date" was introduced. Until the end of 2015, the departure date was defined as a fixed day, e.g. Wednesday 24 June 2015. The price of the package thus defined was collected each month until the month of departure was the same as the collection month. Once the departure date was reached, the package was redefined by replacing the expired departure date by a similar date in the future, e.g. Wednesday 22 June 2016. Graph 8 explains how the collection worked until the end of 2015.

Since January 2016, the departure date has no longer been set at a precise day of the year but defined according to the month in which the price collection takes place. This means that depending on the type of package holiday, the departure dates are set between the current month and the six following months. The departure day is defined as being the Thursday, Friday, Saturday or Sunday of the first, second or third week of the month.

In order to keep the burden of collection at a bearable level, and to be able to record "first minute" and "last minute" offers, the price of each package defined by a destination, a hotel, a room, a type of board and a length of stay, is collected for a similar departure date (e.g. Friday of the 2nd week of the month)

- in 4, 5 and 6 months for seaside holidays overseas,
- during the current month and in 1, 2 and 3 months for seaside holidays in the Mediterranean area and short city breaks,
- and in 3 or 6 months for tours and cruises.

Up to 4 different departure dates are therefore collected for each defined package. These service packages form different price series, changes to which are measured month after month.

To make allowances for the substitution effect, for each package the collection of prices focuses on the best offer, i.e. the best connection at the best price regardless of the airline company, with departures from Zurich and Geneva airports (the airport of departure is defined per package and cannot be replaced).

To make price collection easier, it is carried out on the internet among the largest companies in the Swiss holiday sector[19].

This approach enables the two different concepts used by the CPI (acquisition concept) and the HICP (utilisation concept) to be reconciled with one another.

Graph 9 explains how the prices collected are accounted for in the two indices.

[19] Since 2016, prices have no longer been collected for package holidays by bus or train.

Price collection for package holidays until end of 2015 **G 8**

	2015											
Price collection month	1	2	3	4	5	6	7	8	9	10	11	12
2 weeks, Grand Palladium Palace Resort and SPA, Punta Cana, DR, AI Date of departure: 24.06.2015	4 717	4 717	4 830	4 830	4 500	4 230	4 230	4 230	4 230	4 230		
Resampling, after the publication of new catalogues							missing, not yet on offer, carry-forward of the last collected price					
2 weeks, Grand Palladium Palace Resort and SPA, Punta Cana, DR, AI Date of departure: 22.06.2016											4 516	4 612

Source: FSO – Consumer Price Index

© FSO 2016

Price collection method for package holidays from 2016 **G 9**

	2016												
Price collection month = Recording month in CPI	1	2	3	4	5	6	7	8	9	10	11	12	
2 weeks, Grand Palladium Palace Resort and SPA, Punta Cana, DR, AI Departure: Friday, 2nd week of the month, in 2 months Airport of departure: Zurich	4 400	4 512	4 618	4 529	4 830	4 900	5 630	5 228	4 829	4 516	4 509	4 216	
Month of departure	3	4	5	6	7	8	9	10	11	12	1	2	

	2016												2017	
Month of departure = Recording month in HICP	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2 weeks, Grand Palladium Palace Resort and SPA, Punta Cana, DR, AI Departure: Friday, 2nd week of the month, current month (collected 2 months ago) Airport of departure: Zurich			4 400	4 512	4 618	4 529	4 830	4 900	5 630	5 228	4 829	4 516	4 509	4 216

→ *In this example prices are introduced two months later in the HICP than in the CPI.*

Source: FSO – Consumer Price Index

© FSO 2016

3.8 The price survey of air fares

Even more than package holidays, measuring changes in airfares has become more complex in recent years. Pricing has become very flexible and is adapted very quickly to consumer behaviour.

If in theory, establishing an airfare may appear simple, the task is a complex one in practice. Once again, collecting the price of an airline flight means collecting the price of a service package consisting of:

- a destination (airport of arrival)
- an airport of departure
- a date of departure
- a length of stay

The choice of destinations is based on the Federal Office of Civil Aviation's statistics, as is the choice of departure airports. These choices are reassessed with each revision.

The definition of the departure date adopted for package holidays was also applied to air fares in the 2015 revision. Once again, the aim is to make the best use of the price collection so that the prices of the same packages can be used for both price indices. The price of each package is collected for a departure fixed on a day of the month (e.g. Saturday of the 2nd week of the month) during the current month and for departures in 1, 2, 3, 4 and 5 months.

The length of stay varies from a few days, generally a long weekend, for continental flights to one or even several weeks for intercontinental flights.

As for package holidays, airlines are considered to be completely substitutable. Only companies appearing on the blacklist of airline companies are excluded from the collection.

3.9 The insurance premium survey

The National Accounts define the concept of consumption that is also used by the CPI, so basic health insurance, which is regarded as a transfer payment from households to social security, is excluded from private consumption (see also Chapter 2.1.2).

In contrast, part of private insurance premiums comes under consumption, namely the provision of services component corresponding to the amount consumers pay private insurances for the service rendered. This part is equal to the gross premiums paid by private households less the indemnities paid in the event of claims. This provision of services also corresponds to the total administrative overheads and the profit made.

At present, supplementary health insurance (shared ward in the whole of Switzerland, half-private and private ward), car insurance as well as home contents and third party liability insurance are part of the basket of goods and services. The weighting of these three types of insurance is calculated using the net premium method: only expenditure on provision of services is taken into account.

When it comes to the survey of the premiums, the question is more sensitive. In fact, there is no market price for the net premium, i.e. the provision of services by private insurances. Constructing this particular price artificially would have been extremely costly for the insurances, so changes to the gross premium are used as an estimator. This method is also applied by most European countries.

The range of services selected for the price collection is defined very broadly considering the large number of existing insurance products and options. On the first price collection, only contract main lines were given to insurance companies. They were asked to define an insurance standard contract and to introduce the corresponding price on the form. Furthermore, criteria influencing the price of the service package had to be precisely described. For instance, the premium paid for vehicle insurances depends on the insurance coverage, the place of residence and the driver's age as well as on the make of vehicle and the number of claims already made by the driver. Subsequently, those criteria must be maintained constant. The purpose of the CPI is not to make a comparison between competitors. That is why the use of definitions specific to particular insurance companies is allowed.

The premiums are collected every year, in January, from the major insurance companies. The premiums are those payable on signature of a new policy.

3.10 The price survey of consumer electronics

Traditionally collected in the fields, the prices of consumer electronics have been collected exclusively online since January 2016 in a limited but representative number of sales outlets.

Choice of sample of products

Previously, each price collector was free to choose the appliances deemed to be the most sold and to decide on when they would be replaced by more recent items. Today the sample is carefully determined centrally as is the moment to replace the items of which it is composed with new ones.

The initial selection of items and the selection of subsequent articles is carried out on the basis of information gathered from the internet and other media (trade fairs dedicated to electronic products, new product launches, etc.).

As far as possible, the prices of the same items are collected in each of the sales outlets chosen and replacements are made, where possible, at the same time. The problem of lack of diversity in the items in the sample is solved by selecting a greater number of products.

Sample of sales outlets

In order to reflect consumer behaviour, prices are collected from exclusively online retailers (the four market leaders as well as the web-shop with the best price) as well as the largest electronic chain stores active on the Swiss market. The regional collection of consumer electronics is no longer conducted.

Price collection

The price of the items chosen is collected on the internet either using the "toppreise.ch" search engine or directly on the web site of the sales outlet concerned.

Substitution of articles

When a product present in the sample is no longer representative of the consumption of households, it is replaced directly with the replacement model whenever possible. This involves regular observation of the market in order to identify this as soon as possible.

Once the subsequent product has been identified, the timing of its replacement is determined in accordance with the type of product and based on information available on toppreise.ch, especially information on availability of items and the number of sales outlets where it can be bought.

When the replacement takes place, the two items deemed to be comparable are replaced using direct comparison and the difference in price between the two items is incorporated in the index.

This new methodology, as well as making price collection much easier, ensures that the sample is as representative as possible.

4 The modular index system

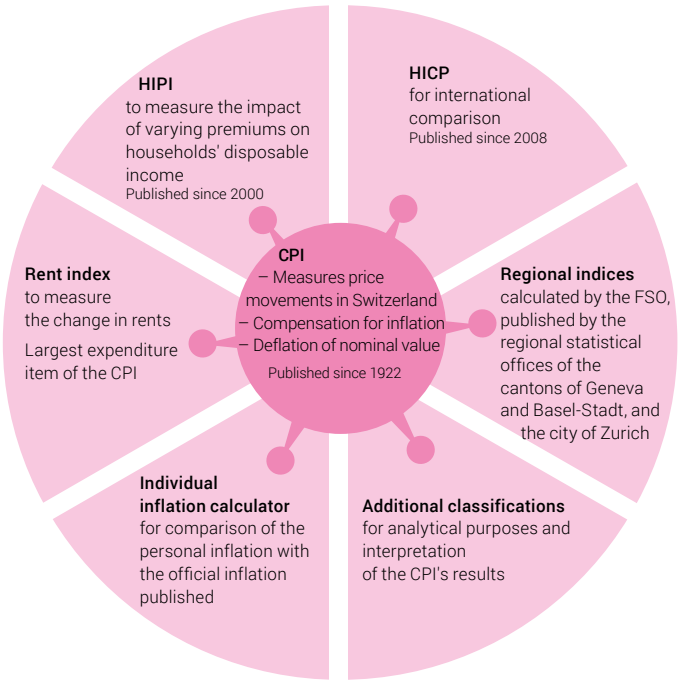
Although it is true that having a single indicator has the advantage of not confusing users, insofar as there is only a single result available and this result is the same for everyone and for all cases relevant to inflation, it is also true that the CPI is not suited to every utilisation. For example,

- by excluding certain important household expenses, in particular basic health insurance and other compulsory expenditure, it does not measure change in the cost of living, which would be a more suitable indicator for inflation compensation.
- it does not show price changes for certain socio-economic groups, in particular pensioners or single-parent families.
- it is not comparable, in terms of the methods used, with the inflation rate calculated by the countries of the European Union, known as the harmonised consumer price index.

To meet the needs of different users, a modular indices system was already introduced in 2000 (see Graph 10).

In this system, the CPI is a central module which is complemented by the health insurance premium index (HIPI), the harmonised consumer price index (HICP) and additional classifications.

Modular index system **G 10**



Source: FSO – Consumer Price Index

© FSO 2016

It should be noted that regional price indices based on the same methods and to a large extent on the same data as the Swiss CPI are published by the cantons of Geneva, Basel-Stadt and the city of Zurich.

Until 2003 this system also included socio-economic consumer price indices but due to lack of resources these are no longer produced. To overcome this, an individual inflation calculator is available on the FSO website.

4.1 The health insurance premium index

As mentioned in chapter 2.1, the CPI adheres to the National Accounts' definition of consumption. According to this definition, compulsory health insurance premiums are treated as household transfer expenditure to social insurances and are therefore excluded from private consumption and hence from the scope of application of the consumer price index.

Given the increases in premiums recorded in recent years, basic health insurance is often the focus of attention. As it is not possible, at present, to include transfers in a basket of goods and services, the FSO has produced a **Health Insurance Premium Index (HIPI)** since 2000. It measures the trend in compulsory and complementary health insurance premiums and enables an estimate to be made of the impact of premium variations on households' disposable income. It is an important indicator for the social partners as it answers the question: how much has my disposable income been diminished by the increase in health insurance premiums? It is used more and more in wage negotiations for the compensation of inflation. The HIPI is published once a year in November.

4.2 The harmonized index of consumer prices

4.2.1 Background and use

The calculation methods and the area covered by national consumer price indices can vary considerably from one country to another, making international comparisons of inflation very difficult. To overcome this problem, European Union member states have armed themselves with an indicator, calculated on the basis of standardised methodology, which enables them to make international comparisons of inflation: the Harmonised Consumer Price Index, HICP.

While it enables inflation to be compared between EU member states, (with the inclusion of Norway and Iceland), the HICP was initially intended to assess whether the convergence criterion was met with regards to price stability, a criterion for participation in the Economic and Monetary Union (EMU). Since the EMU became a reality in 1999, the HICPs enable the calculation of various indices aggregated at European level, the most well-known being the Monetary Union Index of Consumer Prices. This index is the main steering tool for the European Central Bank's monetary policy for the Eurozone.

By signing the Bilateral Agreements II with the European Union on 26 October 2004, Switzerland undertook to harmonise its statistics with those of the EU, including the consumer price statistics. With the entry into force of the bilateral agreement in the area of statistics on 1 January 2007, the publication of an HICP consistent with EU methodology came into effect from 1 January 2008[20]. The HICP, a product of the harmonisation of methodology in line with European standards, is an additional indicator provided by the FSO. It is not intended as a replacement for the Swiss consumer price index (CPI).

4.2.2 Methods

Although the differences separating the HICP and the national CPI are becoming less marked, the two indices do differ on the following points:

- **Geographic and demographic coverage.** The HICP covers all expenditure made on national territory, by residents and visitors alike. The national CPIs often aim to cover expenditure made by residents on the domestic territory and abroad. Furthermore, whereas the HICPs cover expenditure by private and collective households, the CPIs often consider only private households expenditure. As a result, the weighting of the HICP must come from several sources and the weights are considerably different from those of the CPI (reduced weight for "Housing and energy", but greater weight for "Other goods and services" (see G11).
- **Dealing with owner-occupied dwellings.** Imputed rents for owner-occupied dwellings are excluded from the HICP. However, the inclusion of expenditure made for owner-occupied dwellings is under consideration. A unified methodology would considerably improve comparability of the harmonised indices between European countries.
- A third area reveals a large number of differences between the national CPIs and HICPs with regard to the **content of the basket of goods and services:** some countries include in their CPI road tax or taxes for motorised vehicles or games of chance, which are excluded from the HICP. Other countries exclude from their CPI university tuition fees, which are included in the HICP. In this area, the coverage of the Swiss CPI is consistent with the coverage defined for the HICP.
- According to European standards, the prices of services should be entered in the index for the month during which their consumption can begin, i.e. according to the **utilisation concept.** In the CPI, in contrast, the prices of services are dealt with according to the acquisition concept (prices enter the index of the month during which the services were acquired). This difference in methodology affects first and foremost the consideration of the prices of package holidays (chapter 3.7) as well as those of airfares (chapter 3.8). In each of these areas, differences are routinely observed between the time of acquisition and that of consumption.
  In practice the two indices are based on the same packages whose prices are collected no earlier than 6 months before the departure date. The only difference is the time at which

Comparison of the Swiss CPI with the HICP **T 3**

CPI				HICP
	Private consumption according to the National Accounts	Definition of goods and services	Private consumption according to the National Accounts	
	Expenditure of resident households, inside the economic territory and abroad *National concept*	Geographical coverage	Expenditure of resident and non-resident households, inside the economic territory *Domestic concept*	
	Taken into account with the concept of rental equivalence	Owner-occupied housing	Excluded	
	Private households	Demographic coverage	Private and institutional households	
	COICOP	Content and structure of the basket of goods and services	COICOP	
	Acquisition price	Critical prices	Acquisition price	
	Moment of acquisition	Recording period of prices	Moment of consumption	
	Carry forward of the last recorded price	Seasonal goods (Treatment in period of unavailibility)	Imputation of the index of next highest aggregate	
	Chained Laspeyres index Method of geometric average	Calculation methods	Chained Laspeyres index Geometric mean method (and/or mean price relatives method)	
	Monthly, quarterly, aperiodically	Survey frequency	In principle, monthly for all groups of goods and services	

Source: FSO – Consumer Price Index and Harmonised Index of Consumer Prices

© FSO 2016

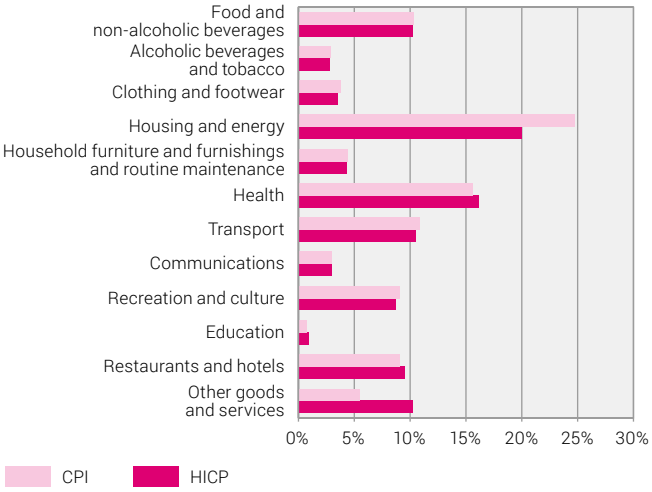
[20] All European legislation on the HICP (22 articles) is available on the Eurostat website: http://ec. europa.eu/eurostat/en/web/hicp/legislation

the prices enter the index: whereas all prices collected during the current month are directly entered in the CPI, in the HICP they are only entered when the holiday can start (during the current month or no later than the next 6 months). The use of two concepts for introducing the prices for services leads to differences between the CPI and HICP with regard to the behaviour of the sub-indices concerned. The CPI tends to reflect price trends in relation to household consumer behaviour (purchase in advance of a holiday) whereas the HICP tends to reflect price trends which are more subject to seasonal influences (high vs low season).

– Whereas the CPI keeps the last price collected during the out-of-season periods, the HICP, in line with European regulations on the treatment of seasonal products[21], carries out an imputation of the upper aggregate to eliminate the effect of seasonal products missing from the index. The seasonal products mainly concerned by this legislation are fruit and vegetables as well as clothing and footwear (group 3).

Table 3 above summarises the similarities and the methodological differences between the CPI and the HICP.

Comparison of Swiss CPI and HICP weighting (2016) **G 11**



Source: FSO – Consumer Price Index and Harmonized Index of Consumer Prices, 2016

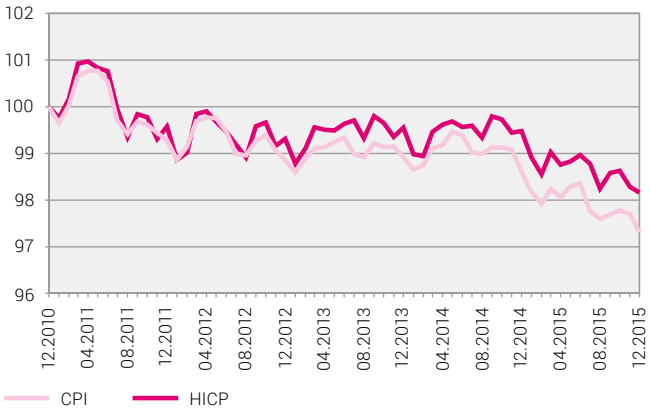
© FSO 2016

4.2.3 Results

The results of the HICP are published by Eurostat before the middle of the following month. The FSO publishes the results of the Swiss HICP at the same time as those of the CPI (www.hicp.bfs.admin.ch).

The results of the Swiss CPI and HICP do not display a large divergence (see G12), insofar as the results are based essentially on the same prices. Any gaps are mainly due to differences in weighting, to special indices for package holidays and air fares as well as the different treatment of seasonal goods.

Evolution of the Swiss CPI and the Swiss HICP since 2010 (base: December 2010) **G 12**



Source: FSO – Consumer Price Index and Harmonized Index of Consumer Prices, 2010-2015

© FSO 2016

4.2.4 The revision 2015

The major update of the CPI and HICP basket of goods and services undertaken during the 2015 revision and which was largely determined by the update of the COICOP structure at detailed level (ECOICOP 5th digit level) by Eurostat, not only led to the publishing of the HICP on a new basis from 2016 (2015 = 100) but also to the fact that the published results are now comparable with the HICP of the different European countries down to expenditure item level.

The HICP comprises 314 weighted aggregates, which are published in the Eurostat database. Apart from the 12 main groups, the HICP basket of goods and services is divided into 144 product groups and 158 published expenditure items[22].

[21] Regulation no. 330/2009 of 22 April 2009

[22] The remaining expenditure items (some 100) are aggregated and are not used directly by Eurostat.

4.3 The individual inflation calculator

Between 2000 and 2003 the FSO, based on the notion that inflation is not the same for all population groups, published consumer price indices addressed to different socio-economic sub-groups of the population[23]: employed persons, pensioners, couples and single parent families.

Although the publication of socio-economic price indices was stopped due to lack of resources, the **individual inflation calculator** available on the FSO website retains the same principle. Anyone who wishes can define their own expenditure structure and thus compare their own inflation with that of the official inflation published. In this way, everyone can judge whether they are more or less affected by inflation than the Swiss average.

4.4 The additional classifications

In addition to the basic COICOP classification, various additional classifications are published, which distinguish, for example, products according to their origin (domestic and imported products). Such aggregates are mainly aimed at the analysis and interpretation of results; they provide further information to users of the index. The additional classifications show the results:

- by type of goods (merchandise or services)
- by origin of goods (domestic or imported)
- in order to group together products with certain characteristics in common (petroleum products, products with administered prices, rents, tobacco, alcoholic beverages, healthcare)
- by excluding the above-mentioned categories (for example the CPI without petroleum products, without tobacco or without products with administered prices)
- by analytic categories (core inflation 1 and 2)

The additional classifications are shown in Appendix 5.

4.5 The regional price movement

Price collections for the CPI aim to measure price trends at national level. Samples are therefore defined so as to calculate price trends for Switzerland. The FSO does not publish regional price movement.

However, the FSO does work together with **three regional statistical offices** who publish a consumer price index: The cantons of Geneva and Basel-Stadt as well as the town of Zurich. The regional indices are calculated by the FSO on the basis of prices collected for the Swiss CPI except for rents, the prices of which are collected by the three offices themselves at regional level. For items for which regional indices are published, only the prices collected in those regions are used for the calculation of the indices; for this reason the regional sample of sales outlets is larger.

[23] These indices formed an approximation of the inflation felt by these population groups given that only the weights of the standard basket were different. To obtain indices that would have been even more significant, it would have been necessary to carry out specific price collections, given that the choice of products and the sales outlets may vary depending on the groups of households. The results published between 2000 and 2003 are shown in Appendix 7.

5 Quality management system

The CPI is an indicator that has a large influence in the economy. An error in the CPI can have considerable financial and social repercussions. For this reason it is very important to ensure it is of good quality. That is why it is subject to very strict quality control. As no post-publication correction is provided for in the normal process, the CPI operates on a "no error" basis.

A completely documented quality system for the monthly production was introduced as early as in 2000. It outlines the quality assurance measures that are to be taken throughout the index's standardised production process: from price collection in the field to the publication of results. The intensity as well as the form of the monitoring carried out at each step of the production process have been defined depending on the frequency of errors detected as well as on the risks that may arise from such errors. The system aims to achieve a total absence of errors at each stage of the process.

To ensure good quality price collections, particular attention is paid to the training and support of price collectors. A price collection manual has been created for external price collectors. It describes the price collection framework, the regulations regarding changes to the range of goods and deals with the areas where problems are most likely to arise. Furthermore, the price collectors are invited twice a year to training sessions during which questions and recurring problems are dealt with in detail. It should be noted that since the introduction of the price collection using touch-screen tablets, the FSO has a tool which helps avoid certain collection errors as plausibility is tested at the same time as the prices are entered.

All prices collected undergo further controls before being validated definitively and entered in the index calculation. In addition, various control functions are included in the PRESTA IT platform[24].

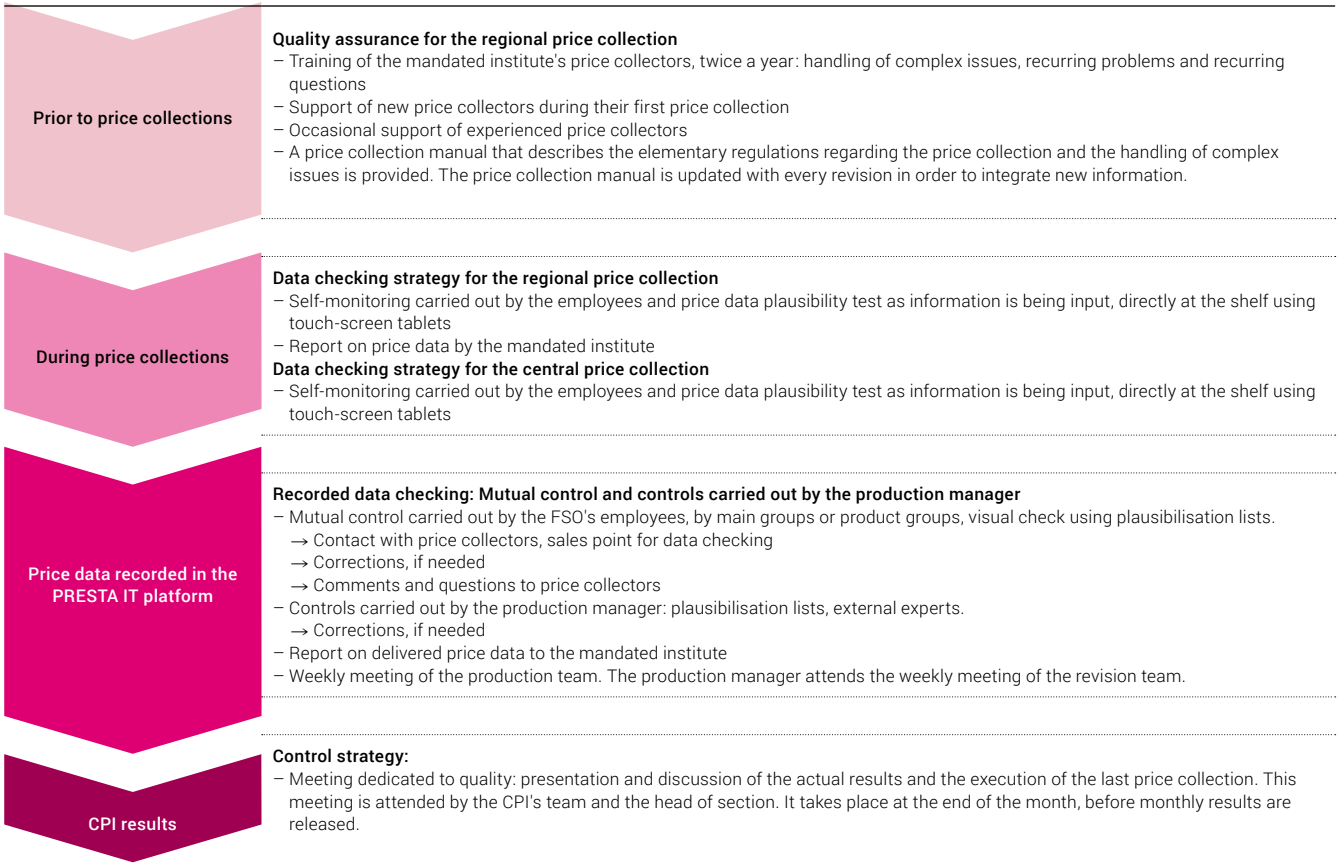
At the end of each production cycle and before results are published, a meeting dedicated to quality is also organised to carry out a structured and documented assessment of the production and the initial results.

Graph 13 shows the quality management system set up for the CPI.

The FSO places great value on the quality of the information it produces as well as on its credibility and the trust placed in it by its users. In terms of quality management, it has based itself on international standards (Code of good practice and Eurostat recommendations on quality) and on the internal quality manual. The CPI also follows these principles.

[24] PRESTA for PREisSTAtistik

Quality assurance system for the CPI production G 13



Source: FSO – Consumer Price Index

© FSO 2016

6 Publication

The following consumer price information is published at frequent intervals:
- CPI: monthly (start of next month)
- Harmonised index of consumer prices: monthly
- Health insurance premium index: annually (November)

The results are disseminated in the form of a press release. Detailed results are available on line at the following address:
www.CPI.bfs.admin.ch

7 Glossary

CPI	Swiss Consumer Price Index
FSO	Federal Statistical Office
NA	National accounts
EUROSTAT	Statistical Office of the European Union
ILO	International Labour Organisation
HBS	Household Budget Survey
COICOP	Classification of Individual Consumption by Purpose
ECOICOP	European Classification of Individual Consumption according to Purpose (5 Digits)
SRPH	Survey framework for surveys on households
HICP	Harmonised index of consumer prices
EU	European Union
PRESTA	Price statistics IT platform

Appendix

Appendix 1 : The basket of goods and services and its weighting 2016

Expenditure item	Weight in % 2016
Total	**100.000**
Food and non-alcoholic beverages	**10.333**
Food	9.382
Bread, flour and cereal products	1.583
Rice	0.043
Flour and other cereals	0.055
Bread, pastries and other baked products	1.144
Bread	0.453
Other bakery products	0.691
Small baked goods	0.163
Viennese pastries, pastry products	0.301
Biscuit/rusk products	0.227
Pizza and quiche	0.064
Pasta	0.124
Breakfast cereals	0.072
Other cereal products	0.081
Meat, cold cuts and sausages	2.325
Meat, fresh or frozen	1.332
Beef and veal	0.549
Beef	0.413
Veal	0.136
Pork	0.268
Lamb	0.095
Poultry	0.366
Other meat, fresh	0.054
Processed meat and sausages	0.993
Sausages	0.454
Cold cuts, other meat products and meat preparations	0.539
Cold cuts and other meat products	0.434
Preparations of raw meat ready to cook	0.105
Fish, crustaceans and seafood	0.354
Fresh fish	0.193
Frozen fish	0.065
Tinned fish and smoked fish	0.096
Milk, cheese and eggs	1.590
Milk and yoghurt	0.466
Whole milk	0.145
Low fat milk	0.093
Yoghurt	0.228
Cheese	0.764
Hard and semi-hard cheese	0.481
Fresh, soft and melted cheese	0.283
Other milk products	0.199
Drink and milk desserts	0.085
Cream	0.114
Eggs	0.161
Fats and edible oils	0.242
Butter	0.131
Margarine, fats, edible oils	0.111
Fruit, vegetables, potatoes and mushrooms	1.983
Fruits	0.877
Fresh fruit	0.690
Citrus fruit	0.096
Stone fruit	0.114
Pome fruit	0.142
Bananas	0.068
Tropical fruits	0.094
Berries	0.105
Other fruits	0.071
Frozen fruit	0.009
Dried fruit and nuts	0.162
Preserved fruit	0.016
Vegetables, mushrooms and potatoes	1.106
Vegetables, mushrooms and potatoes	0.749
Fruiting vegetables	0.212
Root vegetables	0.129
Salad vegetables	0.182
Brassicas	0.043
Onions and leeks	0.064
Other vegetables, aromatic herbs and mushrooms	0.119
Preserved vegetables	0.028
Dried and tinned vegetables and mushrooms	0.122
Potatoes and potatoes-based products	0.139
Potatoes	0.088
Potato products	0.051
Crisps	0.068
Sugar, jam, honey/other sugary foods	0.646
Sugar	0.032
Jam and honey	0.086
Chocolate	0.350
Sweets and chewing gum	0.087
Ice-cream	0.091
Other food products	0.659
Sauces and condiments	0.207
Salt, spices and culinary herbs	0.043
Baby food	0.035
Ready-made foods	0.155
Soups and other food products	0.219
Non-alcoholic beverages (retailing)	0.951
Coffee, tea, cocoa and nutritional beverages	0.426
Coffee (retailing)	0.350
Tea (retailing)	0.056
Cocoa and chocolate powder	0.020
Mineral waters, soft drinks and juices	0.525
Natural mineral water	0.129
Soft drinks	0.224
Fruit or vegetable juices	0.172
Alcoholic beverages and tobacco	**2.900**
Alcoholic beverages (retailing)	1.059
Spirits (retailing)	0.139

Source: FSO – CPI

© FSO 2016

Expenditure item	Weight in %
	2016
Spirits/brandies (retailing)	0.084
Liqueurs and aperitifs	0.055
Wine (retailing)	0.772
Red Wine	0.538
Swiss red wine	0.163
Foreign red wine	0.375
White wine	0.174
Swiss white wine	0.110
Foreign white wine	0.064
Sparkling wine	0.060
Beer (retailing)	0.148
Tobacco	1.841
Cigarettes	1.656
Other tobaccos	0.185
Clothing and footwear	**3.777**
Clothing	2.994
Articles of clothing	2.724
Garments for men	0.754
Jackets for men	0.157
Men's suits	0.077
Men's trousers	0.175
Men's shirts	0.103
Men's sweaters	0.171
Men's underwear	0.071
Garments for women	1.452
Coats, jackets for women	0.330
Women's skirts and dresses	0.170
Women's trousers	0.291
Women's blouses	0.115
Women's jumpers	0.346
Women's underwear	0.200
Garments for children	0.259
Jackets for kids	0.029
Children's trousers and skirts	0.065
Children's jerseys	0.055
Baby clothes	0.081
Hosiery and underwear for kids	0.029
Sportswear	0.259
Winter sportswear	0.105
Summer/Year-round sportswear	0.154
Garment fabrics	0.019
Other articles of clothing and accessories	0.159
Haberdashery and knitting wool	0.035
Other clothing accessories	0.124
Dry-cleaning and repair of garments	0.092
Garment alterations	0.026
Dry cleaning	0.066
Footwear including repairs	0.783
Footwear	0.766
Men's footwear	0.279
Women's footwear	0.380
Children's footwear	0.107
Shoe repairs	0.017

Source: FSO – CPI

© FSO 2016

Expenditure item	Weight in %
	2016
Housing and energy	**24.747**
Rent	18.964
Housing rental	18.123
Housing rentals (Rental index)	13.447
Imputed rent for owner-occupied dwellings	4.676
Rental of garages, parking spaces	0.841
Regular repairs of the dwelling	1.173
Products for housing maintenance	0.096
Services for housing maintenance	1.077
Services of plumbers	0.416
Services for electric installations	0.175
Services for painting and plasterwork	0.174
Services of carpenters	0.312
Services for provision and maintenance of the apartment	1.337
Taxes for provision of the apartment	0.333
Taxes for household waste elimination	0.176
Taxes for water alimentation	0.093
Taxes for waste water elimination	0.064
Maintenance and caretaking	1.004
Energy	3.273
Electricity	1.880
Electricity, consumer type I	0.298
Electricity, consumer type II	0.348
Electricity, consumer type III	0.211
Electricity, consumer type IV	0.187
Electricity, consumer type V	0.338
Electricity, consumer type VI	0.204
Electricity, consumer type VII	0.294
Gas	0.506
Gas, consumer type II	0.135
Gas, consumer type III	0.103
Gas, consumer type IV	0.164
Gas, consumer type V	0.104
Heating oil	0.687
Firewood	0.112
Wood pellets	0.048
Log of wood	0.064
Remote heating	0.088
Household furniture and furnishings and routine maintenance	**4.461**
Furniture, furnishings and floor coverings	1.673
Furniture and furnishings	1.604
Household furniture	1.168
Living room and home office furniture	0.437
Bedroom furniture	0.510
Kitchen and dining room furniture	0.221
Garden furniture	0.126
Lighting equipment	0.116
Furnishings	0.194
Carpets and floor coverings	0.069
Household textiles	0.298
Curtains and curtain accessories	0.058
Bed linen and accessories	0.183
Household linen	0.057

Source: FSO – CPI

© FSO 2016

Expenditure item	Weight in %
	2016
Household appliances	0.620
Major household appliances	0.481
Refrigerators and freezers	0.075
Clothes washing machines, clothes drying machines and dish washing machines	0.168
Cookers, ovens and barbecue	0.087
Household appliances for the regulation of the room temperature and vacuum	0.151
Smaller electric household appliances	0.139
Glassware, tableware and household utensils	0.325
Glassware and tableware	0.086
Cutlery	0.019
Non-electric kitchen utensils and articles	0.220
Kitchen utensils	0.147
Other household utensils	0.073
Tools, equipment and accessories for house and garden	0.558
Motorized tools for DIY and garden	0.114
Tools for house and garden	0.444
Non-motorized tools for house and garden	0.079
Equipment and other accessories for house and garden	0.365
Routine household maintenance	0.987
Goods for routine household maintenance	0.556
Detergents and cleaning products	0.313
Cleaning articles	0.021
Household articles	0.222
Household cleaning services	0.431
Health	15.577
Medical products and appliances	2.734
Medicines	2.314
Medical products	0.048
Therapeutic devices	0.372
Glasses and contact lenses	0.327
Hearing aids and other therapeutic devices	0.045
Outpatient services	8.979
Medical services	6.340
Medical services at local surgery	4.001
Ambulant medical services in hospitals	2.339
Dental services	1.511
Other medical services	1.128
Laboratory analyses	0.425
Paramedical services	0.703
Physiotherapy	0.336
Home care Spitex	0.367
Hospital services	3.864
Transport	10.856
Cars, motorcycles, bicycles	8.233
Purchase of cars motorcycles, bicycles	4.234
Cars	3.834
New cars	2.707
Second-hand cars	1.127
Motorcycles	0.214
Bicycles	0.186

Source: FSO – CPI

© FSO 2016

Expenditure item	Weight in %
	2016
Goods and services in connection with use of cars motorcycles, bicycles	3.999
Spare parts and accessories	0.300
Tyres and accessories	0.237
Spare parts	0.063
Fuels	2.146
Diesel	0.594
Petrol	1.552
Maintenance and repair of personal transport equipment	1.030
Repair services and work for motorized vehicles	0.996
Maintenance for bicycles	0.034
Other services in respect of personal transport equipment	0.523
Parking fees	0.259
Taxes for private vehicles and driving school	0.264
Transport services	2.623
Public transport services by rail and road	1.861
Public transport: direct service	1.225
Public transport: combined services	0.636
Taxi	0.067
Air transport	0.695
Communications	**2.974**
Postal services	0.086
Telephone equipment	0.147
Telecommunication services	2.741
Fixed-line communication	0.284
Combined offers for fixed-line and mobile communication	1.122
Mobile communication	1.335
Recreation and culture	**9.044**
Audiovisual, photographic and IT equipment	1.047
Television sets and audiovisual appliances	0.288
Television sets	0.168
Audiovisual appliances	0.120
Photographic, cinematographic equipment and optical instruments	0.102
Personal computers and accessories	0.526
Personal computer	0.349
IT peripherical devices and accessories	0.157
Computer software	0.020
Recording media and contents	0.114
Recorded media	0.072
Downloads	0.011
Non recorded media	0.031
Repair and installation radio and TV	0.017
Musical instruments	0.075
Other recreational items and equipment, gardens, pets	1.722
Games, toys and hobbies	0.329
Game consoles and electronic games	0.032
Parlour games	0.048
Toys	0.249
Equipment for sports and camping	0.402
Winter sports equipment	0.121

Source: FSO – CPI

© FSO 2016

Expenditure item	Weight in %
	2016
Services for winter sports equipment	0.040
Summer/year-round sports articles	0.241
Plants, flowers and garden products	0.505
Garden products	0.081
Plants and flowers	0.424
Pet related products	0.302
Veterinary services for pets	0.184
Recreational and cultural services	2.883
Sporting and recreational services	1.524
Sporting events	0.049
Sports and leisure activities	1.475
Entries in sport facilities	0.565
Mountain railways, ski lifts	0.200
Leisure-time courses	0.710
Cultural and other services	1.359
Cinema, theatre and concerts	0.470
Cinema	0.098
Theatre and concerts	0.372
Reception of radio and tv	0.813
Fees for radio and tv reception	0.615
Reception of paid audiovisual contents	0.198
Photographic services	0.076
Books, newspapers and stationery	1.012
Books and brochures	0.282
Daily newspapers and periodicals	0.520
Daily and periodical purchased singly	0.078
Daily and periodical by subscription	0.442
Other printed matter	0.079
Writing and drawing materials	0.131
Package holidays	2.305
International package holidays	2.139
Domestic package holidays	0.166
Education	**0.764**
Basic academic and vocational education	0.252
Compulsory education	0.106
Post-compulsory education	0.146
Higher vocational education and universities	0.348
Life-long learning	0.164
Restaurants and hotels	**9.060**
Catering services	7.512
Restaurants, cafés and fast food	6.855
Restaurants and cafés	5.966
Meals taken in restaurants and cafés	3.527
Beverages in restaurants and cafés	2.046
Alcoholic beverages	1.020
Wine	0.655
Beer	0.263
Spirits, other alcoholic drinks	0.102
Non-alcoholic beverages	1.026
Coffee and tea	0.514
Mineral water and soft drinks	0.512
Self-service restaurants	0.393
Fast food	0.889
Fast food meals	0.721
Fast food non-alcoholic beverages	0.131
Fast food alcoholic beverages	0.037
Canteens	0.657
Meals in canteens	0.534
Beverages in canteens	0.123
Accommodation	1.548
Hotels	1.193
Alternative accommodation facilities	0.355
Other goods and services	**5.507**
Personal care	1.930
Services of hairdressers and beauty salons	0.858
Hairdresser for men and children	0.130
Hairdresser for ladies	0.452
Beauty care	0.276
Electrical appliances for personal care	0.057
Articles for personal hygiene	1.015
Non-electrical appliances for personal care	0.068
Toiletries	0.947
Soaps and foam baths	0.067
Hair-care products	0.092
Dental-care products	0.060
Beauty products and cosmetics	0.538
Products for personal care	0.270
Products for face care and make-up	0.268
Paper articles for personal hygiene	0.190
Personal effects	0.635
Jewellery	0.198
Watches	0.152
Luggages, bags and accessories	0.285
Social protection services	0.573
Insurance	1.700
Home and contents insurance (including private third-party insurance)	0.360
Private health insurance	0.770
Car insurance	0.570
Financial services	0.418
Account fees	0.212
Fees for securities accounts	0.206
Other services	0.251

Source: FSO – CPI

© FSO 2016

Appendix 2: Frequency of survey

Product group		Frequency	Months in which price surveys are conducted											
			J	F	M	A	M	J	J	A	S	O	N	D
1.	**Food and non-alcoholic beverages**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Mandarins, Stone fruits, Ananas, Berries, other fruits	Seasonal												
	Vegetables: chicory, asparagus, early potatoes	Seasonal												
2.	**Alcoholic beverages and tobacco**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
3.	**Clothing and footwear**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Summer collection, summer sportswear and summer shoes	Seasonal			X	X	X	X	X					
	Winter collection, winter sportswear, winter shoes	Seasonal	X								X	X	X	X
	Dry-cleaning and repair of garments	Quarterly		X			X			X			X	
4.	**Housing and energy**	**Quarterly**		**X**			**X**			**X**			**X**	
	Regular repairs of the dwelling	Half-yearly					X						X	
	Taxes for waste elimination, water alimentation and waste water elimination	Aperiodically*												
	Electricity, gas and remote heating	Aperiodically*												
	Heating oil	Twice a month	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
	Fire wood	Monthly	X	X	X	X	X	X	X	X	X	X	X	X
5.	**Household furniture and furnishings and routine maintenance**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Garden furniture	Seasonal				X	X	X	X					
	Household cleaning services	Half-yearly				X						X		
6.	**Health**	**Aperiodically***												
	Medicines	Monthly	X	X	X	X	X	X	X	X	X	X	X	X
	Therapeutic devices	Quarterly	X			X			X			X		
	Dental services, Home care spitex	Quarterly	X			X			X			X		
7.	**Transport**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Motorcycles, bicycles	Quarterly	X			X			X			X		
	Fuels	Twice a month	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
	Maintenance and repair, parking fees	Quarterly	X			X			X			X		
	Taxes for private vehicles and driving school	Aperiodically*												
	Public transport services	Aperiodically*												
	Taxi	Quarterly	X			X			X			X		
8.	**Communications**	**Aperiodically***												
	Telephone equipment	Monthly	X	X	X	X	X	X	X	X	X	X	X	X
9.	**Recreation and culture**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Musical instruments	Quarterly			X			X			X			X
	Winter sports equipment	Seasonal	X	X								X	X	X
	Plants and flowers	Seasonal												
	Veterinary services for pets	Quarterly			X			X			X			X
	Sporting events: Football	Annually	X							X				
	Sporting events: Hockey	Half-yearly			X						X			
	Entries in sport facilities: swimming pools	Annually						X						
	Theatre and concerts	Annually									X			X
	Mountain railways, ski lifts	Half-yearly						X						X
	Fees for radio and tv reception	Aperiodically*												
10.	**Education**	**Annually**								**X**	**X**			**X**
11.	**Restaurants and Hotels**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Self-service restaurants, canteens, alternative accommodation facilities	Quarterly	X			X			X			X		
12.	**Other goods and services**	**Monthly**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
	Hairdressers and beauty salons, watches	Quarterly		X			X			X			X	
	Childcare	Half-yearly		X						X				
	Insurance	Aperiodically*												
	Financial services and other services	Quarterly		X			X			X			X	

Reading example: "Food and non-alcoholic beverages" are collected monthly, some fruits and vegetables however seasonal.

* Aperiodically: price variations influence the index when they come into effect (particularly in the case of tariffs and charges).

Source: FSO – CPI

© FSO 2016

Appendix 3: Hotels sampling

As part of the 2015 revision, a complete overhaul was made of the sample of some 200 hotels in which prices of overnight stays in a double room are collected.

The sample selection was made using the quota method. Quotas were fixed for each tourist region so as to take into account both the star classification and the tourist zone[25]. For each cell created in this way, the share in the tourist region's turnover as well as the share in domestic overnight stays of the different hotel categories were calculated based on the FSO tourist accommodation statistics (HESTA). Average values are then calculated, making it possible to deduce the number of hotels to select in each of the cells. For each cell, hotels with the most domestic overnight stays are included in the sample.

This method has the advantage of ensuring diversity in the sample in terms of the location but also the quality of hotels (using the hotel star system). It also ensures that hotels representative of domestic consumers' preferences (and therefore representative for the CPI) are included in the sample.

In practice, the sampling of hotels was carried out as follows.

– First the percentage of domestic overnight stays (excluding overnight stays for business trips) observed in hotels from the different categories and in the various tourist zones was determined for each tourist region[26].

Vaud	Average: Share in turnover and overnight stays			
	Mountain	Countryside	Small town	Large town
1 star	0.008	0.000	0.000	0.018
2 stars	0.006	0.020	0.003	0.035
3 stars	0.083	0.063	0.070	0.047
4 stars	0.045	0.026	0.129	0.100
5 stars	0.014	0.017	0.071	0.033
Not classified	0.000	0.003	0.006	0.006
No information	0.012	0.064	0.012	0.107

– The number of hotels entering the sample by tourist region, determined on the basis of the weight of the tourist region and price fluctuations within the tourist region, is distributed between each tourist zone based on the percentages calculated at stage 1.

Vaud	Number of hotels			
	Mountain	Countryside	Small town	Large town
1 star	0.12	0.00	0.00	0.25
2 stars	0.09	0.28	0.04	0.49
3 stars	1.16	0.89	0.99	0.65
4 stars	0.64	0.36	1.81	1.40
5 stars	0.20	0.23	1.00	0.46
Not classified	0.00	0.05	0.09	0.08
No information	0.17	0.89	0.16	1.50
Number of hotels				**14**

– Each cell with at least one whole number is attributed the relevant number of hotels rounded down. The rest is attributed step by step to the cells in decimals that are nearest to the next integer.

Vaud	Number of hotels (rounded)			
	Mountain	Countryside	Small town	Large town
1 star				
2 stars				1
3 stars	1	1	1	1
4 stars	1		2	1
5 stars			1	1
Not classified				
No information		1		2
Number of hotels				**14**

[25] The variable "tourist zone" distinguishes between "mountain", "countryside", "small town" and "large town". This method was chosen rather than deciding quotas on the basis of the number of overnight stays.

[26] The same process was carried out a second time, replacing the percentage of overnight stays with the percentage of turnover (number of overnight stays multiplied by the average price for each hotel category (number of hotel stars)). Finally, an average of the two obtained results was created.

Appendix 4:
Aggregation of the hospital services index
(simplified example, fictitious numbers)

Step 1: Calculation of inpatient hospital services indices by hospital and by insurance

Basket of services: DRG in hospital A, canton ZH

DRG	Turnover (CHF)	Cost-weight 2016
Case 1	455 454.00	5.60
Case 2	155 555.00	0.35
Case 3	545 440.00	22.40
...		
Total	**7 777 752.00**	

Source: FSO – Cost per case statistics © FSO 2016

Price calculation: DRG in hospital A, canton ZH

DRG	Turnover (CHF)	Cost-weight (t)	Baserate (2016) Insurance A	Price A (2015)	Price A (2016)
Case 1	455 454.00	5.60	7 500.00	39 800.00	42 000.00
Case 2	155 555.00	0.35	7 500.00	2 428.00	2 625.00
Case 3	545 440.00	22.40	7 500.00	161 800.00	168 000.00
Total	**1 156 449.00**				

DRG	Turnover (CHF)	Cost-weight (t)	Baserate (2016) Insurance B	Price B (2015)	Price B (2016)
Case 1	455 454.00	5.60	8 000.00	45 820.00	44 800.00
Case 2	155 555.00	0.35	8 000.00	2 839.00	2 800.00
Case 3	545 440.00	22.40	8 000.00	180 220.00	179 200.00
Total	**1 156 449.00**				

...

Calculation of the elementary indices and aggregation, insurances A, B, hospital A, canton ZH

DRG	% turnover	Index A (Dez.15=100)	Index A (2016)
Case 1	39.38	100.00	105.53
Case 2	13.45	100.00	108.11
Case 3	47.17	100.00	103.83
Index hospital A, Insurance A	**100.00**	**100.00**	**105.08**

DRG	% turnover	Index B (Dez.15=100)	Index B (2016)
Case 1	39.38	100.00	97.77
Case 2	13.45	100.00	98.63
Case 3	47.17	100.00	99.43
Index hospital A, Insurance B	**100.00**	**100.00**	**98.67**

...

Source: FSO – Cost per case statistics © FSO 2016

Step 2: Calculation of inpatient hospital services indices by hospital

Index of hospital A, canton ZH		
Insurance	Market share in Switzerland	Index (2016)
Insurance A	22%	105.08
Insurance B	20%	98.67
Insurance N	2%	102.90
Index hospital A	**44%**	**102.06**

Source: Finma/FOPH – Premium volume per insurance

© FSO 2016

Step 3: Calculation of inpatient hospital services indices by canton

Hospital index, canton ZH			
Hospital	Turnover	Percentage of the turnover	Index (2016)
Hospital A	7 777 752.00	8.69	102.06
Hospital B	54 574 454.00	60.96	106.39
Hospital C	27 134 743.00	30.31	102.21
Hospital S	44 545.00	0.05	104.91
	89 531 494.00	**100.00**	**104.75**

Source: FSO – Turnover per hospital according to the hospital statistics

© FSO 2016

Step 4: Calculation of the Swiss hospital services index

Hospital services index			
Canton	Turnover	Percentage of the turnover	Index (2016)
AG	653 693.00	6.34	100.60
…	…	…	…
ZH	2 073 666.00	20.10	104.75
Index CH	**10 315 514.50**	**100.00**	**102.67**

Source: FSO – Turnover per canton according to the hospitals statistics

© FSO 2016

Appendix 5: Additional classifications

Consumer price index, december 2015=100

Position	Weights in %	
	2015	2016
Type of goods		
Goods	39.551	39.316
Non-durable goods	23.898	24.311
Semi-durable goods	7.021	6.643
Durable goods	8.632	8.362
Services	60.449	60.684
Private services	50.939	49.279
Public services	9.510	11.405
Origin of goods		
Domestic goods	74.854	75.548
Imported goods	25.146	24.452
Core-inflation		
Core inflation 1[1]	88.883	89.831
Fresh and seasonal products	*4.900*	*4.750*
Energy and fuels	*6.217*	*5.419*
Core inflation 2[2]	69.131	69.262

Position	Weights in %	
	2015	2016
Additional classifications		
Health	14.858	15.577
Index without health	85.142	84.423
Housing and energy	18.280	18.123
Index without housing and energy	81.720	81.877
Oil products	3.426	2.833
Index without oil products	96.574	97.167
Tobacco	0.597	1.841
Index without tobacco	99.403	98.159
Alcoholic beverages	2.173	2.116
Index without alcoholic beverages	97.827	97.884
Clothing and footwear	3.819	3.777
Index without clothing and footwear	96.181	96.223
Administrated prices	22.415	23.043
Index without administrated prices	77.585	76.957

[1] Core inflation 1 = total without fresh and seasonal products, energy and fuels

[2] Core inflation 2 = Core inflation 1 without products whose prices are administered

Source: FSO – CPI

© FSO 2016

5.1 Type of goods

Position	Weight in %
	2016
Total	**100,000**
Goods	**39,316**
Non-durable goods	24,311
Food and non-alcoholic beverages	10,333
Alcoholic beverages and tobacco	2,900
Products for housing maintenance	0,096
Taxes for water alimentation	0,093
Energy	3,273
Goods for routine household maintenance	0,556
Medicines	2,314
Medical products	0,048
Fuels	2,146
Plants, flowers and garden products	0,505
Pet related products	0,302
Daily newspapers and periodicals	0,520
Other printed matter	0,079
Writing and drawing materials	0,131
Articles for personal hygiene	1,015
Semi-durable goods	6,643
Articles of clothing	2,724
Garment fabrics	0,019
Other articles of clothing and accessories	0,159
Footwear	0,766
Household textiles	0,298
Smaller electric household appliances	0,139
Glassware, tableware and household utensils	0,325
Tools for house and garden	0,444
Spare parts and accessories	0,300
Recording media and contents	0,114
Games, toys and hobbies	0,329
Equipment for sports and camping	0,402
Books and brochures	0,282
Electrical appliances for personal care	0,057
Luggage, bags and accessories	0,285
Durable goods	8,362
Furniture, furnishings and floor coverings	1,673
Major household appliances	0,481
Motorized tools for DIY and garden	0,114
Therapeutic devices	0,372
Cars	3,834
Motorcycles	0,214
Bicycles	0,186
Telephone equipment	0,147
Television sets and audiovisual appliances	0,288
Photographic, cinematographic equipment and optical instruments	0,102
Personal computers and accessories	0,526
Musical instruments	0,075
Jewellery	0,198
Watches	0,152

Source: FSO – CPI

© FSO 2016

5.1 Type of goods

Position	Weight in %
	2016
Services	**60,684**
Private services	49,844
Dry-cleaning and repair of garments	0,092
Shoe repairs	0,017
Rent	18,964
Services for housing maintenance	1,077
Maintenance and caretaking	1,004
Household cleaning services	0,431
Medical services at local surgery	4,001
Dental services	1,511
Laboratory analyses	0,425
Physiotherapy	0,336
Maintenance and repair of personal transport equipment	1,030
Taxi	0,067
Air transport	0,695
Telecommunication services	2,741
Repair and installation radio and TV	0,017
Veterinary services for pets	0,184
Sporting and recreational services	1,524
Cinema	0,098
Reception of paid audiovisual contents	0,198
Photographic services	0,076
Package holidays	2,305
Education	0,764
Restaurants and hotels	9,060
Services of hairdressers and beauty salons	0,858
Insurance	1,700
Financial services	0,418
Other services	0,251
Public services	10,840
Taxes for household waste elimination	0,176
Taxes for waste water elimination	0,064
Ambulant medical services in hospitals	2,339
Home care Spitex	0,367
Hospital services	3,864
Other services in respect of personal transport equipment	0,523
Public transport services by rail and road	1,861
Postal services	0,086
Theatre and concerts	0,372
Fees for radio and tv reception	0,615
Social protection services	0,573

Source: FSO – CPI

© FSO 2016

5.2 Seasonal products (until 2015)

Position	Weight in %
	2016
Total	**100.000**
Seasonal products	**3.225**
Fresh fruit	0.690
Vegetables and mushrooms	0.749
Potatoes	0.088
Plants, flowers and garden products	0.505
Hotels	1.193
Index without seasonal products	**96.775**
Bread, flour and cereal products	1.583
Meat, cold cuts and sausages	2.325
Fish, crustaceans and seafood	0.354
Milk, cheese and eggs	1.590
Fats and edible oils	0.242
Frozen fruit	0.009
Dried fruit and nuts	0.162
Preserved fruit	0.016
Preserved vegetables	0.028
Dried and tinned vegetables and mushrooms	0.122
Potato products	0.051
Crisps	0.068
Sugar, jam, honey/other sugary foods	0.646
Other food products	0.659
Non-alcoholic beverages (retailing)	0.951
Alcoholic beverages and tobacco	2.900
Clothing and footwear	3.777
Housing and energy	24.747
Household furniture and furnishings and routine maintenance	4.461
Health	15.577
Transport	10.856
Communications	2.974
Audiovisual, photographic and IT equipment	1.047
Musical instruments	0.075
Games, toys and hobbies	0.329
Equipment for sports and camping	0.402
Pet related products	0.302
Veterinary services for pets	0.184
Recreational and cultural services	2.883
Books, newspapers and stationery	1.012
Package holidays	2.305
Education	0.764
Catering services	7.512
Alternative accommodation facilities	0.355
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.3 Oil products

Position	Weight in %
	2016
Total	**100.000**
Oil products	**2.833**
Heating oil	0.687
Petrol	1.552
Diesel	0.594
Index without oil products	**97.167**
Food and non-alcoholic beverages	10.333
Alcoholic beverages and tobacco	2.900
Clothing and footwear	3.777
Rent	18.964
Regular repairs of the dwelling	1.173
Services for provision and maintenance of the apartment	1.337
Electricity	1.880
Gas	0.506
Firewood	0.112
Remote heating	0.088
Household furniture and furnishings and routine maintenance	4.461
Health	15.577
Purchase of cars motorcycles, bicycles	4.234
Spare parts and accessories	0.300
Maintenance and repair of personal transport equipment	1.030
Other services in respect of personal transport equipment	0.523
Transport services	2.623
Communications	2.974
Recreation and culture	9.044
Education	0.764
Restaurants and hotels	9.060
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.4 Housing rental

Position	Weight in %
	2016
Total	**100.000**
Housing rental	**18.123**
Housing rental	18.123
Index without housing rental	**81.877**
Food and non-alcoholic beverages	10.333
Alcoholic beverages and tobacco	2.900
Clothing and footwear	3.777
Rental of garages, parking spaces	0.841
Regular repairs of the dwelling	1.173
Services for provision and maintenance of the appartment	1.337
Energy	3.273
Household furniture and furnishings and routine maintenance	4.461
Health	15.577
Transport	10.856
Communications	2.974
Recreation and culture	9.044
Education	0.764
Restaurants and hotels	9.060
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.5 Tobacco

Position	Weight in %
	2016
Total	**100.000**
Tobacco	**1.841**
Tobacco	1.841
Index without tobacco	**98.159**
Food and non-alcoholic beverages	10.333
Alcoholic beverages (retailing)	1.059
Clothing and footwear	3.777
Housing and energy	24.747
Household furniture and furnishings and routine maintenance	4.461
Health	15.577
Transport	10.856
Communications	2.974
Recreation and culture	9.044
Education	0.764
Restaurants and hotels	9.06
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.6 Alcoholic beverages

Position	Weight in %
	2016
Total	**100.000**
Alcoholic beverages	**2.116**
Retail	1.059
Alcoholic beverages (retailing)	**1.059**
Restaurant	1.057
Alcoholic beverages	1.020
Fast food alcoholic beverages	0.037
Index without alcoholic beverages	**97.884**
Food and non-alcoholic beverages	10.333
Tobacco	1.841
Clothing and footwear	3.777
Housing and energy	24.747
Household furniture and furnishings and routine maintenance	4.461
Health	15.577
Transport	10.856
Communications	2.974
Recreation and culture	9.044
Education	0.764
Meals taken in restaurants and cafés	3.527
Non-alcoholic beverages	1,026
Self-service restaurants	0.393
Fast food meals	0.721
Fast food non-alcoholic beverages	0.131
Canteens	0.657
Accommodation	1.548
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.7 Health

Position	Weight in %
	2016
Total	**100.000**
Health	**15.577**
Health	15.577
Index without health	**84.423**
Food and non-alcoholic beverages	10.333
Alcoholic beverages and tobacco	2.900
Clothing and footwear	3.777
Housing and energy	24.747
Household furniture and furnishings and routine maintenance	4.461
Transport	10.856
Communications	2.974
Recreation and culture	9.044
Education	0.764
Restaurants and hotels	9.060
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.8 Clothing and footwear

Position	Weight in %
	2016
Total	**100.000**
Clothing and footwear	**3.777**
Clothing and footwear	3.777
Index without clothing and footwear	**96.223**
Food and non-alcoholic beverages	10.333
Alcoholic beverages and tobacco	2.900
Housing and energy	24.747
Household furniture and furnishings and routine maintenance	4.461
Health	15.577
Transport	10.856
Communications	2.974
Recreation and culture	9.044
Education	0.764
Restaurants and hotels	9.060
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.9 Administered prices

Position	Weight in %
	2016
Total	**100.000**
Administered and semi-administered prices	**23.043**
Administered prices	7.030
Taxes for provision of the apartment	0.333
Gas	0.506
Electricity	1.880
Remote heating	0.088
Other services in respect of personal transport equipment	0.523
Public transport services by rail and road	1.861
Postal services	0.086
Entries in sport facilities	0.565
Fees for radio and tv reception	0.615
Social protection services	0.573
Semi-administered prices	16.013
Medicines	2.314
Medical services	6.340
Other medical services	1.128
Hospital services	3.864
Taxi	0.067
Basic academic and vocational education	0.252
Higher vocational education and universities	0.348
Insurance	1.700
Non-administered prices	**76.957**
Food and non-alcoholic beverages	10.333
Alcoholic beverages and tobacco	2.900
Clothing and footwear	3.777
Rent	18.964

Source: FSO – CPI

© FSO 2016

5.9 Administered prices

Position	Weight in %
	2016
Regular repairs of the dwelling	1.173
Maintenance and caretaking	1.004
Heating oil	0.687
Firewood	0.112
Household furniture and furnishings and routine maintenance	4.461
Medical products	0.048
Therapeutic devices	0.372
Dental services	1.511
Purchase of cars motorcycles, bicycles	4.234
Spare parts and accessories	0.300
Fuels	2.146
Maintenance and repair of personal transport equipment	1.030
Air transport	0.695
Telephone equipment	0.147
Telecommunication services	2.741
Audiovisual, photographic and IT equipment	1.047
Musical instruments	0.075
Other recreational items and equipment, gardens, pets	1.722
Sporting events	0.049
Mountain railways, ski lifts	0.200
Leisure-time courses	0.710
Cinema, theatre and concerts	0.470
Reception of paid audiovisual contents	0.198
Photographic services	0.076
Books, Newspapers and stationery	1.012
Package holidays	2.305
Life-long learning	0.164
Restaurants and hotels	9.060
Personal care	1.930
Personal effects	0.635
Financial services	0.418
Other services	0.251

Source: FSO – CPI

© FSO 2016

5.10 Housing and energy

Position	Weight in %
	2016
Total	**100**
Housing and energy	**24.747**
Housing and energy	24.747
Index without housing and energy	**75.253**
Food and non-alcoholic beverages	10.333
Alcoholic beverages and tobacco	2.900
Clothing and footwear	3.777
Household furniture and furnishings and routine maintenance	4.461
Health	15.577
Transport	10.856
Communications	2.974
Recreation and culture	9.044
Education	0.764
Restaurants and hotels	9.060
Other goods and services	5.507

Source: FSO – CPI

© FSO 2016

5.11 Core inflation

Position	Weight in %
	2016
Total	**100**
Fresh and seasonal products	4.750
Meat, fresh or frozen	1.332
Fresh fish	0.193
Fresh fruit	0.690
Vegetables and mushrooms	0.749
Potatoes	0.088
Plants, flowers and garden products	0.505
Hotels	1.193
Energy and Fuels	5.419
Energy	3.273
Fuels	2.146
Core inflation 1	**89.831**
Administered prices without administered energy	20.569
Taxes for provision of the apartment	0.333
Medicines	2.314
Medical services	6.340
Other medical services	1.128
Hospital services	3.864
Other services in respect of personal transport equipment	0.523
Public transport services by rail and road	1.861
Taxi	0.067
Postal services	0.086
Entries in sport facilities	0.565
Fees for radio and tv reception	0.615
Basic academic and vocational education	0.252
Higher vocational education and universities	0.348
Social protection services	0.573

Source: FSO – CPI

© FSO 2016

5.11 Core inflation

Position	Weight in %
	2016
Insurance	1.700
Core inflation 2	**69.262**
Bread, flour and cereal products	1.583
Processed meat and sausages	0.993
Frozen fish	0.065
Tinned fish and smoked fish	0.096
Milk, cheese and eggs	1.590
Fats and edible oils	0.242
Frozen fruit	0.009
Dried fruit and nuts	0.162
Preserved fruit	0.016
Preserved vegetables	0.028
Dried and tinned vegetables and mushrooms	0.122
Potato products	0.051
Crisps	0.068
Sugar, jam, honey/other sugary foods	0.646
Other food products	0.659
Non-alcoholic beverages (retailing)	0.951
Alcoholic beverages and tobacco	2.900
Clothing and footwear	3.777
Rent	18.964
Regular repairs of the dwelling	1.173
Maintenance and caretaking	1.004
Household furniture and furnishings and routine maintenance	4.461
Therapeutic devices	0.372
Dental services	1.511
Medical products	0.048
Purchase of cars motorcycles, bicycles	4.234
Spare parts and accessories	0.300
Maintenance and repair of personal transport equipment	1.030
Air transport	0.695
Telephone equipment	0.147
Telecommunication services	2.741
Audiovisual, photographic and IT equipment	1.047
Musical instruments	0.075
Games, toys and hobbies	0.329
Equipment for sports and camping	0.402
Pet related products	0.302
Veterinary services for pets	0.184
Sporting events	0.049
Mountain railways, ski lifts.	0.200
Cinema, theatre and concerts	0.470
Reception of paid audiovisual contents	0.198
Photographic services	0.076
Leisure-time courses	0.710
Books, Newspapers and stationery	1.012
Package holidays	2.305
Life-long learning	0.164
Catering services	7.512
Alternative accommodation facilities	0.355
Personal care	1.930
Personal effects	0.635
Financial services	0.418
Other services	0.251

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Total	**100.000**	**100.000**
Food and non-alcoholic beverages		
Food		
Bread, flour and cereal products		
Rice	0.001	0.174
Flour and other cereals	0.063	0.031
Bread, pastries and other baked products		
Bread	0.570	0.093
Other bakery products		
Small baked goods	0.205	0.033
Viennese pastries, pastry products	0.359	0.123
Biscuit/rusk products	0.228	0.223
Pizza and quiche	0.046	0.120
Pasta	0.089	0.233
Breakfast cereals	0.051	0.135
Other cereal products	0.080	0.083
Meat, cold cuts and sausages		
Meat, fresh or frozen		
Beef and veal		
Beef	0.459	0.270
Veal	0.176	0.011
Pork	0.333	0.066
Lamb	0.048	0.241
Poultry	0.266	0.674
Other meat, fresh	0.021	0.155
Processed meat and sausages		
Sausages	0.571	0.093
Cold cuts, other meat products and meat preparations		
Cold cuts and other meat products	0.517	0.177
Preparations of raw meat ready to cook	0.125	0.043
Fish, crustaceans and seafood		
Fresh fish	0.005	0.774
Frozen fish	0.005	0.250
Tinned fish and smoked fish	0.008	0.369
Milk, cheese and eggs		
Milk and yoghurt		
Whole milk	0.192	0
Low fat milk	0.123	0
Yoghurt	0.281	0.065
Cheese		
Hard and semi-hard cheese	0.509	0.393
Fresh, soft and melted cheese	0.202	0.532
Other milk products		
Drink and milk desserts	0.105	0.024
Cream	0.145	0.019
Eggs	0.166	0.145
Fats and edible oils		
Butter	0.172	0.005
Margarine, fats, edible oils	0.110	0.113
Fruit, vegetables, potatoes and mushrooms		
Fruits		
Fresh fruit		
Citrus fruit	0	0.393
Stone fruit	0.038	0.350
Pome fruit	0.169	0.058
Bananas	0	0.278
Tropical fruit	0	0.384
Berries	0.056	0.258
Other fruit	0.038	0.174
Frozen fruit	0.001	0.033
Dried fruit and nuts	0.043	0.530
Preserved fruit	0.013	0.026
Vegetables, mushrooms and potatoes		
Vegetables and mushrooms		
Fruiting vegetables	0.126	0.477
Root vegetables	0.145	0.079
Salad vegetables	0.185	0.171
Brassicas	0.042	0.047
Onions and leeks	0.065	0.060
Other vegetables, aromatic herbs and mushrooms	0.063	0.292
Preserved vegetables	0.015	0.069
Dried and tinned vegetables and mushrooms	0.097	0.200
Potatoes and potatoes-based products		
Potatoes	0.111	0.018
Potato products	0.061	0.021
Crisps	0.081	0.028
Sugar, jam, honey/other sugary foods		
Sugar	0.035	0.022
Jam and honey	0.097	0.053
Chocolate	0.343	0.372
Sweets and chewing gum	0.037	0.242
Ice-cream	0.108	0.037
Other food products		
Sauces and condiments	0.137	0.423
Salt, spices and culinary herbs	0.028	0.088
Baby food	0.028	0.057
Ready-made foods	0.185	0.063
Soups and other food products	0.145	0.448
Non-alcoholic beverages (retailing)		
Coffee, tea, cocoa and nutritional beverages		
Coffee (retailing)	0.185	0.859
Tea (retailing)	0.015	0.183
Cocoa and chocolate powder	0.021	0.016
Mineral waters, soft drinks and juices		
Natural mineral water	0.113	0.179
Soft drinks	0.282	0.046
Fruit or vegetable juices	0.216	0.035
Alcoholic beverages and tobacco		
Alcoholic beverages (retailing)		
Spirits (retailing)		
Spirits/brandies (retailing)	0.011	0.309

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Liqueurs and aperitifs	0.015	0.180
Wine (retailing)		
Red Wine		
Swiss red wine	0.216	0
Foreign red wine	0	1.534
White wine		
Swiss white wine	0.146	0
Foreign white wine	0	0.262
Sparkling wine	0.008	0.221
Beer (retailing)		
Lager beer, blonde	0.123	0.095
Special beer	0.024	0.040
Non-alcoholic beers	0.004	0.003
Tobacco		
Cigarettes	1.995	0.610
Other tobaccos	0.061	0.567
Clothing and footwear		
Clothing		
Articles of clothing		
Garments for men		
Jackets for men	0.010	0.610
Men's suits	0.005	0.299
Men's trousers	0.012	0.680
Men's shirts	0.007	0.400
Men's sweaters	0.011	0.664
Men's underwear	0.009	0.261
Garments for women		
Coats, jackets for women	0.022	1.282
Women's skirts and dresses	0.011	0.660
Women's trousers	0.019	1.131
Women's blouses	0.008	0.447
Women's jumpers	0.046	1.274
Women's underwear	0.013	0.777
Garments for children		
Jackets for kids	0.001	0.116
Children's trousers and skirts	0.002	0.261
Children's jerseys	0.004	0.214
Baby clothes	0.005	0.315
Hosiery and underwear for kids	0.004	0.107
Sportswear		
Winter sportswear	0.007	0.408
Summer/Year-round sportswear	0.014	0.586
Garment fabrics	0.001	0.074
Other articles of clothing and accessories		
Haberdashery and knitting wool	0.002	0.136
Other clothing accessories	0.016	0.456
Dry-cleaning and repair of garments		
Garment alterations	0.034	0
Dry cleaning	0.087	0
Footwear including repairs		
Footwear		

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Men's footwear	0.004	1.130
Women's footwear	0.005	1.539
Children's footwear	0.001	0.433
Shoe repairs	0.023	0
Housing and energy		
Rent		
Housing rental		
Housing rentals (Rental index)	17.795	0
Imputed rent for owner-occupied dwellings	6.189	0
Rental of garages, parking spaces	1.113	0
Regular repairs of the dwelling		
Products for housing maintenance	0.064	0.196
Services for housing maintenance		
Services of plumbers	0.551	0
Services of electricians	0.232	0
Services of painters and plasterers	0.230	0
Services of carpenters	0.413	0
Services for provision and maintenance of the apartment		
Taxes for provision of the apartment		
Taxes for household waste elimination	0.233	0
Taxes for water alimentation	0.123	0
Taxes for waste water elimination	0.085	0
Maintenance and caretaking of the apartment	1.329	0
Energy		
Electricity		
Electricity, consumer type I	0.394	0
Electricity, consumer type II	0.461	0
Electricity, consumer type III	0.279	0
Electricity, consumer type IV	0.248	0
Electricity, consumer type V	0.447	0
Electricity, consumer type VI	0.270	0
Electricity, consumer type VII	0.389	0
Gas		
Gas, consumer type II	0	0.552
Gas, consumer type III	0	0.421
Gas, consumer type IV	0	0.671
Gas, consumer type V	0	0.425
Heating oil	0	2.810
Firewood		
Wood pellets	0.044	0.059
Log of wood	0.059	0.079
Remote heating	0.116	0
Household furniture and furnishings and routine maintenance		
Furniture, furnishings and floor coverings		
Furniture and furnishings		
Household furniture		
Living room and home office furniture	0.174	1.251
Bedroom furniture	0.203	1.460
Kitchen and dining room furniture	0.088	0.633
Garden furniture	0.050	0.361
Lighting equipment	0.058	0.294

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Furnishings	0.077	0.555
Carpets and floor coverings	0.036	0.172
Household textiles		
Curtains and curtain accessories	0.027	0.154
Bed linen and accessories	0.085	0.486
Household linen	0.026	0.152
Household appliances		
Major household appliances		
Refrigerators and freezers	0.030	0.215
Clothes washing machines, clothes drying machines and dish washing machines	0.067	0.481
Cookers, ovens and barbecue	0.035	0.249
Household appliances for the regulation of the room temperature and vacuum cleaners	0.060	0.432
Smaller electric household appliances	0.018	0.512
Glassware, tableware and household utensils		
Glassware and tableware	0.040	0.229
Cutlery	0.009	0.051
Non-electric kitchen utensils and articles		
Kitchen utensils	0.068	0.391
Other household utensils	0.034	0.194
Tools, equipment and accessories for house and garden		
Motorized tools for DIY and garden	0.023	0.396
Tools for house and garden		
Non-motorized tools for house and garden	0.016	0.275
Equipment and other accessories for house and garden	0.169	0.970
Routine household maintenance		
Goods for routine household maintenance		
Detergents and cleaning products	0.166	0.768
Cleaning articles	0.011	0.052
Household articles	0.118	0.545
Household cleaning services	0.570	0
Health		
Medical products and appliances		
Medicines	0.919	6.624
Medical products	0.048	0.049
Therapeutic devices		
Glasses and contact lenses	0.260	0.535
Hearing aids and other therapeutic devices	0.036	0.074
Outpatient services		
Medical services		
Medical services at local surgery	5.296	0
Ambulant medical services in hospitals	3.096	0
Dental services	2.000	0
Other medical services		
Laboratory analyses	0.563	0
Paramedical services		
Physiotherapy	0.445	0
Home care Spitex	0.486	0
Hospital services	5.115	0
Transport		

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Cars, motorcycles, bicycles		
Purchase of cars motorcycles, bicycles		
Cars		
New cars	0	11.072
Second-hand cars	1.343	0.461
Motorcycles	0	0.875
Bicycles	0.037	0.647
Goods and services in connection with use of cars motorcycles, bicycles		
Spare parts and accessories		
Tyres and accessories	0	0.969
Spare parts	0	0.258
Fuels		
Diesel	0	2.429
Petrol	0	6.347
Maintenance and repair of personal transport equipment		
Repair services and work for motorized vehicles	1.318	0
Maintenance of bicycles	0.045	0
Other services in respect of personal transport equipment		
Parking fees	0.343	0
Taxes for private vehicles and driving school	0.349	0
Transport services		
Public transport services by rail and road		
Public transport: direct service	1.621	0
Public transport: combined services	0.842	0
Taxi	0.089	0
Air transport	0.469	1.393
Communications		
Postal services	0.114	0
Telephone equipment	0	0.601
Telecommunication services		
Fixed communication services		
Fixed telephone services		
Fixed telephone services, small package	0.105	0
Fixed telephone services, medium package	0.069	0
Fixed telephone services, large package	0.017	0
Fixed internet services		
Fixed internet services, small package	0.054	0
Fixed internet services, medium package	0.118	0
Fixed internet services, large package	0.013	0
Bundled telecommunication services		
2-in-1 bundle	0.156	0
3-in-1 bundle	0.801	0
4-in-1 bundle	0.528	0
Mobile communication services		
Mobile communication services, small package	0.368	0
Mobile communication services, medium package	0.708	0

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Mobile communication services, large package	0.691	0
Recreation and culture		
Audiovisual, photographic and IT equipment		
Television sets and audiovisual appliances		
Television sets	0	0.687
Audiovisual appliances	0	0.491
Photographic, cinematographic equipment and optical instruments	0	0.417
Personal computers and accessories		
Personal computer	0	1.427
IT peripherical devices and accessories	0	0.642
Computer software	0	0.082
Recording media and contents		
Recorded media	0	0.294
Downloads	0	0.045
Non recorded media	0	0.127
Repair and installation radio and TV	0.023	0
Musical instruments	0.005	0.291
Other recreational items and equipment, gardens, pets		
Games, toys and hobbies		
Game consoles and electronic games	0.002	0.124
Parlour games	0.003	0.186
Toys	0.016	0.967
Equipment for sports and camping		
Winter sports equipment	0.008	0.470
Services for winter sports equipment	0.053	0
Summer/year-round sports articles	0.006	0.966
Plants, flowers and garden products		
Garden products	0.043	0.199
Plants and flowers	0.224	1.040
Pet related products	0.020	1.173
Veterinary services for pets	0.244	0
Recreational and cultural services		
Sporting and recreational services		
Sporting events	0.065	0
Sports and leisure activities		
Entries in sport facilities	0.748	0
Mountain railways, ski lifts.	0.265	0
Leisure-time courses	0.940	0
Cultural and other services		
Cinema, theatre and concerts		
Cinema	0.130	0
Theatre and concerts	0.492	0
Reception of radio and tv		
Fees for radio and tv reception	0.814	0
Reception of paid audiovisual contents	0.262	0
Photographic services	0.101	0
Books, newspapers and stationery		
Books and brochures	0.056	0.980
Daily newspapers and periodicals		
Daily and periodical purchased singly	0.069	0.105

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Daily and periodical by subscription	0.550	0.108
Other printed matter	0.052	0.162
Writing and drawing materials	0.087	0.268
Package holidays		
International package holidays	1.133	5.249
Domestic package holidays	0.220	0
Education		
Basic academic and vocational education		
Compulsory education	0.140	0
Post-compulsory education	0.193	0
Higher vocational education and universities	0.461	0
Life-long learning	0.217	0
Restaurants and hotels		
Catering services		
Restaurants, cafés and fast food		
Restaurants and cafés		
Meals taken in restaurants and cafés	4.669	0
Beverages in restaurants and cafés		
Alcoholic beverages		
Wine	0.867	0
Beer	0.348	0
Spirits, other alcoholic drinks	0.135	0
Non-alcoholic beverages		
Coffee and tea	0.680	0
Mineral water and soft drinks	0.678	0
Self-service restaurants	0.520	0
Fast food		
Fast food meals	0.954	0
Fast food non-alcoholic beverages	0.173	0
Fast food alcoholic beverages	0.049	0
Canteens		
Meals in canteens	0.707	0
Beverages in canteens	0.163	0
Accommodation		
Hotels	1.579	0
Alternative accommodation facilities	0.470	0
Other goods and services		
Personal care		
Services of hairdressers and beauty salons		
Hairdresser for men and children	0.172	0
Hairdresser for ladies	0.598	0
Beauty care	0.365	0
Electrical appliances for personal care	0.008	0.210
Articles for personal hygiene		
Non-electrical appliances for personal care	0.032	0.181
Toiletries		
Soaps and foam baths	0.035	0.164
Hair-care products	0.049	0.226
Dental-care products	0.032	0.147
Beauty products and cosmetics		
Products for personal care	0.143	0.663

Source: FSO – CPI

© FSO 2016

5.12 Domestic and imported goods and services

Position	Weight in %	
	2016	
	Domestic goods	Imported goods
Products for face care and make-up	0.142	0.658
Paper articles for personal hygiene	0.214	0.117
Personal effects		
Jewellery	0.131	0.405
Watches	0.151	0.155
Luggage, bags and accessories	0.075	0.932
Social protection services	0.758	0
Insurance		
Home and contents insurance (including private third-party insurance)	0.477	0
Private health insurance	1.019	0
Car insurance	0.754	0
Financial services		
Account fees	0.281	0
Fees for securities accounts	0.273	0
Other services	0.332	0

Source: FSO – CPI

© FSO 2016

Appendix 6: Differences between the CPI and the cost-of-living index

	Consumer price index	Cost-of-living index
Basket of goods and services		
– Content	Consumption expenditures	All expenditure: consumption expenditure and mandatory expenditure (social security, taxes)
– Weighting	Fixed for a specific period of time	Permanently flexible in order to keep the utility of goods and services constant
Prices	Measured according to the acquisition concept	Measured according to the utilization concept
Calculation method	(Chained) Laspeyres index and similar indices	Fisher or Törnqvist index

Source: FSO – CPI

© FSO 2016

The first major difference concerns the **basket of goods and services.** The basket of goods and services of the cost-of-living index is bigger and can also include compulsory expenditure. It has to be constantly adjusted in order to maintain a constant level of utility for all households. Utility is a widely-used economic term: it represents the level of satisfaction received from consuming a good or service. Unfortunately it is difficult to measure in practice.

The second difference can be found in the **notion of price.** In the CPI, prices are collected on the basis of the acquisition concept, in other words they influence the results at the moment the product is purchased. The cost-of-living index on the other hand, measures price trends according to the utilisation concept, i.e. the prices are spread over the product's useful life. For non-durable goods, the two concepts lead to the same results. For durable goods, however, the results are not the same[27]. The application of an utilisation concept presents numerous difficulties.

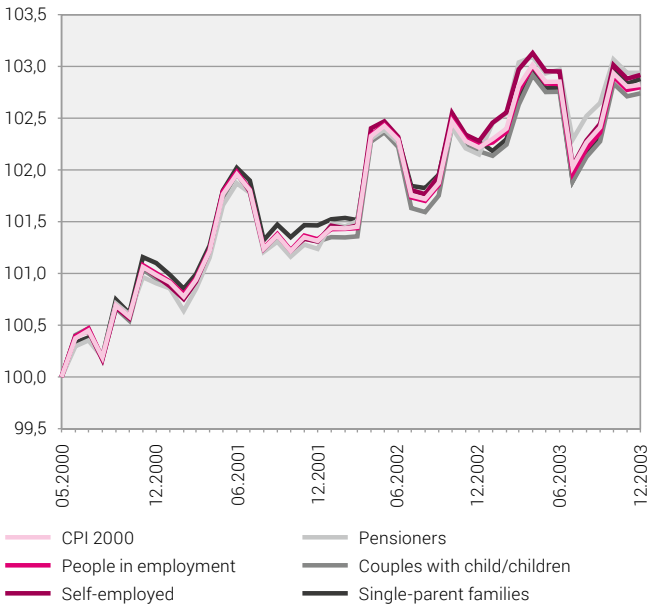
Lastly the **calculation method** is different. With the Laspeyres concept, the weights reflect the structure of past consumption. With the Fisher or Törnqvist concept, in contrast, the weights represent a combination of past and present consumption. As the structure of present consumption is only available after a certain time lag, an index based on the Fisher or Törnqvist method of calculation can only be calculated retrospectively.

For these reasons, the construction of a cost-of-living index, with a correct conceptual and methodological basis, is not a simple task. Each of the key concepts to be applied presents a major difficulty. This is why no country has so far taken up the challenge.

[27] Take, for example, a coffee machine purchased in January 2016 for CHF 500.–: For the CPI, the price will only be influential in January 2016. For the cost-of-living index, it will be spread over the useful lifetime of the product, say 5 years, i.e. CHF 100.– per year. This corresponds to the service flow provided by the product.

Appendix 7: Socio-economic consumer price indices

Evolution of consumer price indices for different population groups **G 14**



FSO – Consumer Price Index, 2000-2003

© FSO 2016

Between 2000 and 2003, the FSO has published the CPI for people in employment, the self-employed, pensioners, couples with children and single-parent families.

These indicators constituted an approximation to the price increase experienced by these population groups, it being understood that only the weights of the basket of goods and services were different. To obtain even more significant indices, it would have been necessary to carry out specific price collections, given that the choice of products and the sales outlets may vary depending on the groups of households.

The results are set out in the graph above: Over the whole period, the CPIs for different types of households differed at some point from the official CPI, with the exception of the CPI for people in employment that followed the same trend as the CPI. Observed differences were, however, limited.

The FSO's publications

As the central statistical agency of the Confederation, the Federal Statistical Office (FSO) has the task of providing Swiss statistical information to a wide range of users. Dissemination is done by topic with different information media via several channels.

The statistical topics

00 Statistical basis and overviews
01 Population
02 Territory and environment
03 Work and income
04 National economy
05 Prices
06 Industry and services
07 Agriculture and forestry
08 Energy
09 Construction and housing
10 Tourism
11 Mobility and transport
12 Money, banks and insurance
13 Social security
14 Health
15 Education and science
16 Culture, media, information society, sports
17 Politics
18 General Government and finance
19 Crime and criminal justice
20 Economic and social situation of the population
21 Sustainable development, regional and international disparities

The key publications

Statistical Yearbook of Switzerland

The "Statistical Yearbook of Switzerland" (German/French) published by the Federal Statistical Office has been the standard reference book for Swiss statistics since 1891. It contains the most important statistical findings regarding the Swiss population, society, government, economy and environment.

Statistical Data on Switzerland

Statistical Data on Switzerland is an appealing and entertaining summary of the year's most important figures. With 52 pages in a practical A6/5 format, the publication is free of charge and available in five languages (German, French, Italian, Romansch and English).

The FSO online – www.statistics.swiss

The Swiss Statistics website offers you a modern, attractive and up-to-date gateway to all statistical information. We would like to draw your attention to the following popular offerings:

Publication database – publications offering further information
Almost all publications published by the FSO are available in electronic form on the website free of charge. Print publications can be ordered by telephone on 058 463 60 60 or by emailing order@bfs.admin.ch.
www.statistics.swiss → Look for statistics → Catalogues and Databases → Publications

NewsMail – always up to date
Email subscriptions by topic with details and information on the latest findings and activities.
www.news-stat.admin.ch

STAT-TAB – the interactive statistical database
The interactive statistical database offers simple and customisable access to statistical results as well as the option of downloads in various formats.
www.stattab.bfs.admin.ch

Stat@tlas Switzerland – regional database and interactive maps

With more than 3 000 interactive thematic maps, the Statistical Atlas of Switzerland gives you an up-to-date and permanently available overview of captivating regional issues covering all FSO topics. Available in German and French.
www.statatlas-switzerland.admin.ch

SwissStats – statistics on the go

Selected, popular digital publications for tablets with interactive content, available from the Apple App Store and the Google Play Store. The App is regularly updated and upgraded.

Individual inquires

The FSO's statistical information service
058 463 60 11, info@bfs.admin.ch

The CPI measures changes in the prices of goods and services which are representative of the consumption of private households. It indicates how much consumers have to increase or decrease their expenditure to maintain the same volume of consumption despite fluctuating prices.

The Consumer Price Index is intended for many different uses and must therefore satisfy all kinds of criteria. These uses range from evaluating the economic system in terms of economic policy in general and monetary policy in particular to assessing Switzerland's ability to compete at international level. They also include the indexing of wages, pensions and other monetary values and by definition, in real terms, of economic growth as well as of salary movements and changes in turnover.

Since its creation in 1922, the CPI has been revised ten times (1926, 1950, 1966, 1977, 1982, 1993, 2005, 2010 and 2015). Regular revision of the index is important to take account of changes in market structures, product ranges and consumption. As part of these revisions, the CPI is calculated using a new base. These publication describes the methodological foundation of the current index using December 2015=100 points as its base. The next full-scale revision of CPI content and methodology is scheduled for 2020.

Print format orders
Tel. 058 463 60 60
Fax 058 463 60 61
order@bfs.admin.ch

Price
CHF 15.– (VAT not incl.)

Downloads
www.statistics.swiss (free of charge)

FSO number
855-1500

ISBN
978-3-303-05748-3

Statistics counts for you.
www.statistics-counts.ch