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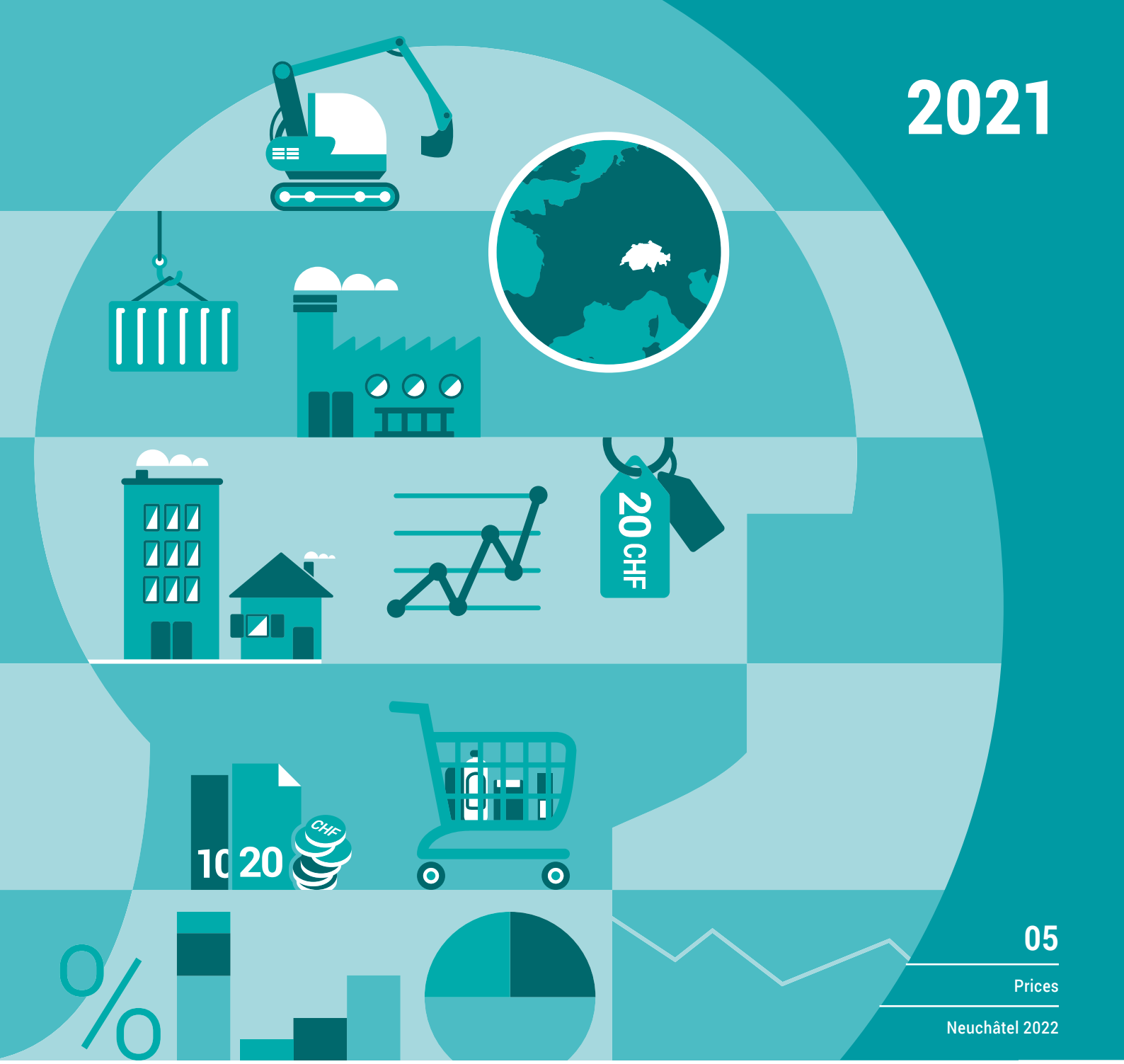

05

Prices

Neuchâtel 2022

Consumer Price Index (December 2020 = 100)

Methodological foundations

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Swiss Consumer Price Index (December 2020=100)

Methodological foundations

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Contents Project team,
Revision 2020 of the Consumer Price Index, FSO
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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 100 000 prices collected monthly throughout Switzerland from 8000 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 2.5).

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 2020, resulting in the adoption of a new index base (December 2020=100).

The new index (rebased to 100 in December 2020) 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 weights, and changes in collection and calculation methods) are being interlinked.

1.4 History of CPI revisions

Since 1922, the CPI has been revised on eleven occasions: in 1926, 1950, 1966, 1977, 1982, 1993, 2000, 2005, 2010, 2015 and 2020.

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 and update 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 computers (2010 & 2020),
- 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, new sampling frame, quality adjustment) (2010/2015).
- develop new sub-indices, e.g. an index of imputed rents for owner-occupied dwellings (2015) and an index for games of chance (2020).
- 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:

- The 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).
- The adoption and the expansion of new price collection techniques that optimise collection time and improve the quality of the collected data: use of scanner data from five major retailers (since 2008), use of touch-screen tablets for price collections in the field (since 2011), increased use of web scraping techniques to collect prices online (2020), introduction of online surveys (2015), introduction of an automated data exchange with a number of property managers (2020).

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 not factored into the CPI calculation?

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 and quality effect runs counter to the purpose of the Consumer Price Index, which is to measure pure price changes.

Moreover, compulsory health insurance premiums do not correspond to prices paid for a particular service or product. These transfer payments, by households to insurance companies, are used to finance health costs in case of illness. The CPI takes into account the price changes of various health goods and services (medical services, hospital services, medicines, etc.) in order to measure inflation. The goods and services are weighted based on total household expenditure. In addition to the expenditure directly paid by households (self-paying, excess), health insurance premiums also count toward the weights.

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

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).

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. As part of the 2020 revision, new expenditure items such as games of chance, trains to foreign destinations, car rental, passenger transport by ship, and lawyer services were introduced.

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 goods and services
- 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.

Various additional classifications are published in addition to the basic COICOP classification (see 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 **G1**

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						11.930
PG			Food					10.918
PG				Bread, flour and cereal products				1.736
EI					Rice			0.052
V							Rice	
V							Rice specialities	
EI					Flour and other cereals			0.087
V							White flour	
V							Other flours and starches	
[..]								
EI					Pasta			0.163
IA						Dry pasta		
V							Spaghetti	
V							Elbow macaroni	
V							Other pasta	

Main group = First subdivision of the private consumption in 12 main groups.
Product group = Grouping of expenditure items resp. product groups (product groups can be found at different levels of the hierarchical structure). There are 127 product groups in the basket of goods and services 2021.
Expenditure item = Lowest weighted position of the basket of goods and services that is fixed over a certain period of time. Expenditure items are the lowest positions for which index series are published. There are 281 expenditure items in the basket of goods and services 2021.
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 1174 varieties in the basket of goods and services 2021.

Source: FSO – Consumer Price Index, Basket of goods and services 2021

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 (20,1%) as on clothing (2,8% in 2021). To achieve economically correct results, the various price movements recorded must be weighted by the importance of the corresponding expenditure items[5].

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 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.
- 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 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.

[5] For instance, if rents increase by 2% and are weighted at 20.1%, rents contribute 0.4% to the price increase.

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

HBS t-2 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[7].

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.

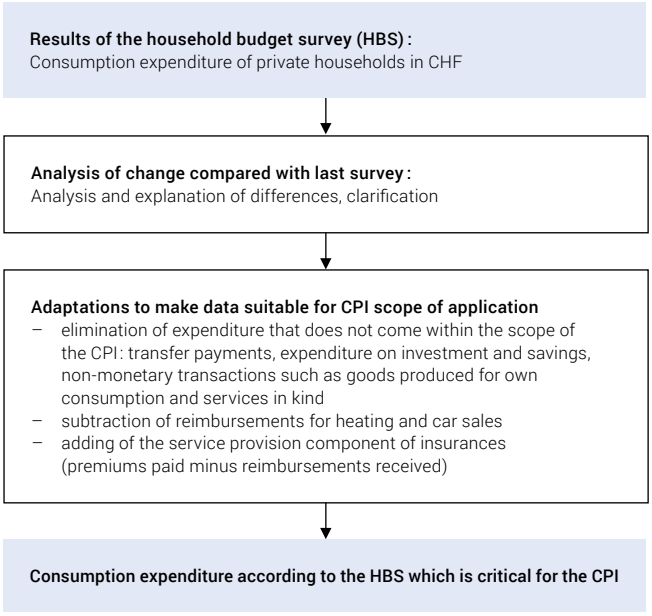
Although the HBS is the main source used for calculating the weights, the results provided may not always be detailed enough for some product groups or they may under-estimate actual consumer spending on them. This is the case for tobacco, for example. Other sources of information (trade data or market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

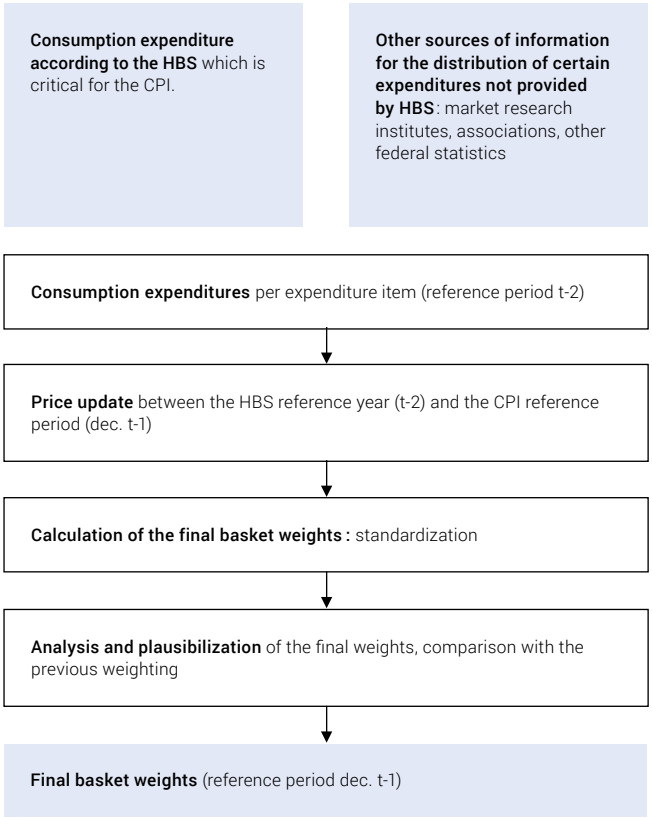
Graph 2 and graph 3 present the different steps leading from the HBS data to the final CPI basket of goods and services weights. As the HBS is conducted annually, the basket weights have been updated every year since 2002, making it possible to take fast account of changes in household consumption habits and to have weights that more closely reflect the actual consumption patterns of private households.

Stage 1: From HBS data to critical expenditure for the CPI G2



Source: FSO – Consumer Price Index © FSO 2022

Stage 2: From HBS expenses to CPI basket of goods and services weights G3



Source: FSO – Consumer Price Index © FSO 2022

[7] The methodology has had to be modified due to the impact of the coronavirus pandemic (see box).

CPI weighting process G 4

	Consumption expenditure by HBS code		
	reference year: t-2	Rice without added ingredients	CHF 2.32
		Rice with added ingredients	CHF 0.30
		…	
↓	**Consumption expenditure by expenditure item (CPI)**		
	reference year: t-2	1003 Rice	CHF 2.62
		1008 Flour	CHF 3.04
		…	
X	**Price update factor**		
	$\frac{\text{Index of expenditure item}_i \text{ Dec.t-1}}{\text{Annual average}_{t-2} \text{ of expenditure item}_i}$	1003 Rice	98.2 / 100.2
		1008 Flour	102.0/101.2
		…	
=	**Consumption expenditure by expenditure item (CPI)**		
	reference month: Dec. t-1	1003 Rice	CHF 2.57
		1008 Flour	CHF 3.06
		…	…
÷	**Total consumption expenditure**		
	reference month: Dec. t-1	Total	CHF 5 572
=	**Share of consumer expenditure in % = CPI weights in %**		
	reference month: Dec. t-1	1003 Rice	0.046%
		1008 Flour	0.055%
		…	
		Total	100.000%

Allocation to the CPI basket

Price update

Normalization

Source: FSO – Consumer Price Index, 2021

Traditionally, 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 consumption expenditures per 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).

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 2020 of the CPI, this drawback has barely any impact on the results, or at the very least on total inflation, which is why use of the method is upheld.

Coronavirus pandemic and weighting

In 2020, the COVID-19 pandemic led to numerous restrictions (shop closures and restaurant closures, etc.), which profoundly affected and changed consumption levels in many sectors.

Given these circumstances, the usual practice of using year t-2 data for the current weighting could not reasonably be maintained. The method's underlying assumption that household behaviour, and therefore consumption patterns, change little from one year to the next did definitely not hold true in 2020.

As household consumption expenditure in 2019 is no longer in any way representative of 2020, provisional data for 2020 from the Household Budget Survey (HBS) has been used as the main source for weighting purposes.

Although the data for the period of December 2019 to November 2020 was only provisional, the analyses and comparisons carried out showed the soundness of the results provided, even in such sensitive areas as package holidays, restaurants and hotels and airfares.

In contrast, the HBS data were corrected using external sources in two areas: new cars (data provided by experts) and, as usual, tobacco (data provided by the customs administration).

As the HBS data extended to November 2020, the price update has only been made for a reduced period. The adjustment factor is the ratio of the December 2020 index to the annual average from December 2019 to November 2020 – the period covered by the HBS. As expected, the impact on the weights was minimal.

The same methodology will be used for the 2022 CPI weighting. For subsequent years, however, nothing has been decided yet.

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).

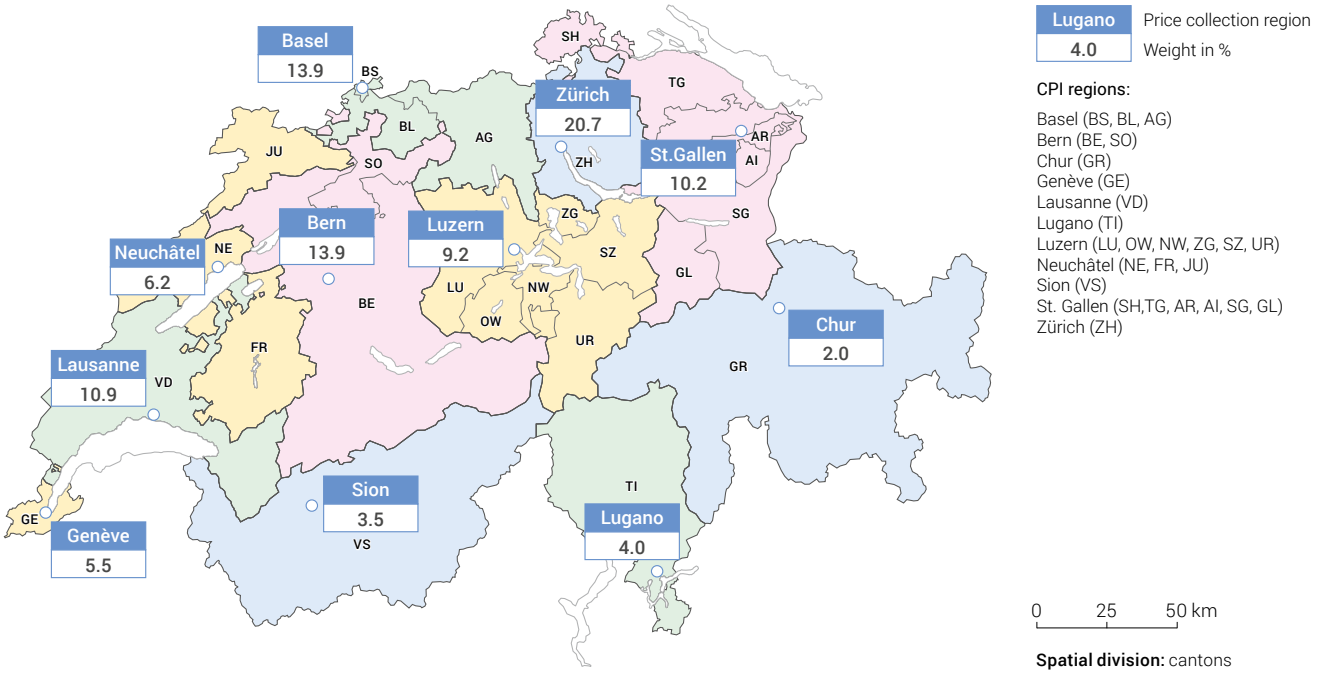
2.3.3 Tariffs

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.

[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.

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



Source: FSO – Household Budget Survey, part of the consumption expenditure by CPI region 2016 – 2018

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 precisely. The package holiday price survey is presented in Chapter 3.10.

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

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

Price collection regions

Prices are collected in **11 regions** (see G 5) 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).

[9] The major regions are supra-regional areas established in 1997 for the purpose of regional and international statistical comparisons. They are the Lake Geneva region, Espace Mittelland, Northwestern 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 2016 and 2018 are applied.

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 **8000 sales outlets**, property managers and owners of rented dwellings included, participate in 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 **1.2 million** 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 1 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 and airfares are partly collected over the first week and partly over the second week of the month.

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

2.3.7 Price-collection organisation and techniques

Price collection organisation

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 collectors who collect prices in about 1000 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 standardise collection practices (especially as regards quality adjustments).
- A **central collection** is carried out 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 7000 sales outlets.

Price collection techniques

Various techniques are used to collect prices:

- The vast majority of data is collected **in the field** using touchscreen tablets[12]. 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**[13]. The price collection with scanner data is managed by the FSO.

[12] The FSO has developed its own application for price collection. The source code can be downloaded free of charge at https://github.com/FSO-PRICES

[13] 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.

– The rent survey is carried out using a form that survey participants can complete on paper or online (eSurvey).
– 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 2020 revision. New price collection techniques were introduced, such as **web scraping**, which makes it possible to automate price collection online using bots, or an **automated data exchange** with a number of property managers in the context of surveying rent data. In addition, the use of scanner data was extended to part of the non-food range of goods of one of the retailers involved in the project.

Synergies with the Producer Price Index (PPI) and Services Producer Price Indices (SPPI)

The 2020 revision provided an opportunity to develop more synergies with the production of the producer and import price index. A system of cooperation already existed, especially for collecting prices for gas, electricity and hotels.

For some years now, the PPI team has been working to develop Services Producer Price Indices (SPPIs) and has therefore put in place the necessary price collections. Many of these services are partially offered to private households and are therefore within the scope of the CPI.

Building on the work done by the PPI, three SPPIs were integrated into the CPI basket of goods and services during the 2020 revision:

– Inland waterway passenger transport
– Car rental
– Legal services: law firms

These indices are calculated for the purposes of the PPI and are included directly in the CPI. However, some adjustments had to be made by the PPI team to match the production cycles of the CPI, in particular for car rental.

In addition, a fourth index has been introduced into the CPI, namely recreational boats, which are included in the Import Price Index (IPI).

It should be noted that this type of cooperation is to be extended further in the coming years.

For more information on SPPIs: *Services Producer Price Indices (SPPI): a methodological basis* Federal Statistical Office, Neuchâtel, 2020

2.4 Principles of price collection

2.4.1 Basic principle of price collection

Measuring a price change involves tracking the price of a specific item by the same sale outlet over time. On this condition alone, a pure change in price can be measured, i.e. a price change that is not caused by a quality change.

In order to respect this principle, the price collectors from the FSO and a commissioned company select items for every sale outlet during the base period. Afterwards they collect the prices of the chosen items each month at the initial sale outlet.

For standard products such as food, cleaning products or tools, this principle is easily applied. These products undergo few changes and remain available for years. In contrast, other products change over time, due to technological progress or fashion trends. This applies in particular to clothing, consumer electronics and new cars, where new models replace older ones. In order to measure only the pure price change, it must be determined to what extent the price difference between the two models is due to a difference in quality. This is known as quality adjustment.

2.4.2 Quality adjustment

Quality adjustments, i.e. the treatment of quality changes, are made in the following six ways:

– **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 2021 is considered as inflation.
This method is used in most product groups.

Article / Price	December 2020 (Base 100)	January 2021	February 2021
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 2021 is therefore split into two: 20 cents are considered as quality enhancement while 10 cents are seen as a price increase.
This method is mainly used for items surveyed using scanner data, if direct comparison cannot be applied.

Article / Price	December 2020 (Base 100)	January 2021	February 2021
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 2021 is split into two: 25 cents are considered as quality enhancement while 5 cents are seen as a price increase.

Article / Price	December 2020 (Base 100)	January 2021	February 2021
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.
This method is only used for clothing and footwear if direct substitution cannot be applied.
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 2020 (Base 100)	January 2021	February 2021
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
			imputed difference in price 5.66%
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 2021 as if it had possessed the characteristics that item B has in February 2021, which is tantamount to estimating the price of item B in January 2021. 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 2021.

Article / Price	December 2020 (Base 100)	January 2021	February 2021
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 2020 (Base 100)	January 2021	February 2021
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.

2.4.3 Handling of observations that are lacking

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 November 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.

Neutral imputation

A new method to impute missing prices is currently being developed (as of 2021). This method aims to be neutral on the evolution of the indices, so that only prices of available products influence the price trend. In practice, that entails imputing the change of its elementary index, for every missing product. This has to be done at the lowest level of aggregation, i.e. at the level of the calculation cell formed by the distribution channel and the region (see G6). Given the challenges the implementation poses to IT, the date on which this method will be introduced is not yet known. In addition, the conditions for its implementation will be the subject of further study during the 2025 revision.

In 2020 and 2021, this method was used for the treatment of missing prices due to the coronavirus pandemic in the following areas: clothing and footwear, airfares, package holidays, and hotels.

Example of a neutral imputation

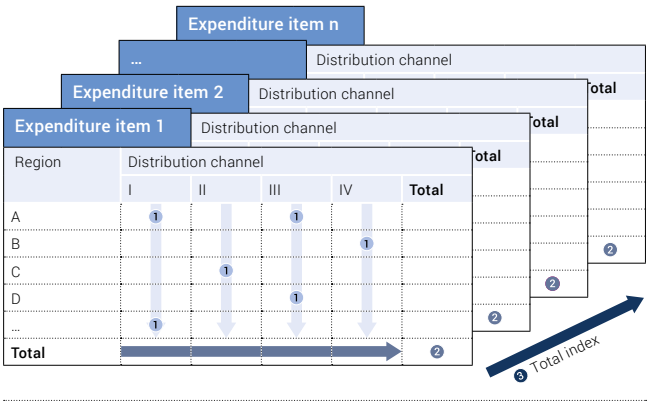
Price	December 2020 (base 100)	January 2021
Price of an overnight stay in hotel A, Graubünden	150.00	135.00
Price of an overnight stay in hotel B, Graubünden	175.00	158.00
Index of overnight stays in Graubünden based on hotels A and B	100.00	90.14
Price of an overnight stay in hotel C, Graubünden – missing in January 2021	165.00	148.76 Imputed price = 165.00 x 0.9014
Total index – Grisons	100.00	90.14

2.5 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 G6.

Stages of aggregation of the Swiss CPI **G6**



1 Basic aggregation
2 Intermediate aggregation
3 Upper-level aggregation

Source: FSO – Consumer Price Index

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 base month

The geometric mean is greatly valued in price statistics because it has interesting mathematical properties, such as transitivity[14], which is very important in a chain concept (see upper-level aggregation below). Moreover, the results it provides take account of an elasticity of 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[15].

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

[14] 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....

[15] 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: $MRP = \frac{1}{n} \sum_{i=1}^{n} \frac{p_i^t}{p_i^0}$ This method assigns the same importance to each price variation.

$I^{L}_{T,m/T-1,b}$ = 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 in December (which represents "b" in the above formula), since 2001 (see Chapter 2.2.2).

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.

3 A closer look at some specific indices[1]

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 dwellings 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 16%, 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. It comprises almost 10 000 dwellings in total.

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 (see T 1) 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 2021, cell weighting have been calculated on the basis of the structural survey of the 2016 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– 20years	> 20 years
Number of rooms	1	0.110%	0.067%	0.100%	3.489%
	2	1.538%	0.586%	0.716%	12.513%
	3	3.285%	1.810%	1.985%	28.031%
	4	3.303%	2.497%	3.141%	24.411%
	5	0.821%	0.751%	1.214%	7.208%
	6	0.140%	0.145%	0.282%	1.857%

Source: FSO – Consumer Price Index, 2021

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[2], which is initially based on the data from population registers and the Federal Register of Buildings and Dwellings.

[1] Fact sheets for each of the sub-indices presented in this chapter can be found in Appendix 2.

[2] *Stichprobenrahmen für Privatpersonen und Haushalte (German) – Cadre de sondage pour les enquêtes auprès des ménages (French)* (Sampling frame for private individuals and households)

The selection of the rental index sample is 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 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.

Sampling weights factor in the selection process and non-response in connection with the survey.

3.1.5 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 dwelling 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), structural details about the dwelling (type of building, number of rooms, surface area, year of construction, storey, renovations) and information on owner type.

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 dwellings that do not fall within the survey framework – namely chiefly owner occupied dwellings – and to obtain the address of the landlord. Following the 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.

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 second reminder. Since November 2020, the second reminder has been made in writing, replacing one by telephone. This change was motivated by the increasing difficulty of reaching private households via landline due to a continuous decline in landline connections. Only a written reminder is sent for the initial 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 results. All in all, it takes three months from start to finish.

Automated Data Transmission
As part of the 2020 revision, the FSO and a provider of a property management software launched a joint project for the automatic transmission of data between the FSO and professional landlords. This project aims to both modernise collection techniques and reduce the burden on professional landlords. This project will make it possible to transmit data as XML files via a secure asynchronous data exchange (Sedex).

3.1.6 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 dwellings 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 for incoming and outgoing dwellings. The model used up until 2020 was developed by a company specialising in research on the Swiss property market. It was replaced by a model developed by the FSO as part of the 2020 revision.

Update of the hedonic model during the 2020 revision
The new hedonic model for rents was calculated with rental index data from 2014 to 2018, supplemented with geolocation data. Thousands of models differently combining the available variables in various forms (categorisation or transformation) were tested and evaluated using multiple indicators and cross-validation. The most promising models were manually revised in terms of the choice and form of the variables. Further tests were carried out regarding the treatment of influential observations and the choice of the estimation period. The results were assessed by an international expert.

The variables in the final model concerning the structure of the dwelling are age, number of rooms, living space, storey, dwelling type (multi-dwelling building or single family house), inclusion of an indoor parking space in the net rent, and dwelling structure (standard dwelling, duplex or penthouse).

The used information about the lease is the year of conclusion of the current lease, the year of the rent survey, the tenancy type (cooperative or subsidised dwelling, rent reduction due to a relationship of kinship or friendship between tenant and landlord, rent reduction related to caretaker services or other), and the type of owner (private individual, pension fund, insurance or investment fund, cooperative, public authority, property or construction company or other).

The included geolocation variables are linked to each building via its Federal Building Identification Number (EGID). The model uses information on the municipality in which the dwelling is located, also called the "macro location". These variables are the canton, the type of municipality (from a typology of nine types), the travel time by motorised private transport to the nearest core city (Basel, Bern, Geneva, Lausanne, Lugano, or Zurich), the ratio of second-homes and the tax burden. Finally, the model uses information on the location of the building within the municipality, also known as the "micro location". The variables are road, rail and air traffic noise, the accessibility by public transport, the proximity to a lake or a power line, the potential for mountain or lake view, and the slope of the land.

The model explains 79% of the variance in the rental prices and the mean absolute error between the actual observed rent and the rent predicted by the model is CHF 197. Detailed information on data, methodology and results of the model is available on the FSO website (FSO, 2021). Compared with the hedonic rent model used up until 2020, the new model is based on more recent data, includes additional variables (e.g. tenancy status) and offers better explanatory power than the previous model (+13% of explained rent variance).

3.1.7 Treatment of all-inclusive rents

The calculation of the rental index is based on net rent, without incidental charges. 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 results is extremely limited.

3.1.8 Calculating the rental index

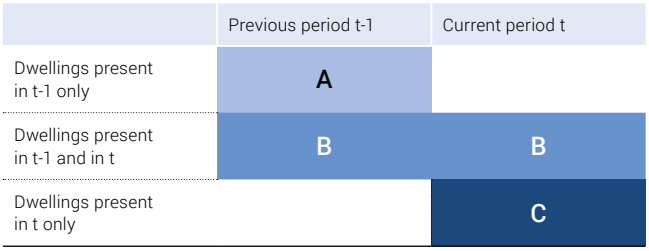
Basis
Each observed rent is attributed to a cell in the post-stratification matrix. Two sub-indices are calculated for each cell (see G7): one for the panel segment, i.e. observations included in both the current and previous period, and one for the rotating segment, i.e. observations coming into and 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 2020=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 G7



Source: FSO – rental index © FSO 2022

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 (rents) 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.

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

where:

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

$\tilde{x}_A^{t-1}$ = 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 arithmetic 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).

Until 2015, the change in the rental index was imputed to owner-occupied dwellings. In 2016, an enhanced rental equivalence method was introduced. A specific index of owner-occupied dwellings called the Index of Imputed Rents for Owner-Occupied Dwellings has been released since then. Rents have therefore been composed of two sub-indices since 2016: the rent index and the imputed index for owner-occupied housing.

This index is calculated based on the particular structure of this market (source: 2016 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, cooperative 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, 2021 © FSO 2022

With the exception of cell weights and dwellings with special rental status, the index of imputed rent for owner-occupied dwellings is based on the same data as the rental index. The calculation method is the same as for the rental index. The publication of the two indices allows a transparent distinction to be made between the rents actually surveyed in the rental index and the imputed data in the imputed rent for owner-occupied housing.

Differences between the two indices have remained limited for the past five years. As price trends were less pronounced for large dwellings, the index of imputed rent for owner-occupied housing increased slightly less than the rental index (2015–2020).

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.

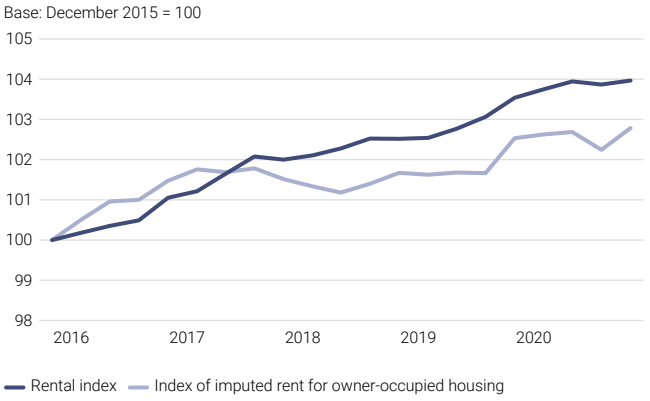
This method is particularly well suited to the Swiss market, where over 60% of households are tenants. The rental market is liquid, diversified, relatively free of regulation and it meets the needs of a large portion of the population. As such, observations of the rental market provide an accurate idea 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 in the past 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.
- 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.
- 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.

Although the residential property price index (IMPI), which has been published since 2019, opens up new opportunities in this regard, rental equivalence remains the only feasible way to survey price trends for owner-occupied housing, at least in the short term.

The rental index and the index for imputed rent for owner-occupied housing **G 8**



Source: FSO – Consumer Price Index, 2021 © FSO 2022

3.3 Maintenance and caretaking

Since 2016, the FSO has been publishing a price index for maintenance and caretaking that tracks price trends for building maintenance, lift maintenance, cleaning of communal areas, garden maintenance and chimney cleaning. These are services that are billed for both rented dwellings and condominiums, usually as part of the settlement of ancillary costs. Private households spend more than CHF 2 billion on this every year.

By far the most important category is building maintenance. The FSO draws on a private database for its price collection in order to minimise the workload for those being surveyed and, where possible, to make use of existing data sources. The database includes 1600 managed properties and some 22 000 residential units. This covers both smaller and larger mandates throughout Switzerland. The survey is based on an analysis of invoices from 12 consecutive months and covers all operating costs (borne by the owner and tenant) incurred for building maintenance in properties with a high proportion of residential units.

Only mandates whose quantitative parameters have not changed significantly since the previous year are surveyed. Mandates for which the managed space has changed are excluded, for example. This is intended to ensure that the resulting price changes are actual price changes and not caused by altered quantities in the definition of the mandates from year to year.

Price collection for lift maintenance is carried out in a similar way, but considerably fewer data on this aspect are available for evaluation. When it comes to garden maintenance, an annual online survey is carried out. For cleaning services, the CPI draws on corresponding PPI surveys.

Since ancillary cost settlements are made once a year, the survey and index publication for maintenance and caretaking are also carried out annually.

3.4 Other services relating to the dwelling

Refuse collection, water supply and sewerage are other services relating to the dwelling that are surveyed. Since 2016, the results for these three services have been published separately. Previously, they were grouped together.

In order to collect the prices of these services, three types of households have been defined for which the corresponding costs are surveyed. The definition of household types is appropriate, because charges may be influenced by both the occupancy and the characteristics of the dwelling and property. As part of the 2020 CPI revision, the household types were adapted to correspond as well as possible to today's reality. (see T 3). In addition, a number of new variables have been added in order to collect basic charges. This information can be used to survey the majority of the fees charged by the municipalities.

However, given the wide range of types of organisation and of communal regulations, not all details that may influence fees can be surveyed. For example, organic waste collections are not surveyed. These are not charged individually everywhere and are therefore not particularly important (compared with refuse sacks and basic fees). Charges for sewerage are only surveyed in central locations. A complete survey of fees for each zone would be too elaborate for the purpose of a price collection. Finally, one-off connection fees are not considered as consumption expenditure, but investments, and are therefore not surveyed. Similarly, prices for services financed by taxes are not included in the index (refuse collection in Geneva).

Other service charges relating to the dwellings are only surveyed once a year, because there are only few price changes. Furthermore prices usually change at the start of a calendar year. As a rule, the fees are publicly available and are collected online. The collection includes fees are either charged to the residents or to their landlords. In the second case, landlords pass on the service charges to the tenants concerned by means of ancillary cost settlements. Municipalities usually charge an annual basic fee and a consumption-based fee. To survey prices, the FSO calculates the costs resulting from these two tariffs and adds them up to a total charge for each of the three household types. The price indices are derived from the ratio of the current year's total charges to those of the previous year.

Services relating to the dwellings are usually provided by the municipalities and its charges should therefore be surveyed at the municipal level. However, fees charged by municipal associations, public companies and cantons are also surveyed. A sample of the 50 most populous municipalities has been defined for this purpose. Overall, the CPI covers well over 30% of all service charges related to dwellings paid in Switzerland.

Household types for services relating to the dwelling **T3**

Household types for services relating to the dwelling	1	2	3
Number of people in household	1	2	4 (2 children)
Type of ownership	Rent	Rent	Ownership
Dwelling			
Number of rooms	3	4	5
Living space (m^2)	79	106	137
Number of 35-litre sacks	41	82	164
Number of 60-litre sacks	3	6	12
Water consumption (m^3/year)	52	104	208
Building			
Number of homes	12	5	1
Gross floor area (m^2)	1188	665	171
Building volume, SIA (m^3)	4396	2461	633
Plot area (m^2)	1200	900	500
Sealed area (m^2)	597	499	186
Meter diameter (mm)	25	20	20
Water meter nominal load (m^3/h)	7	5	5
Water connection nominal width	1''	3/4''	3/4''
Peak volumetric flow rate (l/min)	117	83	83
Building insurance value in CHF	4 000 000	2 250 000	600 000

Source: FSO – Consumer Price Index, 2021

3.5 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, clothing prices are 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. 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.

In addition, the collection of clothing and footwear prices is subject to strict rules:

- All missing or discounted items must be replaced at the beginning of the season with items from the new collection.
- All missing items are replaced immediately during the course of the season.
- No replacements are made at the end of the season and during sales.

These rules imply a high number of replacements each month. 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 the sample's level of quality, each time a replacement is made, price collectors are asked to select an item that has the same qualitative characteristics as the item that has been replaced. Therefore, the price collectors record the characteristics of every item. The brand and the fibres should, where possible, be the same. With regard to articles of clothing, the processing of replacements[3] and therefore quality adjustment is 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 2.4.2). The number of replacements is particularly high when new collections come onto the market in March/April and September/October. About half of the replacements are considered as direct replacements, for the other half the bridged overlap method is applied.

The clothing and footwear sample consists of over 7200 different items, 55% of which are seasonal items. In total, more than 5000 prices are collected each month.

[3] During the first price collection of the season, the sample churn rate is about 30%.

3.6 Medical services

In Switzerland, outpatient medical services at medical practices and hospitals are charged according to an individual service tariff. This is based on a system of medical tariffs called TARMED ("tarif médical"), which is applicable throughout Switzerland since 2004. For each individual service, TARMED lists a definition of the service and a tariff score. The tariff score corresponds to the average cost coverage for the service. The range of services and the funding system vary from canton to canton, which is why a cantonal tariff point value is specified in addition to the tariff score, giving the various stakeholders involved a certain amount of room for manoeuvre.[4]

The price for an individual outpatient service is calculated by multiplying its tariff score by the applicable tariff point value.

For price measurement, a separate basket of goods and services is put together for both service provider types (medical practices and hospital doctors). Each basket comprises the 100 individual services with the highest turnover per canton. The price changes are weighted by turnover up to the published expenditure item level (medical practices and hospitals).

The selection of the services and their weights are updated every year in December. Throughout the year, reported changes in the various tariff point values are captured and thus included in the CPI.

TARMED has been in a transitional phase for some time, but has remained relatively stable except for a few updates. TARDOC, the tariff system set to replace TARMED, has already been announced, but the introduction date and the associated modalities are still unknown. In price statistics, the transition to a new tariff system can be accompanied by difficulties, especially if the definitions of individual services are extensively revised, so that services cannot be compared from one period to the next. The newly defined services have to be mapped as best as possible to the existing services. As a result, the sample is inevitably reduced and comprises only the comparable services during transition.

[4] The tariff point values of hospital doctors are negotiated with insurers at the institutional level. If no agreement has been reached, the cantons may define provisional values so that ongoing operations can be maintained.

3.7 Medicines

The medication market is highly regulated. On the one hand, many medications are only available on prescription, while on the other, only the medications on the list of pharmaceutical specialities (LS)[5] are covered by basic insurance. This is relevant for price statistics because the listed medicinal products that account for the majority of turnover in this area[6] have regulated prices[7].

3.7.1 Treatment-oriented measurement concept

For medicines, the traditional approach to measuring prices is problematic. Observing a specific medicinal product would only show price reductions due to the typical life cycle of medicines. Prescribing and dispensing practice changes constantly due to the introduction of new product variants (successors, imitators, generics, pack sizes, dosages, and dosage forms) and targeted financial incentives (e.g. lower insurance excess for generics). This leads to product substitutions and influences general treatment costs for a specific disease.

In 2007, a revised medicine price index was introduced to observe prices of a particular medication instead of prices of a particular product. However this kind of measurement concept inevitably requires more data. In addition to the actual price information, detailed information on composition, form, indication and quantities are necessary. These data are based on detailed monthly order information from Swiss pharmacies, doctors and hospitals.

The consumer price is composed of the ex-factory price, the pharmacies' distribution share and the VAT. This is supplemented on a case-by-case basis by service-based remuneration ("leistungsorientierte Abgeltung", or LOA) by pharmacists (purchase check and medication check), which is handled separately and only taken into account in the final aggregation.

3.7.2 Calculation of elementary indices and aggregation

The more than 10 000 individual products ordered each month are structured according to the following criteria:

- By ATC code (Anatomical Therapeutic Chemical Classification System: describes what the product is used for, how it is used and combined)
- By active substance(s)
- By dosage form
- By convertible quantity and dose units

All medicines with an identical active substance composition and the same therapeutic benefit (according to indication) are collected in approximately 1500 calculation cells. All product variants (original preparations, successor products, generics) and all package sizes are taken into account.

Example of the content of a calculation cell:
ATC class B01AC06 (blood and haematopoietic organs; antithrombotic medicinal products; platelet inhibitors; acetylsalicylic acid) in tablet form and convertible gram units:

ATC class B01AC06	Content	Quantity (g)	Price T in CHF	Turnover T in CHF
Package A	10 film-coated tablets of 500 mg	5	5.90	1 180.00
Package B	30 tablets of 1 g	30	16.90	9 142.90
Package C	50 tablets of 1000 mg	50	18.90	16 821.00

This database is used to calculate the weighted geometric average price per standardised unit of active substance for the current month and for the previous month. The price series are weighted by their turnover over the two months of comparison.[8] The ratio of the two average prices is used as an elementary index. These elementary indices are subsequently aggregated in several stages using the ATC classification. At this stage, the previous year's turnovers are used as weights.

With the inclusion of the sub-index for pharmacist services, the medicine price index is formed in the final aggregation.

The chosen approach makes it possible to survey not only the actual price changes but also any price effect resulting from product substitutions on an ongoing basis. This is made possible by access to high quality, detailed, up-to-date market data as well as the specific calculation method.

[5] The prerequisite for inclusion on the specialities list maintained by the Federal Office of Public Health (FOPH) is prior testing of safety, quality and efficacy during the authorisation procedure by the Swiss Agency for Therapeutic Products (swissmedic) and an assessment of cost-effectiveness by the Federal Medicines Commission (FMC). The three admission conditions of efficacy, utility and cost-effectiveness must always be met for both inclusion on the SL as well as for any subsequent review (Article 32 of the Federal Act of 18 March 1994 on Health Insurance (KVG; SR 832.10)).

[6] Around two thirds of all medicinal products are listed on the SL, with medicinal products covered by health insurance companies accounting for 80% to 90% of total turnover. Households contribute up to a third of medication costs directly (self-paying, excess).

[7] The price listed is determined on the basis of the treatment costs for the same or comparable illnesses with currently approved medications ("therapeutic cross-comparison") and a comparison with ex-factory prices abroad ("international comparison"). Every year, approximately one third of all medications on the SL are checked. This may lead to price adjustments or even to their removal from the SL. If the price of an original preparation is adjusted, this will also affect its generics, which must be at least 20% cheaper than the original preparation. The expiration of patent protection of an original preparation will lead to a review of the admission conditions on the SL. The cost-effectiveness is assessed differently, because the preparations are no longer cross-compared to other patent protected preparations but with preparations whose patents are expired too. This leads to lower comparison price levels since research and development costs are no longer taken into account.

[8] The average price for the previous month is also recalculated monthly so that the updated quantity structure does not influence price trends.

3.8 Hospital tariffs

3.8.1 SwissDRG tariff system

The new tariff system SwissDRG (Swiss Diagnosis Related Groups) was introduced in 2012 and, since then, regulates the charges of inpatient hospital services across Switzerland.

The flat rates per case catalogue consists of a uniform case classification (DRG) and covers the known spectrum of treatments with over 1000 case definitions. In addition to a designation, each case group is evaluated based on the complexity of the associated cases (cost weight). In contrast, the base rate for a reference case, with a standardised cost weight of 1, is not uniform. The base rate is agreed individually between the service providers and health insurance companies and is approved by the responsible canton.[9]

3.8.2 Charges

Charges are calculated by multiplying the cost weight of the DRG with the base rate set by the cantons in accordance with the current tariff system. The higher the cost weight the higher the charge. This charge, which is paid either by households directly (self-paying or excess) or indirectly (via insurance premiums), is relevant for the CPI. Cantonal contributions to hospital financing are excluded from consumer price statistics.

3.8.3 Concept, calculation method and aggregation

In any given year, that year's tariff system has to be compared with the tariff system of the previous year. Prices are only measured for services that have not changed. In terms of the CPI, the list of services can be regarded as a basket of goods and services. The catalogue of services performed by a university hospital is inherently wider than that of a regional hospital or maternity clinic. The basket of goods and services is therefore structured and weighted individually for each hospital in accordance with the detailed FSO per-case cost statistic "Statistik diagnosebezogener Fallkosten (FKS)". In 2020, baskets of goods and services were created for more than half of the hospitals comprising up to 250 services.

For each service included, the charged prices for the previous year and the current year are calculated and indexed. If the service provider has negotiated individual base rates with the insurance companies, the price is calculated several times.

Example: Price calculation for case N for insurance company A in hospital B

Year	Cost weight	Base rate in CHF	Price in CHF
T-1	0.5	9 000	4 500
T	0.5	10 000	5 000

The elementary indices derived from the per-case prices are aggregated at the hospital level. The individual elementary indices are weighted according to the services turnover and the premium volume of the financing insurance groups (whose base rate is applied).

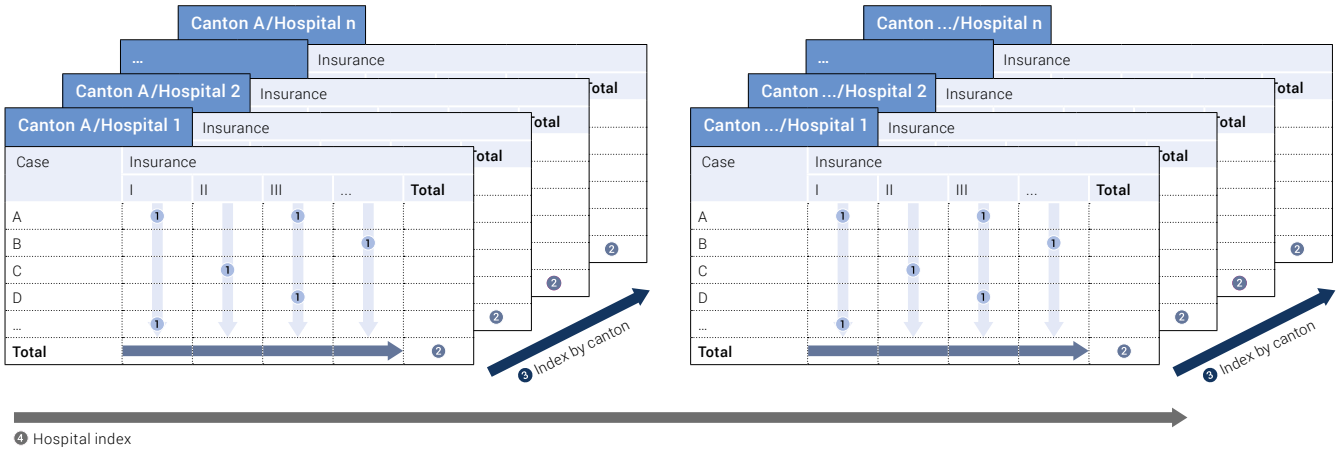
The individual hospital indices are aggregated first at the cantonal level and finally at national level. Here, too, the weights are based on the per-case cost statistic (FKS).

Tariff systems are particularly problematic for price statistics because the definitions of services can change, making it impossible to compare the two versions exactly. As a result, no comparison can be made between the many methods for invoicing hospital services used up until 2011 and the first SwissDRG version used from 2012 onwards.

Since 2013, the hospital tariff index has been calculated and published every summer in accordance with the SwissDRG tariff.

[9] In practice, insurance companies do not negotiate the contracts individually, but in groups. If no agreement can be reached, the canton sets the base rate.

Stages of aggregation of the hospital services price index **G 9**



Source: FSO – Consumer Price Index

3.9 Insurance

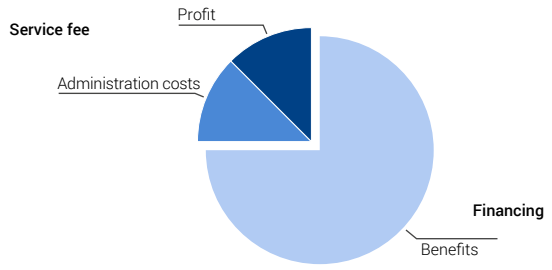
3.9.1 Treatment of premiums in price statistics

With an insurance policy, households "buy" financial protection against a particular risk. If the insured event occurs, the loss will be compensated by the insurance company under the conditions of the applicable policy. The benefits, the part of the premium that is used for reimbursement of claims, is a form of redistribution among households and thus not an expense for insurance services.[10]

The total amount of benefits depend on how many insured events have occurred. They are the variable costs of risk coverage: In addition to price, quantity and quality of the claims influence the premium. In order to observe the pure price trend, the quantity and quality of the observed object must be fixed. In the CPI, this is done by splitting the premium into its basic components.

The largest component of premiums is benefits (the amount the insurance companies pay for the settlement of injuries, losses or damages suffered by the households). The prices for the underlying goods and services are collected in the corresponding sections of the CPI basket. These include the price trends for services provided by doctors, dentists, hospitals, physiotherapists and other therapists, home care, opticians, acousticians, as well as medicines and medical aids in the main group "health". Consequently, the financing share of premium expenditure is also allocated to "health" in the weighting of the basket of goods and services.

Premium components[1] **G 10**



1 fictitious data, for illustration purposes only

Source: FSO – Consumer Price Index

After deducting the benefits, only the service fee remain in the product group insurance. Service fees comprise the administration costs and the profits. The percentage of the service fees can be estimated globally on the basis of published volume data. Although this is an estimate, it meets the demands for the weighting. In contrast, there is no actual market price for the service component of an individual policy that could be observed for price statistics. Thus, the CPI, uses gross premiums.[11]

10 The ratio of premiums to benefits varies greatly by household. If a household receives more money for claims payed than it spends in premiums, its net expenditure for insurance services is negative.

11 Most other European countries also use the gross price (premium in accordance with the policy) to measure price change and the net approach (premiums paid net of claims paid by insurers) for the weights. This "gross-net approach" is generally considered the best way of estimating insurance coverage in price statistics.

3.9.2 Price collection

Since 2000, the CPI basket of goods and services has included supplementary hospital insurance, household and personal liability insurance and vehicle insurance. Premiums from the largest insurance companies in Switzerland are surveyed annually as at January.

Prices or more appropriately, premiums, are surveyed using a selection of policies with a fixed specification of policyholders, insured objects and benefits ("service bundle approach"). The survey form is adapted to the practice of the individual insurance company and is therefore not uniform.

Supplementary hospital insurance
The CPI collects prices for up to 520 individual premiums per service provider in the categories: general wards anywhere in Switzerland, semi private wards and private wards. The prices are stratified by age, gender and canton. These results are also incorporated into the health insurance premium index, where they are published in detail.

Household contents insurance
Between 10 and 15 household contents insurance premiums are collected per insurance company. The policies include personal liability and are paid by five fixed sample households (defined by number of persons, size of dwelling and sum insured). The cantonal breakdown can be simplified, as the premiums are the same throughout Switzerland except in the cantons of Nidwalden and Vaud.

Vehicle insurance
Per vehicle insurance company, 144 premiums (liability, partial and fully comprehensive insurance) are collected by questionnaire. The sample policies are based on six vehicles two types of vehicle owner and four specific municipalities. More detailed specifications are not considered necessary for the purpose of price statistics.

There are many price relevant characteristics, such as age, gender, place of residence, date of driving test, no-accident status, nationality and type of vehicle financing. This information about policyholders could be specified in the survey form and is therefore unproblematic. The price relevant criteria about the vehicles, however, cannot be defined. If, for example, the model year of a vehicle is a fixed criterion, the sample vehicles quickly become obsolete, increasingly notional and decreasingly representative. Conversely, ongoing, uninterrupted vehicle model updates can only be defined if the technical specifications remain comparable.

In 2020, the FSO, in cooperation with insurers, looked for a more streamlined method to collect prices. This new approach is based on the insurance provider's specific policy portfolio for the current year. These policies serve as a fixed quantity structure. Thus the average premiums[12] can be calculated according to the current year's tariff and according to the coming year's tariff and finally compared with each other.

This change corresponds to the unlikely event of all policyholders paying the new tariff. However, the new tariff only applies to new customers or existing customers who have changed their vehicle. All existing policies, on the other hand, retain the contractually agreed premium, subject to the tariff applicable at the time they were taken out. It is not possible to predict which policies will change. Instead, the insurance companies report the percentage of new policies in the current year. This percentage can still be used to estimate the share of policies that will be affected by price changes and the share of policies without price change in the coming year. This makes it possible to calculate the price change for the whole vehicle insurance portfolio. In 2021, half of all insurance companies are already reporting vehicle insurance premiums under this new approach.

Compulsory health insurance
Expenditure for compulsory health insurance is not a voluntary consumer expenditure but, like taxes and social insurance, a mandatory transfer expenditure which finances the public sector or sectors of public interest. This includes the provision of basic healthcare for the Swiss population, the costs and benefits of which are distributed among all citizens by law in accordance with the principle of solidarity.[13] Accordingly, the national accounts do not include expenditure on compulsory health insurance as private consumption and regard premium expenditure as a transfer payment to the financing of basic health care.
Thus, unlike private insurance, price trends for compulsory insurance is not covered in the CPI. Regarding the CPI basket of goods and services, compulsory health insurance premium expenses are allocated in full to the weight of the main group "health". The corresponding expenditure items are weighted by household expenditure paid directly (self-paying or excess) and indirectly (via the insurance companies).[14]

[12] The geometric mean is used.

[13] Premiums are per-capita premiums, i.e. all insured persons pay the same fee for the same policy. However, low-income households are entitled to premium reductions, which are financed by income-dependent taxes.

[14] Under the Health Insurance Act (KVG), no profit may be made in relation to compulsory health insurance. In addition to the benefits, the administrative costs are allocated to the weight of "health" as well.

3.10 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
- length of stay
- type of double room (e.g. standard, superior, deluxe, junior suite, etc.)
- type of board (e.g. breakfast, half-board, all inclusive)
- airport of departure
- departure date

The price of each package defined in this way (e.g. 2 weeks, Grand Palladium Palace Resort and SPA, Punta Cana, double room, AI, departure: Friday, 2nd week of the month, in 2 months, from Zurich) is collected over time.

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 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.

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

The example below explains how the prices collected are accounted for in the two indices. In total, some 260 price series are collected each month.

The current sample is based on the most popular travel destinations for Swiss people (2015) in each category (overseas beach holidays, city breaks, Europe and North Africa beach holidays and cruises and tours). The choice of hotels is based on customer reviews.

Due to collection difficulties related to the coronavirus pandemic and uncertainty about the conditions of travel, the sample was not updated in the 2020 revision. It should be noted that since April 2020, the missing prices have been imputed using the neutral imputation method (see Chapter 2.4.3).

Example of price collection for package holidays

	2022												
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	

	2022												2023	
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.*

3.11 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 and departure airports is made according to their importance (number of flights, number of domestic passengers and average price per destination) based on statistics from the Federal Office of Civil Aviation (FOCA).[15] These choices are usually reassessed at each revision. Nevertheless, due to the coronavirus pandemic, the choice of destinations will be revised each year until the situation has normalised.

The same methodology used for package holidays is also used to collect airfares. 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 of January 2021, airfares are collected twice a month, on the 1st and 10th day of the month. The collected price is that of the cheapest ticket at the time of collection. As with package holidays, the departure airport is fixed, while the airlines are considered to be perfect substitutes. Airlines that appear on the list of banned air carriers are excluded.

It should also be noted that the price collection of international train travel, introduced in the 2020 revision, follows the same methodological principles as airfares and package holidays.

[15] Since December 2020, the calculation of the airfare index has been structured by departure airport (Zurich, Geneva, or Basel) and destination continent (Europe, Asia/Oceania, Africa, or America) in order to best represent each destination's market share for each departure airport.

3.12 Consumer electronics

Consumer electronics encompasses electronic devices and accessories for various entertainment purposes such as audio, video, photography, or gaming, etc.[16] Technological progress and new usage patterns pose great challenges for the price collection of consumer electronics. The rapid product improvements lead to short life cycles marked by constant price decreases and consequently to numerous replacements.

The selection of the sample, the choice of replacements and the timing of product replacements are therefore crucial factors. If prices are collected with a focus on existing (matching) products, the range of products steadily shrinks, moving into extreme price segments, not least because competitive suppliers are removing them from their core ranges. If the switch to the new product categories is made too early, however, the high introductory price and technological advancement during the launch phase can become a problem. The short lifespan and high launch prices cause a sharp drop in prices. Furthermore, it cannot be ruled out that some manufacturers will rely on incorrect standards in the innovation phase and subsequently fail to launch a comparable successor product.

Selection of product sample and replacement

In order to overcome these problems, model series that are both representative and as fully developed as possible are selected, thus increasing the chance of finding a comparable successor product. Products should be available, as representative as possible and specified precisely. The selection of products is based on a variety of information. On the one hand, product presentations by manufacturers, events and trade fairs, media reports and tests are used to assess the quality of the products. On the other hand, online shops provide information on availability and sales ranking. In addition replacements can be better managed by means of a coordinated price collection.

Today, more than 150 different products are collected in the various categories (including telecommunication equipment and IT peripherals), resulting in more than 1200 price reports every month.

If a product in the sample needs to be replaced, it should ideally be replaced directly by the successor model or by a technically comparable product. Comparability is assessed at a monthly coordination meeting dedicated to this survey. The individual product specifications and the price segment are taken into account, as well as the consumer perspective: What would the customer decide in view of the current purchase options?

Comparable products are directly substituted and the price difference between the two products is fully reflected in the index. If no direct substitute is possible, the old price series is terminated and a new price series started.

[16] Telecommunication equipment and IT peripherals are covered in the same survey using the same method.

Price collection

Since January 2016, prices have been collected exclusively online. In addition to online-only shops, bricks and mortar retail prices are also collected online. The market share of e-commerce depends on the product category and makes up between one (TV's) and two thirds (photographic equipment) of the overall market. Furthermore, most retailers' online prices are identical to their offline prices, which is why the online survey has a very good overall market coverage of well over 50%.

The data is collected centrally at the FSO via the retailers' online shops or on the price comparison website toppreise.ch. We pursue a product-oriented approach by looking for the same, specifically selected products in all points of sale. On toppreise.ch, we also collect the lowest price for the product in question irrespective of the retailer. Each retailer is weighted by its estimated turnover (online and bricks and mortar), including "toppreise.ch".

Innovation, short life cycles and frequent replacement of technical products

In the past, technical devices were clearly geared towards a single use and a specific medium. Today, these categories are increasingly blurred, and digitised content is no longer dependent on a physical medium. This is most clearly shown by a device that is not considered a consumer electronics device – a smartphone. It serves as a universal interface between users, content and devices, but also as an end device, which in turn drives the accessories market.

Furthermore, certain categories of devices are increasingly only used professionally or for sports (photo and video cameras) or are geared towards digital content (streaming, D/A converters) via an interface and internet access.

Traditional audio devices such as radio receivers, amplifiers and playback devices are now only developed by a few manufacturers and tend to be offered primarily in the high-priced segment or – at the other end of the price range – as cheap goods for children. In the large segment in between, the focus is on new hybrid devices (network-compatible active speakers).

Such disruptive innovations pose a challenge for price statistics, since old devices are being replaced by new ones that are no longer comparable.

3.13 Personal computers

Collecting PC prices is difficult due to rapid technological change and the associated short product life cycles. Successor products often differ from their predecessors because they come with newer, better technology. It is therefore not possible to directly compare the two products – the old and the successor product – as the improvements in quality render them incomparable. An index calculated by linking only matching (existing) products (non-replacement, see Chap. 2.4.2) would also not accurately reflect inflation. This kind of index would track price trends of product life cycles instead of the real inflation. For this reason a hedonic quality adjustment method is used.

Transactional data (prices and turnover) are collected for personal computers. Average prices (unit prices) over a period of one month are used. The data is processed by a market research company. The delivered data contains only the business-to-consumer segment. Regional differentiation is not carried out, as there are no relevant price differences between the regions.

In addition to information on the price and turnover per model, the data also includes a list of the most important product features. Since data preparation is a time-consuming process, PC prices can only be published with a two-month delay. This means, for example, that the November prices are used to calculate the CPI in January.

Each month, the sample includes the models with the highest turnover. The sample comprises 80 desktop PC models and 120 notebook models.

Estimation of quality

The product information included in the data delivery allows a hedonic regression to be carried out in order to take quality development into account. This method is based on the assumption that the price of a PC is dependent on price factors or quality-related product features ($z_1, \ldots, z_n$). The most important price factor when evaluating the quality of a computer is the performance of the processor (CPU). Other price factors that are used are random access memory (RAM), graphics processing unit (GPU), screen size/resolution, operating system and brand. However, this selection is not complete and, changes over time, as well as varying between desktops and laptops.

Linear regression (OLS) is used for the estimation.[17] It is expressed by the following equation:

$$\ln(y) = \beta\_0 + \beta\_1 * z\_1 + \ldots + \beta\_n * \ln(z\_n) + \varepsilon$$

where:

$ln(y)$ = the dependent variable is the natural logarithm of the price

β_0 = the intercept

$\beta_1, \ldots, \beta_n$ = the coefficients of the independent variables

$z_1, \ldots, z_n$ = independent variables or price factors (including dummies)

ε = the residual

Rapid technological change also means that (new) components can quickly gain or lose value.[18] For this reason, the hedonic valuation is reassessed every month. This ensures that the quality assessment does not fall behind the actual situation.

Calculation

The personal computer indices are calculated in the same way as the rental index (see Chapter 3.1.8). The price changes for products available in the previous period and in the current period are not adjusted. However, quality adjustments are made between products that are discontinued and those that are newly included in the sample. The desktop and notebook indices are calculated with separate hedonic regression models, while tablets use the same method as the rest of the consumer electronics. This is because the hedonic regression model for tablets did not meet the quality requirements during the test phase. Tablets have fewer and less predictive price factors, which leads to an inadequate price estimation.

Cell weights for PCs **T4**

Segment	Weight	Comment
Desktop	16%	with hedonic quality adjustment
Notebook	68%	with hedonic quality adjustment
Tablet	16%	without hedonic quality adjustment

Source: FSO – Consumer Price Index, 2021 © FSO 2022

3.14 Books

Until December 2020, measuring the change in book prices involved calculating the average price per page of a sample of the best-selling paperbacks and hardbacks in Switzerland. Since December 2020, the change in book prices has been calculated in the traditional way: by following monthly price changes in books that can be matched over two successive periods from book distributors, four of the largest bookshops in Switzerland and an international e-commerce giant.

In practice, two distributors[19] – one in the German-speaking part of Switzerland and one in the French-speaking part – provide the FSO every month with a sample of their best-selling books from the previous month. The sampled books account for at least 80% of the turnover of all books sold during the month. These samples are used both to collect the distributers' book prices as well as to select the new sample of books that is collected in the bookshops.

In order to be able to calculate the changes in the prices, the sample delivered in the previous month is compared with the sample delivered in the current month. Only books featuring in both periods are included.[20] The sample churn rate is relatively high. On average only 60% of the books match across the two periods. This is not a problem, because the reported prices are list prices that do not include sales or discounts.

The price collection at bookshops follows the same principle. The new samples were selected in December 2020 on the basis of the bestsellers reported by the distributors. In order to include new products, one tenth of the samples are renewed every month. In practice, this means that both the prices of the books included in the current sample and those of the books that will be included in the following month are web scraped from the websites of the selected bookshops. Thus the replacement of books is done using the overlapping method (see Chapter 2.4.2).

The original sample of books collected from the e-commerce giant was selected in a similar way. Given that the price collection is carried out manually on the internet, however, the sample is only updated quarterly in order to limit the workload. When the sample is rotated, both the old and the new sample prices are collected. It should be noted that prices are reported by the price comparison website billigbuch.ch, which shows prices in Swiss francs including VAT, and are not the ones displayed on the retailer's website.

Lastly, one partner reports 200 of its bestsellers to the FSO every quarter. Between reports, the book prices are collected manually from the website of the partner in question. In total, over 15 000 book prices are collected each month.

[17] Linear regression analysis is based on the idea of modelling a relationship between variables using a linear function. In the variant that we use the dependent variable and some of the independent variables are logarithms. In the OLS method, the coefficients $\beta_0, \ldots, \beta_n$ are chosen so that the sum of all squared residuals (difference between the estimated and actual values) is minimal.

[18] For example, the value of a CD-ROM drive has fallen continuously due to the availability of alternative data carriers and high-speed internet.

[19] The distributor distributes books on behalf of publishers and major brands to a variety of outlets: bookshops, department stores, kiosks, specialist shops, schools and e-commerce retailers in Switzerland and abroad.

[20] The prices delivered by the two distributors are list prices. However, a study conducted in 2008 by the University of Northwestern Switzerland showed that these prices largely corresponded to the prices charged by the bookshops. The latter sell the books at the price set by the distributors.

In addition to the calculation method, the structure of the basket of goods and services was also adapted as part of the 2020 revision. In order to align the structure with the ECOICOP, fiction, textbooks and non-fiction books are new expenditure items that have been published since December 2020.

3.15 Games of chance

The prices of games of chance have been collected since 2021. Because a portion of the stakes is redistributed to players in the form of winnings, games of chance price indices cannot be calculated by simply comparing their sales prices.

The sales price of a game of chance can be broken down into two parts: a service charge – the amount paid to participate in the game – and the winnings paid out to players. Measuring the changes in the prices of games of chance therefore means measuring the changes in service charges. The price collection is essentially based on the methodology for service charges of financial services[21].

The service charge is the reciprocal value of the pay-out ratio (also called return to player or RTP). The service charge can be defined based on actual revenue:

$$Service\ charge = {}^{gross\ gaming\ revenue}/_{turnover}$$

Examples for the inclusion of gambling

In **example 1**, lottery tickets were sold for CHF 10 000 during the survey period. Winnings of CHF 5000 were paid back to players. The service charge is therefore 50%.

Example 1	December 2020	December 2021
Price per bet	2.00 CHF	2.50 CHF
Turnover (=bets)	10 000 CHF	10 000 CHF
Distribution of winnings	5 000 CHF	5 000 CHF
GGR	5 000 CHF	5 000 CHF
Service fee	50%	50%
Price index	**100**	**100**

This means that an increase in the purchase price of a lottery ticket for the same proportional service charge does not affect the index. This is illustrated by **example 1**. Although the price of the lottery ticket increased from CHF 2.00 to CHF 2.50, the index does not increase. In contrast, a change in the service charge moves the index if the purchase price of a lottery ticket remains the same. In other words, the expected return on investment changes, resulting in a change in quality; this should therefore have an impact on the index too. This case is illustrated in **example 2**. In the second survey period, players are paid back a larger portion of their stake as winnings. The service charge is therefore reduced. This represents a price reduction and the index falls accordingly.

The price collection takes place once a year and involves the lottery companies swisslos and Loterie Romande, as well as all licensed casinos in Switzerland. The data covers a period of one year.

The following games are included in the index, whereby online offers are also taken into account for all games:

- Lotteries
- Scratch tickets
- Slot machines

Sports betting, table games (including online poker) are not being surveyed for the time being, as the consumer expenditure is relatively low.

The weighting of the expenditure item, games of chance[22], is based on the gross gaming revenue of Swiss gaming providers, as this corresponds to net consumer expenditure. The detailed weighting of the above-mentioned games is also based on gross gaming revenue.

Example 2	December 2020	December 2021
Price per bet	2.00 CHF	2.00 CHF
Turnover (=bets)	10 000 CHF	10 000 CHF
Distribution of winnings	5 000 CHF	6 000 CHF
GGR	5 000 CHF	4 000 CHF
Service fee	50%	40%
Price index	**100**	**80**

[21] A detailed description of the method can be found in section 12.86 of the Harmonised Index of Consumer Prices (HICP) Methodological Manual https://ec.europa.eu/eurostat/documents/3859598/9479325/KS-GQ-17-015-EN-N.pdf/d5e63427-c588-479f-9b19-f4b4d698f2a2

[22] Gross gaming revenue (GGR) is the difference between bets and winnings legally paid out.

3.16 Cable cars

More and more Swiss ski resorts are introducing dynamic price models for day and multi-day tickets. Dynamic pricing models make measuring price trends more complex. Prices are no longer static, but depend directly on various factors, such as the time of booking, the date of validity, the season, the occupancy rate and the weather. Each ski region uses its own set of price factors.

For this reason, a new price collection method was introduced in December 2020. As with airfares and holiday packages, the price of service bundle is now collected. For day and multi-day tickets, five and four service bundles respectively have been defined to take account of factors that can influence prices. The price is collected on a predefined day of the month (always the Friday of the second week of the month). A fixed date of validity has been defined for each service bundle (e.g. Saturday, one day after the survey date) so that the number of days between the time of booking or price collection and the date of validity remains constant.

For the purpose of the price collection, it is assumed that customers buy their ski tickets in all weathers.

Example of price collection

The survey for January 2022 has been carried out on Friday, 14 January (Friday of the second week of the month. For service bundle 1, the price of a day ticket for adults for Saturday, 15 January has been collected from the online shop (one day after the date of the survey).

For the month of February 2022, the price of the same day-ticket has been collected on 11 February (Friday of the second week of the month), which is valid on the following day, Saturday, 12 February 2022. Thanks to the various service bundles, which remain constant from collection to collection, the trend in prices for ski tickets and cable cars can be measured correctly.

Example of price collection

	Ticket	Price survey date	Validity date of ski ticket (including public holidays)
January 2022	Adult day ticket	Friday, 14 January 2022	Saturday, 15 January 2022
February 2022	Adult day ticket	Friday, 11 February 2022	Saturday, 12 February 2022

A total of 917 cable car prices are collected annually for single trips, day, multi-day and season tickets for the winter and summer seasons.

The survey takes place at different times depending on the season and ticket type:

- During the winter season, day and multi-day tickets are collected from December to March/April.
- During the summer season, single trips, day and multi-day tickets are collected in June.
- Season passes are collected from April to November.

The survey is carried out at the top 20 Swiss ski resorts as well as for cable cars that are important in the summer season. Prices are collected online and weighted according to region. Passenger turnover is used for the regional weighting. The data is from Seilbahnen Schweiz for 2019.

Overview of service bundles for day and multi-day tickets **T 5**

No.	Ticket	Validity date of ski ticket (including public holidays)	Number of days booked	Number of days between booking and validity date
1	Adult day ticket	Saturday, 1 day after price survey date	1 day	1 day
2	Adult day ticket	Friday, on the day of the price survey	1 day	0 days
3	Adult day ticket	Sunday, 2 days after price survey date	1 day	2 days
4	Child day ticket – 10 years	Sunday, 2 days after price survey date	1 day	2 days
5	Adult day ticket	Saturday, 8 days after price survey date	1 day	8 days
6	Adult multi-day ticket	Sunday, 17 days after price survey date	6 days	17 days
7	Multi-day ticket for child 10 years	Saturday, 16 days after price survey date	6 days	16 days
8	Adult multi-day ticket	Saturday, 8 days after price survey date	6 days	8 days
9	Adult multi-day ticket	Saturday, 1 day after price survey date	6 days	1 day

Source: FSO – Consumer Price Index

3.17 New cars

New vehicle prices are collected monthly based on a sample of 400 vehicles. A market research company provides both the monthly prices and the additional information (product features, turnover). As new cars are a complex product in a specialised market, the market research company is also on hand to support the FSO as an expert partner.

The prices of new cars are based on the list prices of the importers. For new cars, there is a significant difference between list and transaction prices. For this reason, an average discount is calculated based on transaction data so that the collected prices, after deduction of the discount, are equal to the prices that consumers actually pay.

Leasing prices are not collected, but the consumer expenditure on leasing is also allocated to expenditure item 7003 New vehicles for weighting purposes.

Every year in December, a new sample of around 400 new cars is selected, which comes into effect from January of the next year. Only passenger cars are surveyed. Special care is taken to ensure that the sample is representative of the Swiss market. Initial registration data of the previous year is used for the selection process. The criteria for stratification are make, model, class, body (sedan, station wagon, SUV, coupé, or convertible) and engine (petrol, diesel, hybrid, or electric).

If the quality of a vehicle only changes slightly, a quality adjustment is made. Examples of such minor changes are the inclusion of a navigation device or parking aid as standard features. In most cases, the equipment was already available as an optional extra before being included as standard. The option pricing method (see Chapter 2.4.2) is used to evaluate changes in quality and remove them from the index trend.[23]

If the changes are fundamental, it is no longer possible to adjust the quality as the two vehicles are no longer comparable. For this reason, the overlapping method (see Chapter 2.4.2) is used in such cases.

3.18 Used cars

The difficulty with comparing used car prices is that the vehicles sold are always individual products. Mileage, condition and age are different for each vehicle. This poses a major challenge for price statistics, as it is not possible to compare identical products from month to month.

The prices are determined monthly by a market research company. The price collection of used cars is based on a sample of around 300 vehicles and is carried out nationally, i.e. the market is not segmented by region. Only passenger car prices are collected, and when selecting the sample, care is taken to ensure that the composition of the sample is representative of the Swiss market in terms of make and model. Only net consumer expenditure is relevant for the CPI. Accordingly, only used car prices from commercial retailers are collected.

For each vehicle in the sample, a typical age (months since first registration) and a mileage (km) is chosen. A new sample of around 300 used cars is selected in December and comes into effect from January of the next year. When the sample is selected, the period during which the individual vehicles were imported is already known. This knowledge makes it possible to design the sample in such a way that no vehicles need to be replaced during the remaining months of the year.

Vehicles traded in Switzerland never exactly match the specifications of the vehicles in the sample, as age and mileage vary. For this reason, the market research company carries out a hedonic estimate of used car prices. Based on retail prices of similar vehicles on online market places, the price at which the sampled vehicles would be traded is estimated each month. Prices of vehicles involved in an accident or special edition vehicles are excluded from the estimation.

3.19 Child care services

According to the FSO Families and Generations Survey (EFG) 2018, 70.7% of children aged 0 to 3 and 60.2% of children aged 4 to 12 are looked after by people other than close family members. With a share of 31.6%, nursery and extra-school childcare are the second-most common form of care after grandparents.

Collecting childcare prices is very complex, as the price paid by parents depends on a number of factors:

- the frequency of childcare
- the age of the child (rates for babies may be higher)
- siblings in the same childcare (sibling discounts may be granted)
- parents' income, financial means and level of employment (particularly relevant in the case of subsidised care)

Therefore, representative service bundles were defined based on various data sources[24]. Income and assets have been fixed for each service bundle, which are representative of the different regions.

[23] A detailed description of the option pricing method can be found in section 12.3.5.5 of the Harmonised Index of Consumer Prices (HICP) Methodological Manual https://ec.europa.eu/eurostat/documents/3859598/9479325/KS-GQ-17-015-EN-N.pdf/d5e63427-c588-479f-9b19-f4b4d698f2a2

[24] For the frequency of childcare: FSO Families and Generations Survey; for income: Federal Tax Administration, statistical key figures 2017, taxable median income by municipality.

Overview of child care service bundles **T6**

SB	Form of care	Household characteristics	Service
1	Nursery	2-year-old child, single-parent household, low income	5 full days of childcare per week
2	Nursery	1-year-old child with sibling in crèche, two-parent household, average income	2 full days of childcare per week
3	Nursery	2-year-old child, two-parent household, high income	3 full days of childcare per week
4	Extra-school childcare	Child 1 Pre-school year (1H), single-parent household	5 x lunchtime care and 5 x afternoon care until 5.30 p.m.
5	Extra-school childcare	Child 3 Primary school (5H), two-parent household	5 x lunchtime care and 1 x afternoon care until 5.30 p.m.

Source: FSO – Consumer Price Index

Example 1: Price collection at a subsidised nursery

SB	Service	Income in CHF	Nursery tariff (daily rate) in CHF	Childcare voucher in CHF	Relevant price (daily rate) in CHF
1	5 full days of childcare per week	35 250.–	Children from 18 months, 108.–	77.–	31.–
2	2 full days of childcare per week	54 200.–	Children aged 18 and under, 140.–	76.–	64.–
3	3 full days of childcare per week	75 500.–	Children over 18 months, 114.–	21.–	93.–

Example 2: Price collection of subsidised extra-school childcare

SB	Service	Income in CHF	Higher price (weekly rate) in CHF
4	5 x lunchtime care and 5 x afternoon care until 5.30 p.m.	36 675.–	5 x midday care at 9.– + 5 x early afternoon at 2.90 + 5 x late afternoon at 4.40 = 81.50
5	5 x lunchtime care and 1 x afternoon care until 5.30 p.m.	58 790.–	5 x lunchtime care at 11.30 + 1 x late afternoon at 6.60 = 63.10

In **example 1**, three prices are collected at a subsidised nursery. For service bundle 1, the price for the care of a two-year-old infant on 5 full days per week is collected. As this nursery is subsidised, an income-based childcare voucher of CHF 77.– is deducted from the daily rate for children over 18 months. This results in the price of CHF 31.– per day.

In **example 2**, two prices are collected at a subsidised extra-school care centre. For service bundle 4, the collected price is for 5 lunchtimes and 5 full afternoons until 5:30 p.m. To calculate the price, the income-based tariffs for the following time blocks are added up: 5 x lunchtime, 5 x early afternoon and 5 x late afternoon, which results in a price of CHF 81.50 per week.

147 prices from 27 nurseries and extra-school care centres are collected twice a year for nursery (February and August) and once a year for extra-school childcare (August). All prices are collected online. Depending on the care centre, daily, weekly or monthly rates are collected. The collection takes place in the urban centres of the 11 CPI regions, at both subsidised and non-subsidised nurseries and care centres. While price collection from 2000 to 2020 focused exclusively on childcare for infants in nurseries, it was expanded in December 2020 to include extra-school childcare options.

3.20 Financial services

Measuring price trends for financial services is complex and limited to the fees for managing accounts and custody accounts.

Three representative service bundles each have been defined for managing accounts and managing custody accounts. The exact number of services varies from banking group to banking group. The service bundles are based on the following questions in particular:

- Which and how many transactions are executed each year?
- How are the transactions executed?
- What is the client's total assets at the bank?
- Which cards are used? (for account services)

Account services

Account services are increasingly charged in the form of service packages at flat rates. Thanks to the predefined service bundles, the transition from individual fees to flat rates can be made without any interruptions. While the service bundle remains constant over time, the product offered by the bank may change. The bank services that generate the highest turnover are collected. Interest on savings is not included because it does not fall within the scope of the CPI.

Example of a service bundle for surveying of account fees

Customer assets: CHF 2000.–
Processing of banking transactions: via e-banking and e-documents
Product: Banking package

Number	Services	Prices
12	Price of account management	60.–
12	Account statements	included.
1	Debit card	included.
36	Cash withdrawals in CHF, domestic, customer-bank ATMs	included.
5	Cash withdrawals in CHF, domestic, third-party ATMs	10.–
12	Outgoing payments in CHF	included.
12	Standing orders in CHF	included.
12	LSV DD+ debits in CHF	included.
	Price per year	**70.–**

In the example, the number indicates how many times per year a service is used.

- The customer pays 12 x CHF 5.– for the account management service, which costs a total of CHF 60.– per year.
- An additional CHF 10.– is charged for five cash withdrawals at third-party ATMs. All other services are already included in the service fee.
- An annual price of CHF 70.– is collected and incorporated in the CPI.

Custody accounts

The custody accounts service bundles consist of both the annual fees for the custody account and the annual fees for the execution of the transactions.

Example of a service bundle for surveying of custody account fees

Customers fixed assets: CHF 348 303.–
Investments:
3 x funds in CHF
2 x bonds in CHF
10 x SMI shares
Processing of banking transactions: via e-banking

Custody account management

Number	Services	Prices in CHF
1	Annual custody account maintenance fees	1 320.97
1	Annual item fees	included
1	Annual account statement	0.85
1	Annual tax statement	150.–
1	Collection of coupons	included
	Subtotal	**1 471.82**

Transactions

Number	Services	Prices in CHF
1	Sale of fund shares for CHF 9952	52.05
1	Purchase of fund shares for CHF 19 903	203.81
1	Purchase of bonds for CHF 19 903	144.10
1	Purchase of shares for CHF 4976	58.73
1	Purchase of shares for CHF 4976	58.73
1	Purchase of shares for CHF 19 903	203.81
1	Sale of shares for CHF 19 903	203.81
	Price per year	**2 396.87**

In this example, the client, with assets of CHF 348 303.–, is charged CHF 1471.82 per year for account management. In addition, the client is charged for seven transactions per year. This results in a total price of CHF 2396.87 per year, which will be incorporated into the CPI.

Price Survey

The prices of financial services are collected quarterly from the 10 most important banks. In total, the price collection includes 60 prices of service bundles. Prices are collected using questionnaires. The financial services indices are weighted by banking group (major banks, cantonal banks, Raiffeisen, and other banks). These weights are based on the annual banking statistics of the Swiss National Bank.

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,

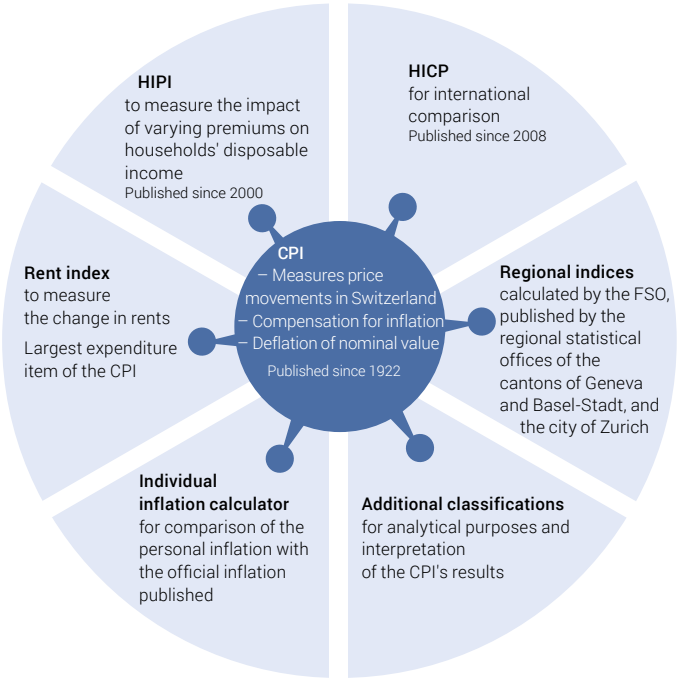
- by excluding certain important household expenses, in particular basic health insurance and other compulsory expenditure, it does not measure change in the cost of living, which would be a more suitable indicator for inflation compensation.
- it does not show price changes for certain socio-economic 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 index system was already introduced in 2000 (see G 11). 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.

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.

Modular index system **G 11**



Source: FSO – Consumer Price Index

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 harmonised 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 index of consumer prices (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[1].

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".
- **Dealing with owner-occupied dwellings**: Imputed rents for owner-occupied dwellings are excluded from the HICP.
- 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 (see Chapter 3.10) as well as those of airfares (see Chapter 3.11). 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 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[2], carries out an imputation of the upper aggregate to eliminate the effect of **seasonal products** missing from the index.

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

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

Comparison of the Swiss CPI with the HICP T 7

CPI	Private consumption according to the National Accounts	Definition of goods and services	Private consumption according to the National Accounts	HICP
	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/ECOICOP	Content and structure of the basket of goods and services	COICOP/ECOICOP	
	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 Geometric mean method	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 – National Consumer Price Index and Harmonised Index of Consumer Prices

4.2.3 Basket of goods and services

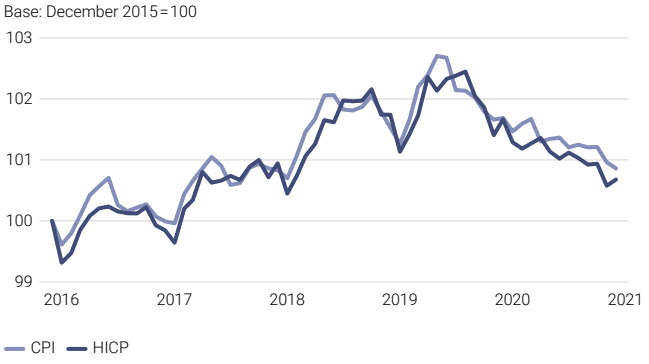
The HICP is composed of 326 weighted aggregates and published in the Eurostat database. In addition to the 12 main groups, the HICP basket of goods and services is subdivided into 146 product groups and 168 published expenditure items.[3]

4.2.4 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 G 12), 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 2015 G 12



Source: FSO – Consumer Price Index, 2021

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[4]: employed persons, pensioners, couples and single parent families.

[3] The remaining expenditure items (some 110) are aggregated and are not used directly by Eurostat

[4] 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.

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)

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.

Additional classifications **T 8**

Position
Type of goods
Goods
Non-durable goods
Semi-durable goods
Durable goods
Services
Private services
Public services
Origin of goods
Domestic goods
Imported goods
Core-inflation
Core inflation 1[1]
Fresh and seasonal products
Energy and fuels
Core inflation 2[2]

Position
Additional classifications
Health
Index without health
Housing and energy
Index without housing and energy
Oil products
Index without oil products
Tobacco
Index without tobacco
Alcoholic beverages
Index without alcoholic beverages
Clothing and footwear
Index without clothing and footwear
Administrated prices
Index without administrated prices

[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: FS0 – Consumer Price Index, 2021

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 stages 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[1].

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.

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.

[1] **PRESTA** for **PRE**is**STA**tistik

6 Publication

The following consumer price information is published at frequent intervals:

- CPI: monthly (start of next month)
- Harmonised index of consumer prices: monthly (start of next month)
- Health insurance premium index: annually (November)

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

7 Glossary

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

Appendix

Appendix 1: 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, pineapples, 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	Annually			x									
	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		
	In-patient hospital services	Annually								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*	x											
	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**
	Reparatur und Installationen Radio und TV	Quarterly			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						
	Mountain railways, ski lifts	Half-yearly						x						x
	Theatre and concerts	Annually									x			x
	Museums and zoos	Twice a year	x								x			
	Game of chance	Annually			x									
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	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	Annually	x											
	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 – Consumer Price Index

Appendix 2: Fact sheets for particular indices

Information about the position	
Position number	4004 Housing rentals (Rental index)
Consumer expenditure	CHF 830.23/month
Weight in the standard basket (2021)	15.561%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Stratified random sample, based on a survey framework specially designed by the FSO for the needs of the rent index. This framework is derived from the SRPH[1], which is based on data from the population registers and the register of buildings and dwellings.
Number of sales outlets	Nearly 5200 property managers and private owners
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx. 41 000
Price collection technique	Paper form Online questionnaire Electronic data transmission (ongoing project)
Type of prices collected	Net rent
Relevant variables	– Gross rent, charges, net rent, flat rate rent – Lease characteristics (tenancy duration, change of tenant, type of lease, reasons for rent adjustment, tenancy status) – Structural information on the dwelling (type of building, number of rooms, surface area, year of construction, floor, renovations) – Other variables: type of landlord, number of bathrooms, outdoor areas, lift and Minergie certification of the building, number and rent of indoor and outdoor parking spaces
Price-collection frequency	Quarterly

Methods	
Calculation method	Basic aggregation (index per cell subdivision): geometric mean Intermediate aggregation (index per cell): weighted arithmetic mean Final aggregation (total index): weighted arithmetic mean
Calculation structure	Number of rooms and building age Source: Structural survey of the population census 2016, FSO
Quality adjustment method	Hedonic model

Results	
Main result	4004 Housing rentals (Rental index)
Number of related sub-indices	–
Publication	February, May, August and November
Result available since	June 1914

[1] SRPH: Stichprobenrahmen für Personen- und Haushaltserhebungen (sample frame for person and household surveys)

Information about the position	
Position number	4008 Imputed rent for owner-occupied dwellings
Consumer expenditure	CHF 242.39/month
Weight in the basket (2021)	4.543%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Stratified random sample, based on a survey framework specially designed by the FSO for the needs of the rent index. This framework is derived from the SRPH, which is based on data from the population registers and the register of buildings and dwellings.
Number of sales outlets	Nearly 5200 property managers and private owners
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx. 35 000
Price collection technique	Paper form Online questionnaire Electronic data transmission (ongoing project)
Type of collected prices	Net rent
Relevant variables	– Gross rent, charges, net rent, flat rate rent – Lease characteristics (tenancy duration, change of tenant, type of lease, reasons for rent adjustment, tenancy status) – Structural information on the dwelling (type of building, number of rooms, surface area, year of construction, floor, renovations) – Other variables: type of landlord, number of bathrooms, outdoor areas, lift and Minergie certification of the building, number and rent of indoor and outdoor parking spaces
Price-collection frequency	Quarterly

Methods	
Calculation method	Basic aggregation (index per cell subdivision): geometric mean Intermediate aggregation (index per cell): weighted arithmetic mean Final aggregation (total index): weighted arithmetic mean
Calculation structure	Number of rooms and building age Source: Structural survey of the population census 2016, FSO
Quality adjustment method	Hedonic model

Results	
Main result	4008 Imputed rent for owner-occupied dwellings
Number of related sub-indices	–
Publication	February, May, August and November
Result available since	December 2015

Information about the position	
Position number	4047 Maintenance and caretaking
Consumer expenditure	CHF 59.74/month
Weight in the basket (2021)	1.120%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	112 Caretaking: 1 Lift maintenance: 1 Garden maintenance: 30 Cleaning of common areas, chimney sweeping: 80
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	960 Caretaking: 750 Lift maintenance: 100 Garden maintenance: 30 Cleaning of common areas, chimney sweeping: 80
Price collection technique	Caretaking and lift maintenance: data delivery Garden maintenance: online price collection Cleaning of common areas, chimney sweeping: price collection form
Type of collected prices	Caretaking and lift maintenance: costs for mandates Garden maintenance, cleaning of common areas, chimney sweeping: hourly rate
Relevant variables	Caretaking: rented area
Price-collection frequency	Annually

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Type of services Sources: Estimates provided by an external partner (2015), estimates provided by the producer price index (2015).
Quality adjustment method	Direct comparison

Results	
Main result	4047 Maintenance and caretaking
Number of related sub-indices	–
Publication	October
Result available since	December 2015

Information about the position	
Position number	4028 Other services relating to the dwelling
Consumer expenditure	CHF 31.93/month
Weight in the basket (2021)	0.598%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	137
Geographical coverage	50 most populated cities in Switzerland, more than 30% of the charges paid in Switzerland for dwelling provision are recorded.

Price collection	
Number of prices collected (per year)	411
Price collection technique	Online price collection
Type of collected prices	Tariff of taxes charged to households and owners
Relevant variables	Household, dwelling and building characteristics
Price-collection frequency	Annually

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	CPI regions
Quality adjustment method	Direct comparison

Results	
Main result	4028 Charges for dwelling provision
Number of related sub-indices	3 4030 Charges for household waste elimination 4036 Charges for water provision 4042 Charges for sewerage
Publication	March
Result available since	May 2000 (December 2015 for the related sub-indices)

Information about the position	
Position number	3002 Articles of clothing
Consumer expenditure	CHF 105.67/month
Weight in the basket (2021)	1.980%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample Sources: Detailhandel Schweiz 2019, GfK Switzerland ; market knowledge of regional price collectors (regional specialised shops)
Number of sales outlets	Approx.100
Geographical coverage	CPI regions

Price collection	
Number of prices collected (per year)	Approx. 54 500
Price collection technique	Price collection in the field Online price collection Web scraping
Type of collected prices	Transaction prices
Relevant variables	Brand, fabric composition (fibres)
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	CPI regions, distribution channel Source: Consumer Panel 2020, GfK Switzerland
Quality adjustment method	Direct comparison: items of identical quality (same brand, comparable fabric) Bridged overlap: items of different quality

Results	
Main result	3002 Articles of clothing
Number of related sub-indices	25
Publication	Monthly
Result available since	September 1966[a]

[a] Results for the main group "Clothing" have been available since 1914.

Information about the position	
Position number	6034 Medical services (Tarmed)
Consumer expenditure	CHF 314.22/month
Weight in the basket (2021)	5.589%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Exhaustive survey
Number of sales outlets	Approx.100, data for all medical practices billing according to Tarmed
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx. 250 000
Price collection technique	Data delivery
Type of collected prices	Tariff
Relevant variables	Quantity structure and tariff point value by groups of insurers
Price-collection frequency	Aperiodic, new tariff in January

Methods	
Calculation method	Basic aggregation: weighted arithmetic mean Intermediate aggregation: weighted arithmetic mean Final aggregation: weighted arithmetic mean
Calculation structure	Cantons, groups of insurers Source: Tariff pool, Tarmed
Quality adjustment method	–

Results	
Main result	6034 Medical services
Number of related sub-indices	2 6031 Medical services at local surgery 6035 Out-patient medical services in hospitals
Publication	Aperiodic
Result available since	September 1966

Information about the position	
Position number	6002 Medicines
Consumer expenditure	CHF 185.46/month
Weight in the basket (2021)	3.476%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Exhaustive survey
Number of sales outlets	1800
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx.120 000
Price collection technique	Data delivery
Type of collected prices	Sales prices
Relevant variables	Quantity ordered, packaging information, product information such as ingredients, nomenclature, technical and therapeutic description
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: ratio of geometric average prices per unit of active substance Intermediate aggregation: weighted geometric average Final aggregation: weighted geometric average
Calculation structure	ATC class according to the WHO classification, type of products (medicines / pharmacists' services) Source: Previous year's turnover of medicinal products according to ATC classification – Previous year's turnover by type of products, PharmaSuisse
Quality adjustment method	–

Results	
Main result	6002 Medicines
Number of related sub-indices	–
Publication	Monthly
Result available since	September 1977

Information about the position	
Position number	6059 In-patient hospital services
Consumer expenditure	CHF 192.43/month
Weight in the basket (2021)	3.606%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Exhaustive survey
Number of sales outlets	Over 200
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Max. 400 000
Price collection technique	Data delivery
Type of collected prices	Tariff
Relevant variables	Cost-weight, quantity structure and base rate by group of insurers and service providers
Price-collection frequency	Annually

Methods	
Calculation method	Basic aggregation: weighted arithmetic average Intermediate aggregation: weighted arithmetic average Final aggregation: weighted arithmetic average
Calculation structure	Cantons, group of insurers and service providers Source: Statistik diagnosebezogener Fallkosten, FSO
Quality adjustment method	–

Results	
Main result	6059 In-patient hospital services
Number of related sub-indices	–
Publication	August/September
Result available since	September 1977

Information about the position	
Position number	12501 Household insurance
Consumer expenditure	CHF 19.50/month
Weight in the basket (2021)	0.366%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	8
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	100
Price collection technique	Price collection form
Type of collected prices	Price offered for new contracts
Relevant variables	Number of persons in the household, size of dwelling, sum insured
Price-collection frequency	Annually

Methods	
Calculation method	Basic aggregation: geometric mean Intermediate aggregation: weighted arithmetic mean
Calculation structure	Insurer Source: Annual Report 2019, FINMA
Quality adjustment method	–

Results	
Main result	12501 Household insurance
Number of related sub-indices	–
Publication	January
Result available since	May 2000

Information about the position	
Position number	12510 Private health insurance
Consumer expenditure	CHF 49.22/month
Weight in the basket (2021)	0.923%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	8
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	500
Price collection technique	Data delivery
Type of collected prices	Price offered for new contracts
Relevant variables	Hospitalisation coverage, canton, gender, age
Price-collection frequency	Annually

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Insurer, hospital coverage (general, semi-private, private ward), canton Sources: Annual report 2019, FINMA – Turnover 2019 by hospital coverage, delivered by insurers – Household budget survey
Quality adjustment method	–

Results	
Main result	12510 Private health insurance
Number of related sub-indices	–
Publication	January
Result available since	May 2000

Information about the position	
Position number	12520 Car insurance
Consumer expenditure	CHF 40.24/month
Weight in the basket (2021)	0.754%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	8
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	584
Price collection technique	Price collection form
Type of collected prices	Price offered for new contracts (fictitious service packages) Average portfolio premium
Relevant variables	Specifications of the service package and/or key figures of the portfolio
Price-collection frequency	Annually

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Insurer Source: Annual Report 2019, FINMA
Quality adjustment method	–

Results	
Main result	12520 Car insurance
Number of related sub-indices	–
Publication	January
Result available since	May 2000 Also available for the years 1966 to 1982

Information about the position	
Position number	9569 Package holidays
Consumer expenditure	CHF 58.98/month
Weight in the basket (2021)	1.106%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	7
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	3720
Price collection technique	Online price collection
Type of collected prices	Transaction prices
Relevant variables	Departure airport, departure date, destination, hotel, hotel category, room type, pension, duration of stay
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean
Calculation structure	–
Quality adjustment method	Direct comparison

Results	
Main result	9569 Package holidays
Number of related sub-indices	2 9570 International package holidays 9580 Domestic package holidays
Publication	Monthly
Result available since	September 1977 (December 2015 for domestic package holidays)

Information about the position	
Position number	7300 Air transport
Consumer expenditure	CHF 23.44/month
Weight in the basket (2021)	0.439%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample: selection of destinations according to the weighted importance of airports and continents of destination based on the number of departing domestic passengers and the average prices calculated in the CPI. Source: Liner and charter traffic statistics 2020, FSO
Number of sales outlets	2
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx.2500
Price collection technique	Online price collection
Type of collected prices	Transaction prices
Relevant variables	Airport of departure, destination, length of stay
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Continent of destination and airport of departure Source: Liner and charter traffic statistics 2020, FSO
Quality adjustment method	–

Results	
Main result	7300 Air transport
Number of related sub-indices	–
Publication	Monthly
Result available since	May 2000

Information about the position	
Position number	8006 Telecommunication equipment
Consumer expenditure	CHF 12.23/month
Weight in the basket (2021)	0.23%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	8
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx. 2500
Price collection technique	Online price collection
Type of collected prices	Transaction prices
Relevant variables	Availability, technical specifications (brand, model, etc.)
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean
Calculation structure	–
Quality adjustment method	Direct comparison

Results	
Main result	8006 Telecommunication equipment
Number of related sub-indices	–
Publication	Monthly
Result available since	May 2000

Information about the position	
Position number	9002 Television sets and audiovisual appliances
Consumer expenditure	CHF 11.18/month
Weight in the basket (2021)	0.209%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	8
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx. 9100
Price collection technique	Online price collection
Type of collected prices	Transaction prices
Relevant variables	Availability, technical specifications (brand, model, etc.)
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean
Calculation structure	–
Quality adjustment method	Direct comparison

Results	
Main result	9002 Television sets and audiovisual appliances
Number of related sub-indices	3 9003 Television sets 9013 Audiovisual appliances 9029 Photographic, cinematographic equipment and optical instruments
Publication	Monthly
Result available since	September 1966

Information about the position	
Position number	9055 IT peripheral devices and accessories
Consumer expenditure	CHF 10.04/month
Weight in the basket (2021)	0.118%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	8
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	Approx. 2000
Price collection technique	Online price collection
Type of collected prices	Transaction prices
Relevant variables	Availability, technical specifications (brand, model, etc.)
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean
Calculation structure	–
Quality adjustment method	Direct comparison

Results	
Main result	9055 IT peripheral devices and accessories
Number of related sub-indices	–
Publication	Monthly
Result available since	May 1993

Information about the position	
Position number	9048 Personal computers
Consumer expenditure	CHF 13.23/month
Weight in the basket (2021)	0.248%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Bestsellers
Number of sales outlets	1 (the data delivered cover 80% of the market)
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	2400
Price collection technique	Data delivery
Type of collected prices	Transaction prices
Relevant variables	Processor speed, operating system, screen, RAM, video memory, brand, turnover
Price-collection frequency	Monthly, with a 2 month time-lag

Methods	
Calculation method	Basic aggregation: geometric mean with hedonic quality adjustment Final aggregation: weighted arithmetic mean
Calculation structure	Type of computer (desktop, notebook, tablet PC) Source: GfK Consumer Panel 2020, GfK Switzerland
Quality adjustment method	Hedonic evaluation

Results	
Main result	9048 Personal computers
Number of related sub-indices	–
Publication	Monthly
Result available since	May 1993

Information about the position	
Position number	9501 Books
Consumer expenditure	CHF 12.15/month
Weight in the basket (2021)	0.228%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Bestsellers
Number of sales outlets	7 (2 book distributors, 4 bookshops, 1 e-commerce giant)
Geographical coverage	Switzerland, except Ticino

Price collection	
Number of prices collected (per year)	Approx.180 000
Price collection technique	Data delivery Web scraping Online price collection
Type of collected prices	List prices of the previous month (distributors) Transaction prices of the current month (other partners)
Relevant variables	Number of copies sold, ISBN
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Distribution channel (sales outlets) Sources: Published turnover of partners and Detailhandel Schweiz 2019 GfK Switzerland
Quality adjustment method	Overlapping method

Results	
Main result	9501 Books
Number of related sub-indices	3 9514 Fiction books 9517 School and educational books 9520 Other books
Publication	Monthly
Result available since	September 1966 (December 2020 for the sub-indices)

Information about the position	
Position number	9480 Games of chance
Consumer expenditure	CHF 31.30/month
Weight in the basket (2021)	0.587%
Source	Gross gaming revenue from lotteries and casinos
Frequency of weight updates	Annually

Survey coverage	
Sample type	Complete survey
Number of sales outlets	23
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	50
Price collection technique	Data delivery
Type of collected prices	Service fees
Relevant variables	Pay-out ratio (in %), turnover
Price-collection frequency	Annually

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Type of games and CPI price collection regions Source: Gross gaming revenue from lotteries and casinos 2020
Quality adjustment method	–

Results	
Main result	9480 Games of chance
Number of related sub-indices	–
Publication	March
Result available since	December 2020

Information about the position	
Position number	9420 Mountain railways, ski lifts
Consumer expenditure	CHF 11.43/month
Weight in the basket (2021)	0.214%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample: Targeted selection of Switzerland's largest ski resorts and mountain railways based on skier days Source: Winter season report 2019/2020, Seilbahnen Schweiz
Number of sales outlets	25
Geographical coverage	Bernese Oberland, Central Switzerland, Eastern Switzerland, Graubünden, Fribourg and Vaud Alps, Valais.

Price collection	
Number of prices collected (per year)	917
Price collection technique	Internet
Type of collected prices	Transaction prices
Relevant variables	Type of ski ticket, date of purchase, validity date
Price-collection frequency	Aperiodic (differs according to the variety surveyed)

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Tourist regions: Bernese Oberland, Central Switzerland, Eastern Switzerland, Graubünden, Fribourg and Vaud Alps, Valais Source: Facts and figures on the Swiss mountain railways industry 2019, Seilbahnen Schweiz
Quality adjustment method	Direct comparison

Results	
Main result	9420 Mountain railways, ski lifts
Number of related sub-indices	–
Publication	Monthly
Result available since	September 1977

Information about the position	
Position number	7003 New cars
Consumer expenditure	CHF 127.92/month
Weight in the basket (2021)	2.398%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Quota sample
Number of sales outlets	1 (the data delivered cover 98% of the vehicle fleet)
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	4800
Price collection technique	Data delivery
Type of collected prices	List prices from which the average discounts are deducted
Relevant variables	Class, body type, engine, make, model, turnover (annual)
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	–
Quality adjustment method	Option price method

Results	
Main result	7003 New cars
Number of related sub-indices	–
Publication	Monthly
Result available since	September 1977

Information about the position	
Position number	7035 Second-hand cars
Consumer expenditure	CHF 69.85/month
Weight in the basket (2021)	1.309%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Quota sample
Number of sales outlets	1 internet platform
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	3600
Price collection technique	Data delivery
Type of collected prices	Estimated average prices (based on transaction prices and expert judgement)
Relevant variables	Class, body type, engine, make, model, turnover (annual)
Price-collection frequency	Monthly

Methods	
Calculation method	Basic aggregation: geometric mean
Calculation structure	–
Quality adjustment method	Hedonic evaluation

Results	
Main result	7035 Second-hand cars
Number of related sub-indices	–
Publication	Monthly
Result available since	September 1977

Information about the position	
Position number	12190 Social protection services[a]
Consumer expenditure	CHF 38.35/month
Weight in the basket (2021)	0.719%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample
Number of sales outlets	27 nurseries and extra-school childcare facilities *(+ 11 home care organisations)*
Geographical coverage	CPI regions

Price collection	
Number of prices collected (per year)	147 *(+ 44 prices for home care services)*
Price collection technique	Online price collection
Type of collected prices	Tariff: price for a package of services
Relevant variables	Parents' income, type of household, duration and frequency of childcare, age of the child, etc.
Price-collection frequency	Half-yearly – nurseries Annually – extra-school childcare facilities

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	CPI price collections regions and type of social protection services Source: Household Budget Survey 2018, FSO
Quality adjustment method	Direct comparison

Results	
Main result	12190 Social protection services
Number of related sub-indices	–
Publication	February, May, August and November
Result available since	May 2000

[a] In addition to nurseries and extra-school childcare facilities, home care services are also included in this position.

Information about the position	
Position number	12531 Financial services
Consumer expenditure	CHF 25.83/month
Weight in the basket (2021)	0.484%
Source	Household Budget Survey (HBS)
Frequency of weight updates	Annually

Survey coverage	
Sample type	Target sample of the largest banks Source: Bank statistics, Swiss National Bank
Number of sales outlets	10
Geographical coverage	Switzerland

Price collection	
Number of prices collected (per year)	240
Price collection technique	Price collection form
Type of collected prices	Transaction prices
Relevant variables	Account maintenance fees according to the assets/the fixed assets, number of transactions as defined in the service bundle
Price-collection frequency	Quarterly

Methods	
Calculation method	Basic aggregation: geometric mean Final aggregation: weighted arithmetic mean
Calculation structure	Type of bank Source: Bank statistics 2019, Swiss National Bank
Quality adjustment method	Direct comparison

Results	
Main result	12531 Financial services
Number of related sub-indices	2 12534 Bank account fees 12536 Fees for securities accounts
Publication	February, May, August and November
Result available since	May 2000 (December 2015 for the sub-indices)

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Since its creation in 1922, the CPI has been revised eleven times (in 1926, 1950, 1966, 1977, 1982, 1993, 2000, 2005, 2010, 2015 and 2020). 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 2020=100 points as its base. The next full-scale revision of CPI content and methodology is scheduled for 2025.

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