

## **The impact of Financial Crises on the CPI**

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### **Abstract**

In October 2008 the Icelandic bank system collapsed followed by severe economic turmoil. This paper describes the effect of the crises on the calculation of the Icelandic CPI. Among the problems rising are reduced sample of outlets due to closing down, reduced availability of goods in the stores, collapsing of the market for new cars. The economic downturn also leads to a sudden change in consumptions patterns causing difficult measurement problems. This paper describes the theoretical and practical treatment of those problems in the Icelandic CPI.

**Key words:** Consumer price index, household expenditure surveys, shopping substitution bias, outlet substitution bias, financial crises.

**JEL:** C43, C81, D11, E31.

## **1. Introduction**

After the bank crash in October 2008 there was a sudden downturn in consumption influencing the CPI in many ways. This paper will try to give overview of the main things affected but there is a problem because detailed economic information is not yet available.

The first thing that could be affected was the eventual lack of prices (holes) following the downturn which still is not a big problem but influences the CPI price collection. The import of new cars stopped at once in October but had already declined considerably since March-April 2008 when the exchange rate of the Icelandic Krona fell significantly. One immediate effect of the crises was that some of the outlets in the sample closed down. Housing market was affected by increase in non monetary payments and changes in consumption influencing many part of the CPI. Share of discount stores in the food market increased leading to a shopping substitution bias that had to be corrected.

## **2. Unobservable prices.**

If an item of good or service is not available but is expected to become so soon again or it can not be replaced immediately in the basket, the price is kept unchanged from the previous month. This method is accepted and applied internationally.

There has not been any significant rise in goods that have disappeared from the shops as there has not been any goods shortage and real effort is made to maintain the sample size in the CPI up to date. So far there have been no specific problems in Iceland regarding the availability of goods and service. The number of prices has been monitored since October and there is not a significant increase in missing prices. For the groceries missing prices are not taken into the calculation, only available prices. The price collectors are asked to propose new items to be added to the sample in case of permanent dropout (change in package size, new brand, etc). For other items the prices are left unchanged from last month if the item is expected to be available again and in cases when they have permanently dropped out the price collectors are instructed to find a replacement item (often done centrally).

The replacement items are taken into the sample using direct comparison, bridget overlap (class mean often used as a bridge). It has been 13-15%, most missing in the grossery stores (12-14%). The prices are collected at different time of the day and the availability always varies. In the sample there are more than one outlet in the same chain to meet the fact that the items are not available at every occasion of price collection.

## **2. Treatment of the fall in the sales of cars**

Household purchases of private cars had a weight of 7% in the CPI when car sales came to stop as this is the component in the index which is most easily affected by changes in economic conditions. There is very detailed public weekly information available about the sales of car that is utilised by Statitics Iceland.

In October 2008, list prices of new cars rose by 4.1%. As car sales came largely to a stop, this rise in list prices was considered to be unrealistic and was therefore not included in

the CPI (effect on the change in the CPI: -0.3%). Statistics Iceland has from November 2008 only included price changes of car sales where transaction has taken place. Information about the transaction prices is collected directly from the car sellers.

The effect of the change in the methods for price collection from October 2008 to March 2009 can be seen in table 1. The table show clearly that if the price collection method had not been changed the price change had been measured 1.1% higher than the price change published. If the weight for cars had been taken out of the CPI the inflation would have been measured 0.13% higher then the published price change mainly because the share of other expenditures would have increased.

**Table 1. Cars in the CPI October 2008–March 2009**

<i>Percent</i>	<i>CPI</i>	<i>CPI less cars</i>	<i>Measured effect of car index</i>	<i>Effect of list prices</i>
<b>Total in the period</b>	<b>6,00</b>	<b>6,13</b>	<b>0,31</b>	<b>1,41</b>
October 2008	2,13	2,3	0	0,3
November 2008	1,73	1,78	0,08	0,06
December 2008	1,55	1,67	-0,01	0,48
January 2009	0,55	0,46	0,12	0,4
February 2009	0,51	0,48	0,07	0,22
March 2009	-0,59	-0,68	0,05	-0,05

### 3. Reduced sample of outlets

If a shop closes down the price change taken into account is the same as in the stores still in the sample. In the case of clothing (inclusive some home textiles) 10% of the outlet in the sample dropped out in October 2008 (5 of 50 outlets) and since then few shops selling home electronics closed down. Furthermore two providers of home electronics changed their variety of goods causing missing prices. There is difficult to add to the sample of goods in the current situation because of the uncertainty of whether the firms still operating will survive and new outlets are not entering the market.

Statistics Iceland strives at keeping the sample stable both by adding outlets if available and increasing the sample of goods in stores already in the sample. In December 2008 one of the three prevailing conglomerate, (each split in three chains of outlets; a discount chain, a supermarket chain (big variety, good service) and a „around the clock“ chain (long opening hours, poor variety of goods)) changed some stores in their supermarket chain to stores in their discount chain. Their own explanation was that it aimed at meeting new preferences from costumers that were becoming more economic in their shopping habits following the crises. One store in the supermarket chain that was transformed into a discount store is in the CPI sample and it was decided to keep it there. The price change was evaluated by comparing the prices of goods common to both store types. The effect on the CPI of this was 0.1% lowering of the index.

There has been large and increasing competition in the clothing market in the recent years and even before the banking crash there were reports about difficulties in the clothing

branch due to the general recession. The banking- and the following currency crash was so to say the last straw for many in the business. Some resampling were made (resulting in replacement of 14 out of 35 items) but Statice decided to wait and see if more outlets would close down. Fortunately that hasn't happened since October.

The prices from the shutdown outlets were dropped out of the sample except in the case of home electronics as there were possibilities of resampling, some rather new outlets could be added to the sample with items similar to the disappearing ones. The new items were taken in using direct comparison where judged appropriate, if not then the class mean change from the base period was used. except in case of sales prices: Those were moved back to presales level before they were dropped out.

If an outlet is closing down and final sales prices are included in the compilation of the index in the final month of the outlets activity, the price reductions will have a downward impact on index development which will not be followed by an upward index development in the next month. That is because in that month there is no direct price comparison between the final sales price and any after sales price. This may lead to a downward drift of the index. Statistics Iceland therefore excludes price observations from outlets where these are known to close down. In one case (a clothing outlet) reduced prices were measured in September and included in the CPI. The shop was found closed in October and Statice decided to impute the October prices to the level observed in August and removed the outlet the month after to avoid the downward drift.

#### **4. Non monetary housing payment and other measurement problems in housing**

There are mainly two problems connected to the recession in the housing market. Firstly the falling prices and secondly there is an increase in sales contract where a part of the payment is non monetary.

Following the downturn of the housing market the price observations (number of contracts) used in the calculation of the house price index are fewer. Compared to the period 2000-2004 the obserations have decreased by 65-85% influencing the calculation strongly. Still the stratification (by type, location and size) in the index is kept fixed in the calculation using a superlative approach.

In housing trade, real estate or liquid assets may constitute a part of the payment for the purchase of a dwelling. Such non monetary payment are found in approximately one third of the contracts and the present value of the contract is then calculated by a rate of return reflecting the risk of such trade. These contract are a part of the price building in the market and have to be taken into account.

##### **4.1 Effect of fall in sales and missing prices**

There are three strata used in the calculation of the house price index, by location, by the type of housing; multiple or single flats and by and size classes. When facing a large drop in

the sales of housing it happens that few contracts are used for different strata and the composition of properties in each cell (stratum) can vary between months causing high volatility in the results. That raises questions about quality issues that can be difficult to deal with within the model. The current situation might challenge the suitability of the geometric mean as an estimator.

There are two main ways to treat this problem. In the case that no sale occurs in a cell the price is kept unchanged at least for three months. This is a similar method as used in other parts of the CPI when goods or services are not available. It is also well in line with the concept for the user cost model used in the compilation of owner occupied housing. If very few contracts are available in a cell the rule used is that there should be at least five contracts available in the calculation. If there are fewer than five contracts available older prices are added to new ones to reach the minimal number of prices required each month.

In 4% of cases in 2008 there were less than five prices available and similar figure to April 2009 were 15%. Missing prices were nearly 1% in 2008 and 4% in 2009. The total of this is 5% in 2008 and 19% 2009. It means that nearly one price of five is affected by the economic situation. The results differs between strata in 2009 as in the case for single flats in the capital area where this figure reaches 70%, compared to only 9% for multiple flats in the capital area and 16% for housing outside the capital area.

## **4.2. The effect of non monetary payments**

Non monetary trade in housing occur when real estate or liquid assets may constitute a part of the payment for the purchase of a dwelling. A sales contract includes payment arrangement details; this information is used for computing the present value of the sales contract.

The Icelandic housing price index is computed from changes in the present value of real estate sales and the price changes for real estate are calculated as a three-month moving average, with a one-month delay. This method has been applied in the calculation from November 1992 when the user cost method was adapted.

Around mid-year 2008, these types of housing transactions became increasingly common. From May 2008 the share of housing purchase contracts involving non-monetary payments constituted 17% of all housing purchase contracts, for the capital area the share was 22% and outside the capital area 14%. In the first four months of 2009 this trend has strengthened and the total number of non monetary transactions rose to 28%, for the capital area to 40% and outside the capital area to 18 %. The biggest share of these transactions is for single flat houses in the capital area where the share of this type of transactions was 38% in 2008 rising to 54% in the period January to April 2009.

As the non montary transaction became more common the required rate of return for such transactions was revised each month and figured out by using the highest long term real interest rates available in the banking system and with inflation also taken into account. In March 2009 the real interest rates were 8%, the inflation rate 15.2%, and thus the total rate of

return used was around 23%, which entails that the nominal value of the real estate used for payment in housing purchases was reduced by nearly one quarter when calculating the present value of the sales price.

The method used lowers the value of the contract when calculating the present value. The main uncertainty connected to using the method is the question when the property, taken as a payment, can be sold and at what price. It is still considered necessary to include these contracts as they reflect market situation and in times of deep recession they can be considered as a precondition for sales to take place.

If the non monetary transactions had not been taken into account in the calculation the house price index would have been 2.9% higher in April 2009 than the published index including those transactions. The difference is highest in the case of multi flat housing in the capital area 4.8% and lowest in the case of single flat houses outside the capital area -7.9%.

There is a difficulty regarding the effect of non monetary transactions on the market price of housing. This is a complex measurement issue regarding how to include these transactions in the calculation of the present value of the contract when there are no standardised methods available.

## **5. Changes in consumption patterns**

In the domestic debate following the bank crash there was often argued that there was an upward bias in the CPI measurement because the changes in consumption patterns that were supposed to have changed much and suddenly were not taken into consideration.

Changes in buying patterns have an impact on household expenditure (cost-of-living) but not necessarily on consumer prices. The consumer price index does not measure volume changes of the index basket but rather the price changes of the goods and services which the basket contains. A fall or an increase in household consumption does therefore not have an impact on the results of the calculation of the CPI. It is well known that when purchasing power rises households have a tendency to buy more expensive goods than before and that many households will meet a fall in purchasing power by switching their purchases from expensive to inexpensive items. For example, if a household substitute expensive steaks with inexpensive processed meat it does not constitute a price reduction in the CPI as these are not comparable goods. The same applies if purchasing power rises, leading households to switch to more expensive items (buying steaks more frequently than before), that it will not be measured as a price rise in the CPI.

A switch in the purchases of households away from relatively high price supermarkets towards low-price stores may have an impact on the CPI. Although the economic situation changes households will continue to buy many of the most common consumer goods, but their prices may differ substantially between shops. Many households will adapt to reduced purchasing power by becoming more price sensitive and actively seek out the lowest available prices. This does not constitute a change in consumption but rather a change in buying patterns.

Statistics Iceland monitors changes in the weight of different outlets in the household expenditure survey and renews the weights of outlets every time the index is rebased. The outlet weights are used in the calculation of price changes of everyday items in the CPI every month. The weights system of Icelandic CPI and HICP is based on HES. The HES covers 1,200 households each year. A moving average of 3 years HES results is used for the CPI/HICP weights. At the time of the base revision one year is added and one dropped out. At present the national CPI is based on the average results of HES for the years 2005-2007, measured in 2007 prices. Then the average was price-updated to March 2009 and these weights are in use since then.

The car component was revised in March 2009 with respect to new registration data and new data was obtained for airfares between Iceland and other countries and for package tours abroad. All items were reviewed on the basis of available data, such as on VAT turnover, as has been done on every occasion of rebasing the index during the last decade. Furthermore, a special attention was paid to changes in buying pattern. The main changes in the expenditure composition were in transport where the weight decreased from 16.5% to 12.6%, mainly owing to the drop in sales of new cars in 2008. The weight of food and beverages increased from 12.0% to 14.3% and the weight of recreation and culture decreased from 11.8% to 10.8%. The share of housing water and electricity decreased from 28.2% to 25.4%. Thereof the weight of the imputed rent for owner occupied housing decreased from 17.9% to 14.1%.

The shopping habits of households were revised but the share of shops had been unchanged since 2006. The new shopping weights are based on the results from the household expenditure survey for the year 2007. The results were revised in accordance with turnover figures for the year 2008 to monitor the changes. The change in shopping habits is not consumption because the goods bought are the same as before but come from different types of shops and that is the reason why revision of this kind affects the index results.

The results show that consumers have moved their shopping to stores where prices are lower. This change in shopping substitution led to a 0.12% lowering of the index in April 2009.

The revision of the base can be divided into three parts. First is the price updating of the expenditure weights. Second is the change in the shopping weights of grocery stores and the third is correction for shopping substitution bias. Statistics Iceland studied the share of these different parts on the price change between March and April 2009. When the expenditure weights had been price updated the index was 0.13% lower than if the price change was calculated on the older 2008 base. When the shopping weights had been revised the price change was measured 0.08% lower than would have been on the older base. The reason is that there was a bigger price increase from March to April in the outlets with increased weights shares in the revision of the shopping weights. When the shopping bias had been corrected (effect on the CPI -0.12%) the CPI was 0.20% lower on the new base compared to the old base.

## 6. Shopping substitution bias

In the Icelandic CPI, each type of substitution bias is accounted for separately. The geometric mean is used to calculate elementary indices. Outlet substitution is allowed for when an item is not available at a particular store. Substitution bias in household shopping has been called outlet substitution bias, though it in fact has more to do with household shopping behaviour than outlet prices. See Guðnason (2003, pp. 304-308 and 2004, pp. 13-17) and Reinsdorf (1993). On the construction of the elementary indices and the theory behind these, see Balk (1997), and Diewert (1998, 1999, 2004, 2009).

Consumers constantly face the fact that store prices for identical or similar goods often vary widely. If consumer price indices are to be correct, they should measure the prices of the goods that households obtain and on that basis measure the price changes in household purchases. Normally, not enough information on shopping behaviour is available to make that possible. The price collection for an index takes place in stores, and the average change in price is most often reckoned from sales information.

When households modify their purchasing patterns, the average price of their purchases may change without anything happening in the store; in fact, prices there might even remain unaltered. In order for consumer indices to reflect such developments, store weights must be adjusted and these price changes must be allowed for in the price measurements. If a price change was being measured by household weights, they would be changed for individual stores as household purchasing patterns evolved. The main issue is that the store sample should provide an accurate picture of transactions.

Retail practices are constantly evolving; accordingly, consumers modify their behaviour in consumption. When a store closes down, they are forced to adapt, although if another store opens at the same place as the old one they can keep shopping there. Otherwise, they must search for a new store, whether it has existed before or is brand new. Consumers will respond, and if they buy the same goods elsewhere, at a lower price, this must be accounted for in index calculations, or else shopping substitution bias will enter the index.

Until recently, it was impossible to monitor such changes, because information was lacking, and such a bias is most often called outlet substitution bias. This type of bias has not received much discussion on an international plane, and index adjustments for it have been out of the ordinary.

When consumer indices show no consideration for the household shopping substitution that is actually happening, the assumption will be that any price difference between stores stems from differences in the quality of their service, and in this instance, no change will be marked by indices when consumers evolve new shopping behaviour. "When pure price differences exist, a change in market conditions may make it possible for some households to switch from purchasing at higher prices to purchasing at lower prices, for example if new outlets open that offer lower prices. The resulting fall in the average price paid by households counts as a price fall for CPI purposes, even though the price charged by each individual outlet may not change." (Hill, 2004, p. 4).



Underestimating quality change in goods or services leads to overestimating inflation. This risk is most pronounced when inflation increases abruptly and household purchases deviate sharply. The service level in stores deeply influences consumer choice, besides prices on goods. Service level includes every factor affecting the consumer's idea of quality when selecting a place to shop, as well as most elements that characterize the type of store. Such aspects are entailed as the selection of goods, the number of stores in the chain, their location, the number of cash registers, the opening hours and the payment arrangements. Every one of these aspects needs to be accurately reflected in price measurements. Since quality is both subjective and dependent on the individual, evaluating the service level presents a considerable problem, except for the selection of goods.

There has been a reduction in the contrast between low price stores and stores of other kinds in Iceland in regard to the factors indicated above. It is possible to assess a difference in the quality of varying service levels by comparing the assortment of goods, which represents the only factor in service that is measurable. An example would be if one store closed down and another opened at the same location. Various goods that had been available in the previous store would not be offered in the new one, and there would be different packaging and other brands. The consumer would be shopping at the same location as before but in a new type of store. The price difference between the stores for the goods they had in common would be used to measure the price changes.

The store weights and grocery headings were corrected when the index of December 2001 was compiled, which yielded a 1.3% decrease in the food component of the index or a 0.27% decrease in the overall index. On the basis of more precise data from receipts in the household expenditure survey, the effects were evaluated once more in April 2002, resulting in a 0.10% lowering of the index.

At the same time, changes in shopping behaviour regarding petrol were taken into consideration, according to information from the oil companies on their market shares in petrol sales, whereby the index fell by 0.08%. In May of 2003 changes due to substitution were also introduced, leading to a 0.07% drop in the consumer price index.

From December 2001 to May 2003, the total change due to adjustments in household shopping substitution for groceries and petrol amounted to an almost 0.52% drop in the consumer price index. This revision has been conducted each year having the effect of 0.03% lowering in 2005, 0.03% lowering in 2006, no measured effect in the years 2007 and 2008 but 0.12% drop in 2009.

## **8. FAQ about the CP**

When the banks crashed in October the domestic discussion increased considerably especially of the effect of higher inflation on private consumption. In most cases there has been a profound misunderstanding or misconception about the issues.

Statistics Iceland had not developed special strategy to meet this situation. The common information strategy in the Price unit is easy accessibility for the users directly to the experts, and the staff is very service minded and tries to be transparent in their communication.

The unit tries to meet the demand for information which has been quite massive the last months. Examples of such recent communication: Participating in news magazines on Radio, giving interviews on TV and newspapers, presentation to the staff of Statice, presentation and discussion in meetings with representatives of trade unions, lecture at the university for graduate students in economy. In addition the unit is under big pressure from the public calling in or writing e-mails with queries. The wide use of the CPI for indexation has put the CPI in focus. To meet the demand for exact communication Statistics Iceland gathered information as answers to the most frequently asked questions about the CPI and put out on the website. Both in an Icelandic and english version. In the appendix to this paper these questions and answers are displayed.

This has been very successful and in the period from 24 March to 13. May 2009 there were 1,252 different visitors that accessed the domestic part of the website and thereof one third of those in the first day after publishing the answers. These figures show that this attempt to give out information has been successful.

## **Appendix: Frequently asked questions (FAQ) about the Icelandic CPI**

### **What is the consumer price index (CPI)?**

The CPI is the most common tool for measuring general price changes, i.e. inflation. The CPI measures monthly price changes of a fixed basket of goods and services which form the base of the index. The basket is made up of the estimated expenditure on goods and services of an average household over a whole year. It is not meant to measure volume changes of household consumption or changes in expenditure patterns. The CPI is compiled in accordance with international standards.

### **For what purpose is the CPI compiled?**

The main purpose of the CPI is to measure inflation, i.e. changes in the value or purchasing power of money. For comparing specific expenditure or income over a period of time it is necessary to be able to differentiate between changes in nominal and real terms (i.e. price and volume changes) and base the comparison on unchanged purchasing power (value) of money. Furthermore, inflation is one of the main measures of stability in the economy.

### **Is the CPI based on legislation?**

Yes, the CPI is based on the Act on the Consumer Price Index no. 12/1995 (with subsequent changes). The Act prescribes that the CPI shall measure changes in prices of private household consumption and that it shall be based on the findings of a household expenditure survey.

### **How is the index base determined?**

The household expenditure survey of Statistics Iceland is the main instrument for establishing the base of the CPI. Since the beginning of the year 2000, the household expenditure survey has been continuous, i.e. it has been ongoing every year the whole year through. The base of the CPI is renewed every year.

### **How is the methodology for compiling the CPI determined?**

According to the Act on the Consumer Price Index, Statistics Iceland shall establish the index basket on the basis of a household expenditure survey and other available sources and decide on the methodology for compiling the CPI. The methods applied by Statistics Iceland are based on international recommendations and instructions and are fully harmonized with the methods recommended in EU regulations. Since 1992, Statistics Iceland has participated in comprehensive international cooperation together with world leading index experts ensuring that the compilation of the CPI is in accordance with mainstream methodology.

### **For how long has the CPI been compiled?**

The CPI has been compiled since 1922 but was at the outset calculated back to the year 1914. The index basket was first based on a consumer expenditure survey in 1939. In the last few years, the methods used for the basing and the compilation of the CPI have undergone radical changes. The index is now rebased annually and the index is therefore subject to a continuous renewal.

### **How is the household expenditure measured?**

Statistics Iceland carries out a continuous household expenditure survey. This is a sample survey involving 1,200 households every year. Results for three years household expenditure survey are used for annual rebasing of the index.

### **How often is the index basket renewed and what are the main sources for that?**

The index basket is renewed (the index is rebased) in March every year. For that, Statistics Iceland utilizes the results of a household expenditure survey as well as various other sources available at the time of the renewal, such as data on new car registrations, information on real estate valuation for calculating owner occupied housing cost, sales data from the State Alcohol and Tobacco Company (government monopoly), data on private insurance from the Financial Supervisory Authority, data on lotteries and on VAT turnover.

### **How is the regular CPI compiled?**

The CPI is compiled every month. Statistics Iceland collects data on prices of some 3,500 items of goods and services in the whole country for approximately one week in the middle of each month. Some 18,000 price quotations are utilized for the calculation. Price data are collected through visits to grocery and clothing stores, through e-mails and faxes from a large number of firms, price data are observed on firms' websites and some 300 firms render price data over the telephone. In addition to this, data are obtained directly from the databases of various firms and institutions. The sample of outlets is selected for each component of the

index, either randomly or on the basis of data on turnover. The selection of goods and services in the basket is based on the household expenditure survey.

### **How are CPIs calculated in other countries?**

Other countries compile their CPI's in very much the same way as is done in Iceland. In all developed countries, the CPI's are based on household expenditure surveys and the baskets are renewed at regular intervals, annually or every few years. The CPI's are calculated on a fixed basis with a household basket of goods and services being used as the index base. The most common practice is that the basket reflects annual expenditure. Most countries compile their CPI's every month. Such CPI's are used as measures of inflation all over the world.

### **Do changes in consumption affect the CPI?**

No, changes in buying patterns of this type have an impact on household expenditure (cost-of-living) but not on consumer prices. The consumer price index does not measure volume changes of the index basket but rather the price changes of the goods and services which the basket contains. A fall or an increase in household consumption does therefore not have an impact on the results of the calculation of the CPI. It is well known that when purchasing power rises households have a tendency to buy more expensive goods than before and that many households will meet a fall in purchasing power by switching their purchases from expensive to inexpensive items. For example, if a household substitute expensive steaks with inexpensive processed meat it does not constitute a price reduction in the CPI as these are not comparable goods. The same applies if purchasing power rises, leading households to switch to more expensive items (buying steaks more frequently than before), that it will not be measured as a price rise in the CPI.

### **Do changes in buying patterns affect the CPI?**

Yes, a switch in the purchases of households away from relatively high price supermarkets towards low-price stores may have an impact on the CPI. Although the economic situation changes households will continue to buy many of the most common consumer goods, but their prices may differ substantially between shops. Many households will adapt to reduced purchasing power by becoming more price sensitive and actively seek out the lowest available prices. This does not constitute a change in consumption but rather a change in buying patterns. Statistics Iceland monitors changes in the weight of different outlets in the household expenditure survey and renews the weights of outlets every time the index is rebased. The outlet weights are used in the calculation of price changes of everyday items in the CPI every month.

### **What is meant by purchasing power?**

Purchasing power measures how much of goods and services can be bought for the wages and salaries earned. Unchanged purchasing power, from one year to the next, means that the household can buy a basket of goods and services of the same size as the year before. Purchasing power is most often calculated as the change in wages and salaries relative to the change in the CPI. Purchasing power increases when wages and salaries rise more than prices but decreases when the rate of inflation is higher than the rate of increase of wages and salaries.

### **What is done if a good or a service disappears?**

If an item of goods and services is not available but is expected to become available soon again or it is not possible to replace it immediately in the basket, the price is kept unchanged from the previous month. This method is one which is accepted and applied internationally.

### **What is done if an outlet closes?**

If a shop or another point of sale is closed down the calculation of the CPI will utilize price changes of goods and services in the outlets which are still in the sample. Statistics Iceland renews the samples as soon as outlets or items become unavailable.

### **How are increased non-monetary housing payments treated in the compilation of the CPI?**

A real estate price index is used in the calculation of user cost of owner occupied housing. The housing market prices are based on sales contracts that include payment arrangement details. The cash price is calculated as the present value of the contract price at a given nominal rate of interest or a rate of return, dependent on the means of payment. In housing trade, real estate or liquid assets may constitute a part of the payment for the purchase of a dwelling. Around mid-year 2008, these types of housing transactions became increasingly common, and at the present time (March 2009) the share of housing purchase contracts involving non-monetary payments constitute 25-30% of all housing purchase contracts. For the calculation of the housing component of the CPI, the assumption of the required rate of return, which is based on the rate of inflation and the highest real mortgage rates, has been changed every month since October 2008. The required rate of interest for such transactions is around 25% in March 2009 which entails that the nominal value of the real estate used for payment in housing purchases is reduced by one quarter when calculating the present value of the sales price.

### **Will Statistics Iceland react to changes in consumption pattern at the time of rebasing of the index in March 2009?**

Yes, Statistics Iceland is currently (March 2009) working on the annual rebasing of the CPI, i.e. renewing the composition of the basket of goods and services which constitutes the index base. The rebased CPI compiled on the renewed basis of March 2009 will be released on 28 April 2009. The new basket will be based on the results of the household budget survey of 2005-2007. The car component will be revised with respect to new registration data and new data will be obtained for airfares between Iceland and other countries and for package tours abroad. All items are reviewed on the basis of available data, such as on VAT turnover, as has been done on every occasion of rebasing the index during the last decade. Furthermore, a special attention will be paid to changes in buying pattern.

### **How is the collapse in car sales following the economic crisis 2008 treated?**

Household purchases of private cars have a weight of 7% in the CPI and this is the component in the index which is most easily affected by changes in economic conditions. In October 2008, list prices of new cars rose by 4.1%. As car sales came largely to a stop, this rise in list prices was considered to be unrealistic and was therefore not included in the CPI (effect on the change in the CPI: -0.3%). Statistics Iceland has from November 2008 only included price changes of car sales where transaction has taken place.

### **What are the effects of the change in the treatment of the car component?**

If the method of collecting price data and calculating the car component had been kept unchanged the CPI would have shown a rate of inflation just over 1% higher from November 2008 to February 2009. If the weight for cars had been excluded from the CPI altogether the CPI would have shown a 0.2% higher rate of inflation than it did as the weight of other items would then have increased.

### **How are package holidays treated in the CPI?**

Prices and the weight of package holidays were measured in the CPI in February 2009 using the same method as in the case of cars, i.e. only sold package tours were included.

### **Has the CPI always been used for indexation of financial obligations?**

When indexation of financial assets was permitted by law in 1979 the Central Bank of Iceland calculated a composite index to be used for indexation purposes which was based on the then prevailing cost-of-living index and the building cost index. In 1989 a wage index was added

to this composite index. In 1995, a new Act on the Consumer Price Index was enacted replacing the earlier cost-of-living index. At the same time it was decided by law on interest rates and indexation, no. 38/2001 with subsequent changes, that indexation should solely be based on the CPI.

### **How is the method of indexation determined of savings and credit?**

The indexation of savings and credit is based on the Act on Interest Rates and Indexation no. 38/2001 with subsequent changes. The act states that savings and credit may be indexed if the indexation is based on the CPI. The decision to apply the CPI for indexation purposes is thus not made by Statistics Iceland which is mandated to compile the CPI in accordance with the CPI Act, No 12 1995, and international practice.

### **Is it necessary to use the CPI for indexation purposes of savings and credit?**

The use of the CPI for indexation purposes is always a political decision and there are of course other price indices which can be used. The decision to utilize the CPI alone for indexation was based on the arguments that it was an advantage to use a yardstick which is general in nature, comprehensive and recognized both within the country and abroad.

### **Are there other price indices which are related to the CPI?**

There has long been a need for more measures or indicators on price changes than the aggregate CPI. Thus, Statistics Iceland has always compiled the CPI less housing cost where the entire housing component is excluded. Statistics Iceland also calculates monthly several sub-indices and constant tax-rate indices where certain expenditure components are excluded. This is mainly done for analytical purposes.

### **What is the difference between the compilation of the CPI and the harmonized price index?**

The harmonized price index, which is compiled in all the EEA-member states, is similar to the domestic CPI. The scope of the two indices is somewhat different, however, mainly in two respects; foreign tourist expenditures in Iceland are included in the base of the harmonized EEA index but not in the CPI, and owner occupied housing cost, which is included in the CPI, is as yet not included in the base of the harmonized EEA index. The compilation methods and the price quotations used in the compilations are the same in both the indices.



### **Why is the cost of owner-occupied housing not included in the harmonized EEA index?**

From the beginning of the preparation and the compilation of the harmonized index it has been the plan to include owner occupied housing in the harmonized index and use a real estate price index for monthly calculations. This has not been done yet as sufficiently reliable real estate price indices have only been available in few EU member states. The central statistical office of the EU, Eurostat, has during the past few years allocated vast resources in assisting the member states in establishing real estate price indices which can be compiled with sufficient security, regularity and timeliness.

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