

Residential exposure to natural hazards in Europe, 2000–2020 (2022 update)

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Abstract

This dataset provides average national-level current gross replacement costs of the stock of residential assets (buildings and household contents) per m² of useful floor space. The dataset includes annual time series (2000–2020) for 33 European countries, in nominal and real prices. It is a thorough revision and update of the dataset described in Paprotny et al. (2020).

Contents

The dataset is provided in two formats:

- An Excel file with 19 formatted tables, each containing one indicator.
- A CSV file containing 18 indicators, with the following columns:
 - IndicatorCode – code corresponding to Excel tables;
 - Indicator – name of the indicator;
 - Unit – unit of measurement;
 - CountryCode – NUTS level 0 (country) code, used in Eurostat publications;
 - Country – name of country;
 - 2000...2020 – year.

Significant changes compared to the original dataset

- Croatia, North Macedonia, Serbia and an aggregate for the European Union (27 countries) were added.
- Estimates for years 2018–2020 were added.
- Underlying and auxiliary data related to residential exposure, such as the total stock of dwellings (value, number of units, useful floor space), population, gross domestic product and composition of household contents were added.
- Author's estimates of the gross stock of dwellings for some countries were replaced with new official estimates, published by Eurostat.
- New sources of data on the number of dwellings/households and their floor space were identified for several countries (especially for Austria, Belgium, Slovenia and Spain), while new estimates by the author were made for several countries with limited direct information by integrating annual data on construction of new dwellings.
- Majority of countries have significantly revised their national accounts data in the past year, changing estimates of household expenditure, dwelling stock and associated deflators for all available years. These changes have considerable influence on the whole timeseries of residential exposure for several countries.

Acknowledgement

This update was supported by the German Research Foundation (DFG) through project “Decomposition of flood losses by environmental and economic drivers” (FloodDrivers), project no. 449175973. The original work was supported by Climate-KIC through project “SAFERPLACES – Improved assessment of pluvial, fluvial and coastal flood hazards and risks in European cities as a mean to build safer and resilient communities”, Task ID TC2018B_4.7.3-SAFERPL_P430-1A KAVA2

4.7.3. Further funding was received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement no. 730381.

Methods

The following methodology was abridged and updated from Paprotny et al. (2020).

The average current gross replacement cost of dwellings and household contents per m² was computed based on many data sources. The basis of the calculation was total floor space of dwellings and households in a country, which was collected from national statistical institutes and Eurostat. For many countries, author’s estimates filled gaps in the data based on available proxies. All sources and adjustments to the data are listed in Table 1.

Statistical institutes in most European countries are recording the stock of fixed assets, including dwellings, for purposes of national accounting. Annual time series of the gross stock of dwellings is available for 24 EU countries from Eurostat, though the data for three countries – Latvia, Poland and Romania – couldn’t be used due to major methodological differences which are discussed in Table 2. The value of dwellings is provided from the aforementioned resource in nominal and previous year’s prices. A deflator to obtain real (2015) prices was constructed based on the two timeseries. Finally, the value of all dwellings was divided by the total floor space area in a country to obtain average value per m². The method does not consider building types or quality, but this information is scarcely available from open datasets on buildings. Information on specific data sources on dwelling values is provided in Table 1.

Dwelling stock for Iceland, Malta, Norway, Sweden and Switzerland required more data collection efforts. The Perpetual Inventory Method (PIM) was applied instead. Here, we use a simplified formula for PIM due to data limitations discussed in Paprotny et al. (2020), which is as follows:

$$S_t = \sum_{j=0}^{L_{mean}} I_{t-j} \quad (1)$$

where: S denotes stock of an asset;

t is the calendar year;

j is an annual increment;

I is investment in year $t - j$;

L_{mean} is the average service life of an asset in years;

Two quantities are needed to obtain the stock of dwellings S : investment in housing and an estimate of the dwellings’ average service life. Investment (gross fixed capital formation for asset type ‘dwellings’) is available from Eurostat, national statistical institutes or country-specific research estimates. However, sufficiently long investment series were only identified for Sweden, while for other countries had to be extrapolated using total investment or gross domestic product (GDP), a method which is also applied by national statistical institutes when necessary. L_{mean} for each country was taken from national methodologies collected in a survey by Eurostat and OECD (2014), except for Switzerland, which was taken from Bundesamt für Statistik (2006).

For further four countries, where data on investment is limited, but the balances of the number of buildings and their floor space is available, a modified PIM was applied. In those cases, we computed an initial estimate of the stock of dwellings (Bulgaria in 1999, Latvia and Romania in 2000, Poland in 1995) based on national construction costs in the base year and then used annual data on investments in, and retirement of, dwellings in the country to arrive to a timeseries of the gross stock. In this case eq. (2) becomes:

$$S_t = S_{t-1}(1 - G_t) + I_t \quad (2)$$

where G_t is the fraction of the stock retired during year t . In this way, service life assumption and long data series are not needed, with the drawback of assuming uniformity of the existing stock of dwellings and that all investment goes into building new dwellings rather than also into renovation of dwellings.

Finally, the calculation for the remaining country, Croatia, was not possible due to the lack of investment data needed for the computation. We therefore used national annual estimates of the construction costs of new dwellings. Data sources and assumptions for individual countries are provided in Table 1, and a summary of methods used is shown in Table 3.

Data availability for the stock of household contents is much lower than for dwellings, as discussed in Paprotny et al. (2020). In order to estimate the stock of household contents, the PIM method is applied again. However, the contents consist of various durables of different service lives, therefore eq. (1) has to be rewritten as:

$$S_t = \sum_{a=1}^A \sum_{j=0}^{L_a} I_{t,a-j} \quad (3)$$

where the stock of household contents equals the sum of stocks for items $a = (1, \dots, A)$, each with service life L_a . No retirement pattern was assumed, hence all items are included in the stock until reaching their average service life. The data on annual investment was gathered from final consumption expenditure of households split according to the Classification of Individual Consumption by Purpose (COICOP). The relevant durables are a set of twelve items at COICOP 4-digit level, i.e. all durables less items under code 07.1 “Purchase of vehicles”. However, only Sweden publishes annual data with such level of detail; data disaggregated at COICOP 3-digit level are disseminated for 31 countries, at COICOP 2-digit level for Switzerland. We therefore computed the average share of spending on durables within COICOP 3-digit categories using 5-yearly household survey data from Eurostat on detailed consumption expenditure patterns per country. Assumptions about service life of durable items (aggregated to COICOP 3-digit items) were calculated from German estimates presented by Schmalwasser et al. (2011). We averaged 1991 and 2009 estimates of service lives from that study and weighted the COICOP 4-digit items according to their share in spending. The service life of appliances for personal care (COICOP code 12.1.2) was not provided in the aforementioned resource, hence it was taken from Jalava and Kavonius (2009). A list of durable items and assumptions on their service life is shown in Table 4, and the share of spending on durables per COICOP 3-digit items is shown in Tables 5. For Iceland detailed consumption expenditure surveys are not available, hence average share in 15 EU members states was used instead.

Final consumption expenditure data were collected from Eurostat, OECD and national statistical institutes. Due to the very long estimated service life of durables in the ‘personal effects’ (COICOP code 12.3.1) category (45 years), the spending on those items had to be extrapolated using data on total private consumption expenditure, or GDP. Detailed sources of data are shown in Table 6. The calculation in eq. (3) was carried out with expenditure time series in real (2015) prices, and then converted to nominal prices using country- and item-specific deflators. Additionally, country-specific deflators of household contents were devised from the time series of the stock of consumer durables in real and nominal prices. Lastly, the stock of consumer durables was divided by the total floor space area in a country to obtain average value per m², as for residential buildings. However, in most countries there is certain share of unoccupied dwellings, hence only the floor space area of occupied dwellings or the number of households was used in this calculation, if such information was available. Instances of using different floor space area estimates to obtain average building and contents values are indicated in Table 1.

Table 1. Sources of data for estimating residential building value.

Country	Gross stock of dwellings (current and constant prices)	Total floor space area and number of dwellings/households (stock)
Austria	Eurostat	2004–2020: annual number of dwellings multiplied by average floor space; 2000–2003: number of dwellings multiplied by average floor space interpolated from 1994 and 2004 microcensus data (Statistics Austria); 2000–2012 dwellings computed by revising upwards the number of households by a percentage interpolated from 1991, 2001 and 2011 censuses and 2013 estimate; 2013–2020 actual number of dwellings from building register (Statistics Austria / Eurostat)*
Belgium	Eurostat	Annual time series of dwellings (STATBEL) and households (IBSA 2022) multiplied by average floor space extrapolated from 2012 estimate (Eurostat) using change in structure of dwellings by area (STATBEL)*
Bulgaria	Eurostat (2020 value extrapolated from 2019 using change in dwelling total floor space and deflator ‘Construction cost, new residential buildings’)	Annual time series (BNSI); number of households (interpolated from 1992, 2001, 2011, 2014, 2016 and 2018–2020 data by BNSI and Eurostat) multiplied by annual average dwelling floor space (BNSI)*
Croatia	Annual average construction cost of new dwellings per m ² for 2000–2020 (DZS)	Extrapolated from 2001 and 2011 census (occupied/all dwellings) using annual data on construction and demolition of dwellings (number and floor space) from DZS, adjusted for 2002–2010 to match census numbers*
Cyprus	Eurostat (2020 value extrapolated from 2019 using change in number of households and deflator ‘Construction cost, new residential buildings’)	Annual number of all dwellings and households multiplied by average floor space in 2012 (CYSTAT), with dwellings and households for 2020 extrapolated from 2019 using the change in population*

Czechia	Eurostat	Number of households (interpolated from 2001 and 2005–2020 data) multiplied by average floor space in 2012 (Eurostat); revised upwards by a percentage interpolated from 2001 and 2011 censuses to account for unoccupied dwellings (CZSO)*
Denmark	Eurostat	Annual time series for all dwellings (DST); annual average dwelling size multiplied by number of households (DST)*
Estonia	Eurostat (2020 value extrapolated from 2019 using change in dwelling floor space area and deflator ‘Construction cost, new residential buildings’)	Dwellings: 2000–2011: Annual time series of dwelling floor space, 2012–2020: annual number of dwellings (except 2012–2015 interpolated from 2011 and 2016) multiplied by average floor space extrapolated from 2011 based on the area of newly completed dwellings (Statistics Estonia); Households: annual number households multiplied by average floor space of dwellings (Statistics Estonia)*
Finland	Eurostat	Annual number of households multiplied by average annual floor space (Statistics Finland); 2000–2020 revised upwards by a percentage interpolated from 2000, 2010, 2017, 2018 and 2020 censuses to account for unoccupied dwellings (Statistics Finland)*
France	Eurostat (2020 value extrapolated from 2019 using change in dwelling floor space and deflator ‘Construction cost, new residential buildings’)	Annual number of all dwellings/households multiplied by average floor space interpolated from 1996, 2001, 2006 and 2013 estimates and extrapolated from 2013 based on the area of newly started dwellings (INSEE); Number of households for 2000–2004 interpolated from 1999 and 2005; Data covers France without Mayotte*
Germany	Eurostat	Annual time series of dwellings in residential buildings (DESTATIS)
Greece	Eurostat (2020 value extrapolated from 2019 using change in number of households and deflator ‘Construction cost, new residential buildings’)	Number of households interpolated from 1991, 2001, 2011 censuses (ELSTAT) and extrapolated from 2011 using annual survey estimate of the number of households from Eurostat, multiplied by average floor space interpolated from 2001 and 2012 data (Eurostat/Federcasa 2006); revised upwards by a percentage interpolated from 1991, 2001 and 2011 censuses to account for unoccupied dwellings (ELSTAT/Eurostat)*
Hungary	Eurostat (2020 value extrapolated from 2019 using change in number of dwellings and deflator ‘Construction cost, new residential buildings’)	Annual number of dwellings (KSH) multiplied by average floor space interpolated from 2001 and 2012 data (Eurostat/Federcasa 2006) and extrapolated from 2012 based on the area of newly built dwellings (KSH); Number of households interpolated from 1991, 2001, 2011 censuses (KSH) and extrapolated from 2011 using annual survey estimate of the number of households from Eurostat, multiplied by average floor space*

Iceland	Statistics Iceland	Annual number of dwellings in 2000–2017 from Statistics Iceland and Nordic Statistics Database (DST) multiplied by average floor space in 2012 (Eurostat), with 2018–2020 extrapolated based on the number of newly built dwellings (Statistics Iceland)
Ireland	CSO	Number of dwellings/households interpolated from 1996, 2002, 2006, 2011 and 2016 data and extrapolated from 2016 based on the number of newly built dwellings (CSO) or survey estimate of the number of households from Eurostat, multiplied by average floor space in 2012 (Eurostat)*
Italy	Eurostat	2001 and 2011 value for occupied dwellings (ISTAT/Federcasa 2006) interpolated and then extrapolated using change in the number of households interpolated from 1991, 2001 and 2006–2020 data (ISTAT/Eurostat); revised upwards by a percentage interpolated from 1991, 2001 and 2011 censuses to account for unoccupied dwellings (ISTAT)*
Latvia	PIM using starting stock in year 2000, adding annual GFCF of dwellings (2001–2020) and removing retirement of dwellings (value per m ² from the average value of previous year's stock); data from Eurostat and CSP, while the retirement of dwellings was assumed to be 0.1% per year.	Dwellings: annual floor space in 2010–2020 extrapolated back to 2000 using earlier annual time series before a series break; number of dwellings for 2002–2009 and 2011 census (used for year 2010) extrapolated using annual number of dwellings completed (CSP). Households: annual number of households multiplied by annual average floor space of dwellings (CSP)*
Lithuania	Eurostat (2020 value extrapolated from 2019 using change in floor space of dwellings and deflator 'Construction cost, new residential buildings')	Annual time series (Statistics Lithuania), with number of dwellings for 2000–2003 extrapolated from 2004 based on the total floor space
Luxembourg	Eurostat	Number of households (interpolated from 1991, 2001 and 2006–2020 data by STATEC/Eurostat) multiplied by average floor space interpolated from 2001 and 2012 data (Eurostat/Federcasa 2006) and extrapolated to 2000 and 2019 based on the floor space of newly constructed dwellings (STATEC)
Malta	PIM (service life: 80 years**) based on GFCF of dwellings for 2000–2018 (Eurostat), total GFCF for 1970–1999 from PWT 10.0, GDP for 1950–1969 from MPD 2018) and 1921–1949 interpolated from 1921, 1930 and 1938 estimates by Apostolides (2010) and 1950 estimate from MPD 2018	Number of dwellings and households for 2000–2011 interpolated from 1995, 2005 and 2011 censuses (National Statistics Office), number of households for 2012–2020 from Eurostat and number of dwellings estimated from 2011 ratio of dwellings to households; both dwellings and households multiplied by average floor space in 2002 (Federcasa 2006)
Netherlands	Eurostat	2011–2020: annual number of dwellings multiplied by average floor space; 2000–2010: annual number of dwellings multiplied by average floor space extrapolated from 2011 based on floor space by year of construction and number of newly-built dwellings (CBS)

North Macedonia	Average building expenses per floor space of residential buildings in 2015 (MakStat) deflated using 'Construction cost, new residential buildings' (Eurostat), except 2000–2004 using GDP deflator (Eurostat)	Dwellings: 2002 census extrapolated to 2000–2020 using number and floor space of newly built dwellings (MakStat); Household: 2000–2004 number of households interpolated from 1994 and 2002 censuses and 2005 estimate, 2005–2020 from survey-based number of dwellings, multiplied by average dwelling size in each year (MakStat/Eurostat)*
Norway	PIM (service life: 80 years) based on GFCF of dwellings for 1970-2020 (SSB/Eurostat) and total gross investment for 1921-1969 (Grytten 2004)	Dwellings: annual number for 2006–2020 extrapolated based on number of newly built dwellings (SSB) multiplied by average floor space in 2012 (Eurostat) extrapolated based on floor space area of newly built dwellings (SSB). Households: interpolated from 2000 and 2004–2020 data (SSB) and multiplied by annual average floor space of dwellings*
Poland	PIM using starting stock in 1995 (average GFCF of dwellings per m ² of completed dwellings multiplied by total floor space of dwellings), adding annual GFCF of dwellings (1996–2020) and removing annual apparent retirement of dwellings (value per m ² from the average value of previous year's stock); deflator of GFCF of dwellings deflator until 2000 and deflator 'Construction cost, new residential buildings' used afterwards; data from Eurostat (GFCF and deflator) and GUS (dwelling stock and construction)	Annual time series (GUS)
Portugal	Eurostat (2020 value extrapolated from 2019 using change in number of dwellings and deflator 'Construction cost, new residential buildings')	Number of dwellings (interpolated from 1991 and 2001–2020 data by Statistics Portugal) and households (interpolated from 1991, 2001 and 2005–2020 data by Statistics Portugal/Eurostat) multiplied by average floor space extrapolated from 2011 census based on floor space of newly built dwellings and annual balance of dwellings (Statistics Portugal)*
Romania	PIM using starting stock in year 2000, adding annual GFCF of dwellings (2001–2018) and removing annual apparent retirement of dwellings (value per m ² from the average value of previous year's stock); data from Eurostat (GFCF and initial stock) and INSSE (dwelling stock and construction)	Dwellings: annual time series (INSSE); Households: annual number of households (interpolated from 1992, 2002, 2005–2020 data by INSSE/Eurostat) multiplied by annual average floor space of dwellings (INSSE)*
Serbia	Annual average construction cost of new dwellings per m ² for 2000–2020 (SORS), with construction cost for 2019–2020 extrapolated from 2018 using average price of dwellings (incl. land and other costs)	Dwellings: stock of dwellings and floor space (2012–2020) extrapolated for 2000–2011 using number and size of dwellings newly built (SORS); Households: 2000–2010 interpolated based on occupied dwellings from 1991, 2002 and 2011 census (SORS); 2011 interpolated from 2010 and 2012, 2012–2020 survey-based household number (Eurostat); household floor area extrapolated from 2011 census using change average dwelling area.*

Slovakia	Eurostat	Dwellings: number of dwellings extrapolated from 2011 census based on the number of newly built dwellings (SOSR), multiplied by average floor space in 2012 from Eurostat extrapolated by the floor space of newly built dwellings (SOSR); Households: annual number of households (interpolated from 2001 and 2005–2020 data by Eurostat) multiplied by average floor space of dwellings*
Slovenia	Eurostat	Dwellings: annual time series for 2002–2010, 2011–2017 interpolated from 2010, 2014 and 2017 data, 2018–2020 extrapolated based on floor space newly built, 2000–2001 extrapolated using change in number of dwellings (SiStat). Households: interpolated from 1991, 2002, 2005–2010, 2014, 2017 and 2020 data by SiStat/Eurostat*
Spain	Eurostat (2020 value extrapolated from 2019 using change in number of dwellings and deflator ‘Construction cost, new residential buildings’)	2000–2012: Annual time series of all/principal dwellings from Ministerio de Fomento (except 2000 interpolated from 1991 and 2001 data by INE) multiplied by average floor space interpolated from 1991, 2001 and 2012 data (Eurostat/Fundación BBVA e Ivie 2009); 2013–2020: Annual time series of all dwellings from Ministerio de Fomento and households from INE multiplied by average floor space in 2012 (Eurostat)*
Sweden	PIM (service life: 73 years) based on GFCF of dwellings for 1993–2020 from Eurostat and 1928–1992 from Edvinsson (2005)	2013–2020: Annual number of dwellings multiplied by average floor space of dwellings, based on distribution of floor space classes (SCB); 2000–2012: Annual number of dwellings multiplied by average floor space of households in 2013 (SCB)
Switzerland	PIM (service life: 50 years) based on GFCF of dwellings for 1995–2020 from Eurostat, 1990–1994 from OECD, 1981–1986 and 1951–1969 from HSSO; and total investment for 1987–1989 and 1970–1980 from HSSO	Number of dwellings (interpolated from 2000 and 2009–2020 data by BFS) and households (interpolated from 2000 and 2011–2020 data by BFS/Eurostat) multiplied by average floor space in 2009–2019 (BFS), with 2009 value used for 2000–2008*
United Kingdom	ONS	2017–2020: annual number of dwellings/households multiplied by average floor space in 2016; 2004–2016: Annual number of dwellings/households multiplied by average floor space; 2000–2003: number of dwellings/households multiplied by average floor space in 2004; Note: average floor space refers only to England and Wales (ONS)*

Notes:

* value for all dwellings was used for estimating building value per m², while the value for occupied dwellings/principal dwellings/households was used for estimating contents value per m².

** according to national methodology, service life of dwellings is 85 years, but it was truncated here due to the lack of economic data before year 1921.

GFCF = gross fixed capital formation; GDP = gross domestic product; PIM = Perpetual Inventory Method

PWT 10.0 = Penn World Table 10.0 (Feenstra et al. 2015)

MPD 2018 = Maddison Project Database 2018 (Bolt et al. 2018)

Table 2. A note on methodological differences for certain countries preventing the use of national or Eurostat data on the gross stock of dwellings. Based on Eurostat and OECD (2014), Eurostat and GUS.

Country	Description
Latvia	Gross stock of dwellings is calculated based on prices of newly constructed buildings rather than on the basis of the replacement costs of existing stock, which substantially differ in type and quality. Consequently, this results in overestimation of the stock of dwellings. The statistical office of Latvia made a baseline national estimate of gross stock for year 2000, hence we use that estimate as the basis for computing time series for 2001–2020 using PIM with annual GFCF and assumed annual retirement equaling 0.1% of the stock (Eurostat and OECD 2014).
Malta	Gross stock of dwellings published by Eurostat in constant prices has a strong downward trend, which is highly unrealistic. Eurostat’s estimate for 2018-2019 is almost identical to ours, hence we use PIM for all years.
Poland	Gross stock of dwellings that were built before 1995 is calculated at constant replacement values of September 1994, which results in a very low estimate of the total value of dwellings in Poland. PIM is applied instead using our estimate of the initial stock of dwellings in 1995.
Romania	Gross stock of dwellings published by Eurostat has almost the same value as of net stock, which is highly unrealistic. We therefore use the same approach as for Latvia, though using directly annual data on dwelling balance from INSSE.

Table 3. Reference to methodologies used for obtaining building stock.

Method	Countries
Building stock taken directly from Eurostat database or national statistical agency	Austria, Belgium, Bulgaria, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Portugal, Slovakia, Slovenia, Spain, United Kingdom
PIM – eq. 1	Malta, Norway, Sweden and Switzerland
Modified PIM – eq. 2	Latvia, Poland, Romania
Construction cost of new dwellings	Croatia, North Macedonia, Serbia

Table 4. Consumption expenditure categories by COICOP 3-digit codes and durable items included in those categories by COICOP 4-digit codes, with assumption on service life and share of durables in final consumption expenditure COICOP 3-digit categories per country.

COICOP code	COICOP category name	Durable items (COICOP code and name)	Service life (years)
05.1	Furniture and furnishings, carpets and other floor coverings	05.1.1 Furniture and furnishings 05.1.2 Carpets and other floor coverings	17
05.3	Household appliances	05.3.1 Major household appliances whether electric or not	15
05.5	Tools and equipment for house and garden	05.5.1 Major tools and equipment	11
06.1	Medical products, appliances and equipment	06.1.3 Therapeutic appliances and equipment	7
08.2	Telephone and telefax equipment	08.2.0 Telephone and telefax equipment	6
09.1	Audio-visual, photographic and information processing equipment	09.1.1 Equipment for the reception, recording and reproduction of sound and picture 09.1.2 Photographic and cinematographic equipment and optical instruments 09.1.3 Information processing equipment	10
09.2	Other major durables for recreation and culture	09.2.1 Major durables for outdoor recreation 09.2.2 Musical instruments and major durables for indoor recreation	16
12.1	Personal care	12.1.2 Electric appliances for personal care	10
12.3	Personal effects n.e.c.	12.3.1 Jewellery, clocks and watches	45

Notes:

- COICOP = Classification of Individual Consumption by Purpose.
- Final consumption expenditure of households is expenditure incurred by resident households on goods or services that are used for the direct satisfaction of individual needs or wants or the collective needs of members of the community. It includes or excludes many specific types of expenditure, for instance excludes purchases of dwellings, land and valuables. See paragraphs 3.94-3.96 of the European System of Accounts (ESA) 2010 manual (Eurostat 2013).
- Service life should include normal wear and tear, obsolescence and accidental damage which can be insured against. It excludes, among other things, exceptional or catastrophic losses, unforeseen obsolescence and uncompensated seizures. See paragraphs 3.139-3.142 and 6.08-6.13 of the ESA 2010 manual.

Table 5. Assumptions on the share of durables in final consumption expenditure COICOP 3-digit categories per country (based on expenditure surveys listed in Table S5).

Country	Spending on durables as % of total spending per COICOP 3-digit category								
	05.1	05.3	05.5	06.1	08.2	09.1	09.2	12.1	12.3
Austria	99.6	76.9	34.0	45.3	100.0	78.7	96.6	2.2	46.3
Belgium	98.7	74.2	30.2	23.9	100.0	66.4	85.6	2.2	47.0
Bulgaria	99.7	79.3	24.5	3.7	100.0	86.7	90.5	0.7	40.4
Croatia	99.0	88.4	40.1	12.7	100.0	90.7	85.2	1.3	19.7
Cyprus	99.0	87.4	42.2	11.1	100.0	88.0	91.4	0.2	44.7
Czechia	99.2	78.4	46.9	20.5	100.0	85.6	95.7	2.7	40.9
Denmark	97.8	82.3	29.9	33.6	100.0	79.6	96.7	2.4	57.9
Estonia	99.7	85.8	44.6	11.9	100.0	89.3	93.8	1.0	32.5
Finland	91.9	84.4	36.7	25.5	100.0	81.6	91.7	2.0	51.2
France	98.8	84.4	32.3	37.3	100.0	69.3	94.0	1.1	45.7
Germany	94.0	70.5	45.1	36.7	100.0	77.7	88.5	1.6	65.9
Greece	95.8	84.9	18.6	21.3	100.0	73.1	80.0	1.1	28.1
Hungary	96.9	83.7	27.6	11.6	100.0	89.4	91.7	0.7	31.2
Iceland	91.0	70.8	21.7	30.8	100.0	70.4	87.3	8.8	55.8
Ireland	98.7	59.2	21.8	15.9	*4.6	69.6	88.1	0.9	63.2
Italy	90.5	52.8	16.3	23.4	100.0	64.0	93.4	1.1	55.2
Latvia	96.9	80.4	48.6	7.0	100.0	90.5	88.9	1.0	28.3
Lithuania	99.3	81.7	35.1	6.8	100.0	90.6	91.7	1.1	24.5
Luxembourg	99.6	83.0	30.8	44.2	100.0	81.4	89.0	7.6	63.3
Malta	99.5	73.0	16.3	22.3	100.0	82.5	78.4	0.7	**15.5
Netherlands	97.9	75.9	14.3	50.0	100.0	77.3	79.2	4.5	57.8
North Macedonia	97.7	83.3	18.0	10.0	100.0	92.3	100.0	0.5	41.9
Norway	99.6	81.1	11.0	29.9	100.0	85.4	91.6	1.9	53.1
Poland	99.4	80.8	26.2	8.0	100.0	86.8	95.2	1.3	16.4
Portugal	97.3	80.0	20.9	15.5	100.0	78.0	70.3	0.5	48.1
Romania	97.5	72.8	41.7	2.5	100.0	91.4	100.0	0.7	47.6
Serbia	98.7	82.0	14.3	14.3	100.0	90.6	100.0	0.7	13.7
Slovakia	99.2	79.4	31.6	9.4	100.0	90.7	98.4	1.2	28.6
Slovenia	98.7	85.7	69.0	37.9	100.0	88.3	90.0	1.1	28.0
Spain	96.3	74.9	14.5	38.0	100.0	71.2	84.5	1.9	57.1
Sweden	99.0	83.1	29.5	34.3	100.0	68.5	88.8	2.6	55.7
Switzerland***	[37.3]	[14.4]	[11.6]	[27.0]	[4.8]	[13.1]	[2.8]	[47.1]	[16.4]
	81.2	70.1	20.6	12.0	100.0	87.4	100.0	3.0	61.8
United Kingdom	99.9	73.6	28.0	46.0	100.0	72.2	93.4	2.9	60.2

Notes:

* share in COICOP 2-digit category 08 (Communications),

** share in total spending for COICOP categories 12.3, 12.4, 12.5 and 12.6,

*** upper row is the share of COICOP 3-digit category in respective COICOP 2-digit categories (05, 06, 08, 09, 12).

Table 6. Availability of household final consumption expenditure data by country.

Country	Annual final consumption expenditure data (COICOP 3-digit) – sources by year	Detailed consumption expenditure data (COICOP 4-digit) – available surveys (from Eurostat unless otherwise noted)
Austria	1995-2020: Eurostat; 1976-1994: OECD; 1956-1975: extrapolated using total household consumption expenditure from PWT 10.0	1994, 1999, 2005, 2010, 2015
Belgium	1995-2020: Eurostat; 1956-1994: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2005, 2010, 2015
Bulgaria	1995-2020: Eurostat; 1970-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1969: extrapolated using GDP from MPD 2018	2005, 2010, 2015
Croatia	1995-2020: Eurostat; 1990-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1989: extrapolated using GDP from MPD 2018	2005, 2010, 2015
Cyprus	1995-2020: Eurostat; 1956-1994: extrapolated using total household consumption expenditure from PWT 10.0	2005, 2010, 2015
Czechia	1990-2020: CZSO; 1956-1989: extrapolated using GDP from MPD 2018 (Czechoslovakian GDP before 1970)	2005, 2010, 2015
Denmark	2020: extrapolated from 2019 using total household consumption expenditure on certain aggregated COICOP categories in current and constant prices (DST); 1966-2019: DST; 1956-1965: extrapolated using total household consumption expenditure from PWT 10.0	1994, 1999, 2005, 2010, 2015
Estonia	1995-2020: Eurostat; 1990-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1950-1989: extrapolated using GDP from MPD 2018 (Soviet GDP per capita before 1980)	2005, 2010, 2015
Finland	1975-2020: Statistics Finland; 1956-1974: extrapolated using total private consumption expenditure from Statistics Finland	1994, 1999, 2005, 2010, 2015
France	1975-2020: Eurostat; 1959-1974: OECD; 1956-1958: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2005, 2010, 2015
Germany	1991-2020: DESTATIS; 1956-1990: extrapolated using total household consumption expenditure from PWT 10.0	1994, 1999, 2005, 2010, 2015
Greece	1995-2020: Eurostat; 1956-1994: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2005, 2010, 2015
Hungary	1995-2020: Eurostat; 1970-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1969: extrapolated using GDP from MPD 2018	2005, 2010, 2015
Iceland	1990-2020: Statistics Iceland; 1957-1989: extrapolated using household expenditure on certain items, in local classification, roughly comparable with COICOP (Statistics Iceland); 1956: extrapolated using total private consumption expenditure (Statistics Iceland)	COICOP items 05.3.1, 09.1.1-3 and 12.3.1: average consumer price index weights during 2002–2020 (Statistics Iceland); other COICOP items - average shares for the European Union (15 member states) from 1999, 2005, 2010 surveys

Ireland	1995-2020: Eurostat; 1956-1994: extrapolated using total household consumption expenditure from PWT 10.0	1994, 1999, 2005, 2010, 2015
Italy	1995-2020: Eurostat; 1970-1994: OECD, with deflator per COICOP item for 1970-1991 extrapolated from 1992 using deflator for all durables from ISTAT; 1956-1969: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2010, 2015
Latvia	1995-2020: Eurostat; 1990-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1950-1989: extrapolated using GDP from MPD 2018 (Soviet GDP per capita before 1980)	2005, 2010, 2015
Lithuania	1995-2020: Eurostat; 1990-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1950-1989: extrapolated using GDP from MPD 2018 (Soviet GDP per capita before 1980)	2005, 2010, 2015
Luxembourg	2020: extrapolated from 2019 using total household consumption expenditure on durables in current and constant prices (Eurostat); 1995-2019: Eurostat; 1956-1994: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2005, 2010, 2015
Malta	2000-2020: Eurostat; 1970-1999: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1969: extrapolated using GDP from MPD 2018	2005, 2010, 2015
Netherlands	1995-2020: Eurostat; 1980-1994: OECD; 1956-1979: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2005, 2015
North Macedonia	2020: extrapolated from 2019 using GDP in current and constant prices (Eurostat); 2000-2019: Eurostat; 1990-1999: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1989: extrapolated using GDP from MPD 2018	2005, 2010, 2015
Norway	2020: extrapolated from 2019 using total household consumption expenditure on certain aggregated COICOP categories in current and constant prices (SSB); 1970-2019: SSB; 1956-1969: extrapolated using total private consumption expenditure from Grytten (2004)	2005, 2010, 2015
Poland	1995-2020: Eurostat; 1970-1994: extrapolated using total private consumption expenditure from PWT 10.0; 1956-1969: extrapolated using total consumption expenditure from GUS	2005, 2010, 2015
Portugal	1995-2020: Eurostat; 1956-1994: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2005, 2010, 2015
Romania	1995-2020: Eurostat; 1960-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1959: extrapolated using GDP from MPD 2018	2005, 2010, 2015
Serbia	1995-2020: Eurostat; 1990-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1989: extrapolated using GDP from MPD 2018	2015
Slovakia	1995-2020: Eurostat; 1990-1994: extrapolated using total household consumption expenditure from PWT 9.1; 1956-	2005, 2010, 2015

	1989: extrapolated using GDP from MPD 2018 (Czechoslovakian GDP before 1985)	
Slovenia	1995-2020: Eurostat; 1990-1994: extrapolated using total household consumption expenditure from PWT 10.0; 1956-1989: extrapolated using GDP from MPD 2018	2005, 2010, 2015
Spain	1995-2020: Eurostat; 1956-1994: extrapolated using total household consumption expenditure from PWT 10.0	1988, 1994, 1999, 2005, 2010, 2015
Sweden	1980-2020: SCB; 1956-1979: extrapolated using total private consumption expenditure from Schön and Krantz (2017)	1994, 1999, 2005, 2010, 2015
Switzerland	2020: extrapolated from 2019 using total household consumption expenditure (BFS); 1995-2019: COICOP 2-digit level data from BFS; 1956-1994: extrapolated using household consumption expenditure by five broad categories from BFS (1986-1995) and HSSO (1948-1986)	Swiss surveys for 2006–2008, 2009–2011, 2012–2014 and 2015–2017 (BFS)
United Kingdom	1985-2020: ONS; 1956-1984: extrapolated using total household consumption expenditure from Blue Book 2020 (ONS)	1988, 1994, 1999, 2005, 2010, 2015

Notes:

PWT 10.0 = Penn World Table 10.0 (Feenstra et al. 2015), available from <https://www.rug.nl/ggdc/productivity/pwt/?lang=en>

MPD 2018 = Maddison Project Database 2018 (Bolt et al. 2018)

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CSP: Central Statistical Bureau of Latvia, <https://www.csb.gov.lv/lv/sakums>

CYSTAT: Republic of Cyprus Statistical Service,
https://www.mof.gov.cy/mof/cystat/statistics.nsf/index_en/index_en?OpenDocument

CZSO: Czech Statistical Office, <https://www.czso.cz/>

DESTATIS: Federal Statistical Office, <https://www.destatis.de/>

DST: Statistics Denmark, <https://www.dst.dk/>

DZS: Croatian Bureau of Statistics, https://www.dzs.hr/default_e.htm

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OECD: Organisation for Economic Co-operation and Development, <https://stats.oecd.org/>

ONS: Office for National Statistics, <https://www.ons.gov.uk/>

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SOSR: Statistical Office of the Slovak Republic, <https://slovak.statistics.sk/>

SSB: Statistics Norway, <https://www.ssb.no/>

STATBEL: Belgian Statistical Office, <https://statbel.fgov.be/en>

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