Inflation Convergence over Time:
Sector-Level Evidence within Europe

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Abstract

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JEL Classification: C32, E31, E58, F45

Key Words: Inflation Convergence; Half-Life; Sector-Level Analysis; European Union; Euro Area

Short Title: Inflation Convergence over Time

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1   Introduction

Inflation convergence is an important criterion in the Maastricht Treaty, as it ensures price stability and integration within the European Union (EU).[1] This criterion not only requires member countries to have a high degree of price stability, but also calls for a price performance that is sustainable to allow for the adoption and continuous circulation of the euro (e.g., see the convergence report by European-Commission (2020)). Accordingly, when candidate countries are considered for EU membership or the Euro Area (EA), part of the evaluation focuses on inflation convergence. Moreover, even when a country is an EU member or within the EA, its price-stability performance is evaluated over time for sustainability (e.g., see Siklos (2010)). It is thus implied that an investigation of inflation convergence within Europe *over time* is essential for the price stability and continuous integration of the EU.

As different sectors can have alternative inflation-convergence patterns, identifying the sectors that are responsible for inflation convergence or non-convergence is essential for sector-specific policies, especially for EU candidate countries and non-euro EU member countries. This can only be achieved through a sector-level investigation, which is also necessary to avoid any aggregation bias, as suggested in studies such as by Byrne and Fiess (2010). Different from country-level analyses, where evidence only for convergence versus non-convergence can be obtained, a sector-level investigation is also useful for measuring the total expenditure share of sectors for which there is evidence for inflation convergence; this helps identify the position of countries in their inflation convergence, especially when the investigation is conducted over time.

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[1] The full text of the Maastricht Treaty can be found at http://data.europa.eu/eli/treaty/teu/sign.

This paper conducts such a time-varying sector-level investigation of inflation convergence among European countries consisting of past and present EU/EA members, EU candidate countries and non-euro EU member countries. The formal analysis is based on four-digit sector-level inflation data from 34 countries covering the months between 1997:M1−2019:M12, where five year (i.e., sixty months) moving windows are considered in order to conduct a time-varying investigation. Panel unit root tests based on Levin, Lin, and Chu (2002) are used to investigate the convergence of bilateral inflation rates across countries at the sector level; this is essential to overcome the arbitrary benchmark problem, as discussed in studies such as those by Pesaran (2007) and Yazgan and Yilmazkuday (2011).

Specifically, country-sector specific panel estimations are used to compare the sector-level inflation rates of each country with those of other countries within Europe; i.e., the cross-sectional dimension of the panel unit root tests consist of countries at the sector level. When there is evidence for convergence (if any) for a particular sector in a particular country, the corresponding speed of convergence is further investigated by using half-life measures, as in studies such as that by Lopez and Papell (2012); this is convenient for observing how the speed of convergence has changed over time at the country-sector level. Once estimations are run at the country-sector level, the corresponding results are further aggregated across sectors (of each country) to obtain country-specific results for inflation convergence.

In the literature on inflation convergence in Europe at the country level over time, Kočenda and Papell (1997) and Busetti, Forni, Harvey, Venditti, et al. (2007) have shown evidence for inflation convergence among EU countries. The exchange-rate mechanism during the 1980s, for example, accelerated inflation convergence. Similarly, Engel and Rogers (2004) have shown evidence for a reduction in price dispersion across European cities in the early

1990s referring to a reduction in economic barriers. Kočenda, Kutan, and Yigit (2006) and Siklos (2010) have shown that the inflation rates of new EU countries have converged with the Maastricht criteria. Lopez and Papell (2012) have shown that for EA countries, inflation convergence began shortly after the implementation of the Maastricht treaty, although it has been steadier since the introduction of the euro. Brož and Kočenda (2018) have shown evidence that inflation convergence among EU countries has become more widespread since the global financial crisis of 2008.

There are also studies in the literature that evidence the non-convergence of inflation or even inflation divergence among European countries. Among these, Honohan and Lane (2003) have shown that inflation rates have diverged much more widely than expected among EU member states, which is attributable to the weakness of the euro in the early months of the union. Fritsche and Kuzin (2011), Giannellis (2013) and Cuestas, Gil-Alana, and Taylor (2016) have shown that there are clusters of inflation convergence in Europe, although there is no overall inflation convergence.

The mixed evidence of inflation convergence at the country level in the literature can be attributed to an aggregation bias, as in studies such as by Byrne and Fiess (2010) who provides evidence for diverging country-level inflation rates and converging sector-level inflation rates. The sectoral heterogeneity for inflation convergence has also been discussed by Rogers (2007) who shows evidence for a decline in the dispersion of traded goods prices in Europe. This paper contributes to this sector-level literature by investigating the sectors that are responsible for inflation convergence versus non-convergence, which is essential for implementing sector-level policies such as the harmonization of tax rates across European countries.

Regarding the time period investigated, this paper is closest to the study by Brož and Kočenda (2018) which covers the period between 1999:M1 and 2017:M12, although there are several differences. First, the investigation in this paper is conducted at the country-sector level, whereas Brož and Kočenda (2018) conducts a country-level investigation. Having a sector-level investigation for each country is useful for obtaining the total expenditure share of sectors for which there is evidence for inflation convergence, whereas a country-level investigation can suggest either convergence or non-convergence. Second, this paper aggregates sector-level results to obtain country-level results by using the corresponding expenditure shares. Third, when there is evidence for sector-level convergence, this paper investigates the speed of convergence by estimating the corresponding half-life measures. These half-life measures at the sector level are also aggregated to obtain country-level half-life measures. Fourth, in order to carry out a continuous investigation of inflation convergence over time, this paper conducts estimations by using moving windows of five years (sixty months). Finally, due to these technical differences, this paper shows that the convergence process within Europe has been disrupted in certain sectors and countries over time, especially during the 2008 financial crisis and starting in 2015.

The rest of the paper is organized as follows. The next section describes the data set and the estimation methodology. Section 3 depicts the panel unit-root test results as well as the corresponding speed of convergence measured by half-life estimates. Section 4 discusses the empirical results by connecting them to the existing literature, and Section 5 concludes. Certain technical details and county-specific results are given in the Appendix.

2 Data and Estimation Methodology

2.1 Data Set

The convergence analysis is conducted across 34 European countries by using sector-level inflation data obtained from Eurostat covering the months between 1997:M1 and 2019:M12. The list of countries, which is determined based on Eurostat data availability at the four-digit sector level, can be found in Table 1. These countries consist of past and present EU/EA members, EU candidate countries and non-euro EU member countries.

Inflation data are measured by using the Harmonised Index of Consumer Prices (HICP) for 94 four-digit sectors according to the classification of individual consumption by purpose (COICOP). The list of four-digit sectors is given in Appendix Table A.1. In this data set, inflation is defined as the annual rates of change in HIPC (with the code prc_hicp_manr).

Expenditure shares at the country-sector level are also obtained from Eurostat; these are used to aggregate results at the country-sector level to obtain country-level results.

2.2 Methodology

Since the main objective is to investigate the convergence of inflation rates across countries over time, the estimations are conducted by considering moving windows of five years (sixty months); e.g., the first estimation is conducted for the period between 1997:M1 and 2001:M12, the second estimation is conducted for the period between 1997:M2 and 2002:M1, and so forth, while the last estimation is conducted for the period between 2015:M1 and 2019:M12.[2]

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[2] An alternative window size of ten years has also been considered for robustness. The results are highly similar to those obtained by five-year moving windows qualitatively.

2.2.1 Panel Unit-Root Tests

For each moving window, bilateral convergence of inflation rates across countries is investigated at the sector level using the panel-data model of Levin, Lin, and Chu (2002) given by:

$$\Delta q_{ist}^j = \mu_{is} + \phi_{is} q_{is,t-1}^j + \sum_{m=1}^p \theta_{ism}^j \Delta q_{is,t-m}^j + \varepsilon_{ist}^j \tag{1}$$

where $q_{ist}^j = \pi_{ist} - \pi_{jst}$, with π_{ist} and π_{jst} representing inflation rate of sector s in country i and country j, respectively, at time t, and Δ represents time difference. Individual estimations of this model are conducted at the country-sector (is) level. As one example to these individual regressions, inflation rates of "Bread and cereals" (represented by s) are used to construct q_{ist}^j's between Germany (represented by i) versus all other countries (each represented by j) in the sample that constitute the cross-sectional dimension of this individual panel. Another example would include inflation rates of "Furniture and furnishings" (represented by s) between United Kingdom (represented by i) versus all other countries (each represented by j). It is important to emphasize that bilateral inflation rates across countries (at the sector level) are considered to overcome the arbitrary benchmark problem as discussed in studies such as by Pesaran (2007) or Yazgan and Yilmazkuday (2011).

The panel unit-root test by Levin, Lin, and Chu (2002) is used to test the null hypothesis of $H_0 : \phi_{is} = 0$ (implying non-convergence) versus the alternative $H_0 : \phi_{is} < 0$ (implying convergence). Since μ_{is} is at the country-sector (is) level, the panel unit-root test corresponds to investigating relative convergence of inflation differences between country i and other countries for sector s to a country-sector (is) specific value. The optimal number of lags p is

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determined according to the methodology introduced by Hall (1994) that considers alternative criteria (among AIC, SIC or HQIC) based on the model parameters and the sample size.

2.2.2 Speed of Convergence

If the null hypothesis of $H_0 : \phi_{is} = 0$ is rejected (implying convergence), to investigate the speed of convergence, the corresponding half life η_{is} at the country-sector (is) level is approximated by using the autoregressive parameter ϕ_{is} as in studies such as by Lopez and Papell (2012) according to:

$$\eta_{is} = -\frac{\ln(2)}{\ln(1 + \phi_{is})} \tag{2}$$

which corresponds, according to the example above, to the half life of inflation rate for "Bread and cereals" in Germany with respect to all other countries in the sample. Using the standard error of the estimated autoregressive parameter ϕ_{is}, its confidence interval is obtained, which is further used to construct the lower and upper bounds of η_{is}.

As it is shown in the Appendix, the autoregressive parameter ϕ_{is}, which is at the country-sector (is) level, can be aggregated across sectors (each represented by s) in country i to have a country-i-specific autoregressive parameter under certain conditions as follows:

$$\phi_i = \sum_{s=1}^{S} \omega_{is} \phi_{is} \tag{3}$$

where ω_{is} is the expenditure share of sector s in country i, and S is the number of sectors. The corresponding half life η_i at the country (i) level is approximated by using this autoregressive parameter ϕ_i as follows:

$$\eta_i = -\frac{\ln(2)}{\ln(1 + \phi_i)} \tag{4}$$

which corresponds, according to the example above, to the half life of the consumer price index (CPI) inflation rate in Germany with respect to all other countries in the sample. Using the confidence interval of the estimated autoregressive parameter ϕ_{is}, the lower and upper bounds of η_i are obtained.

3   Empirical Results

Estimations at the country-sector (is) level are conducted by using Equation 1 for each moving window. The corresponding panel unit-root test results are obtained in a continuous way, whereas three snapshots for the windows of 1997:M1−2001:M12, 2006:M1−2010:M12 and 2015:M1−2019:M12 are given in the tables as summaries. Three alternative significance levels, namely 1%, 5% and 10%, are considered for robustness, although the discussion in the text follows significance at the 5% level.

The total expenditure shares of sectors for which there is evidence for convergence (i.e., for which the null hypothesis of $H_0 : \phi_{is} = 0$ is rejected) are given in Table 1 for each country. As is evident, convergence is conducted for all sectors in several countries, although the total expenditure share of sectors is as low as about 75% (for Turkey between 1997:M1 and 2001:M12).

3.1   Speed of Convergence

For the countries and sectors for which there is evidence for convergence, ϕ_{is} estimates based on Equation 1 are further used to obtain the speed of inflation convergence measured by half-life estimates at alternative levels according to Equations 2, 3 and 4.

Half-life estimates at the country level are summarized in Table 2, whereas the corresponding continuous measures are given in Figures 1-3. According to Table 2, the average half life across countries decreased from about 15 months between 1997:M1 and 2001:M12 to about 8 months between 2015:M1 and 2019:M12. Therefore, there is evidence for the faster convergence of sector-level inflation rates over time. This evidence over time also holds for the median, minimum and maximum across countries.

Before the official circulation of the euro (i.e., between 1997:M1 and 2001:M12), half-life measures were about 17 months for countries such as Germany, Portugal and Ireland, and they shrank to about 9 months for Germany and Portugal and to about 10 months for Ireland in the latest period between 2015:M1 and 2019:M12. The largest decrease in half-life measures was experienced by Turkey, from about 43 months between 1997:M1 and 2001:M12 to about 9 months between 2006:M1 and 2010:M12, although it increases to about 16 months between 2015:M1 and 2019:M12.

The corresponding continuous measures given in Figures 1-3 highly support the summary results in Table 2. Nevertheless, countries such as Bulgaria, Estonia, Spain, France, Ireland, Iceland, Lithuania, Latvia and Slovenia experienced volatility in their convergence during the period coinciding with the 2008 financial crisis.

3.2 Sector-Specific Results

Although the estimations are conducted at the four-digit COICOP sector level (for 94 sectors) for each country, the estimation results at the sector level are given for two-digit COICOP sectors (11 of them) for presentational purposes. Similar to Equations 3-4, the results for two-digit sectors are obtained by aggregating the corresponding results for four-digit sectors

by using the corresponding expenditure shares. In order to focus on sectors, the results in the main text are presented for the median country, although they are given for each country in the Appendix tables.

Sector-level half-life estimates for the median country are summarized in Table 3. Before the official circulation of the euro (i.e., between 1997:M1 and 2001:M12), the estimated average (across sectors) half-life was about 17 months, with a range between 10 months (for "food and non-alcoholic beverages") and 26 months (for "restaurants and accommodation services"). By the latest period of 2015:M1−2019:M12, the average half-life estimate (across sectors) was reduced to about 11 months, with a range between 5 months (for "clothing and footwear") and 35 months (for "restaurants and accommodation services"). Overall, except for "information and communication" and "restaurants and accommodation services," the half-life estimates of all sectors have decreased over time for the median country. It is implied that "restaurants and accommodation services" were responsible for there being no further reductions in half-life estimates over time.

When "food and non-alcoholic beverages" are considered, Turkey experienced the largest reduction in half-life estimates over time, whereas half-life estimates for Poland increased. Regarding "alcoholic beverages, tobacco and narcotics," Germany experienced a reduction of about 20 months in half-life estimates over time, while half-life estimates for Turkey increased in the last 5-year window considered. Almost all countries experienced a reduction in half-life estimates for "clothing and footwear", "housing, water, electricity, gas and other fuels", "furnishings, household equipment and maintenance", or "transport." There is mixed evidence across countries for half-life estimates over time for "health", "information and communication", "recreation, sport and culture", "restaurants and accommodation services" and

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"insurance and financial services." It is implied that reductions in half-life estimates over time are observed in tradable sectors, whereas the evidence over time is mixed for non-tradable sectors.

4 Discussion of Results and Policy Implications

This section connects the empirical results in this paper to the existing literature, where the corresponding policy implications at the country level, especially for EU candidate countries and non-euro EU member countries, are also discussed.

In particular, the results of this paper are mostly consistent with earlier sector-level and country-level studies such as those by Kočenda and Papell (1997), Engel and Rogers (2004), Weber and Beck (2005), Kočenda, Kutan, and Yigit (2006), Busetti, Forni, Harvey, Venditti, et al. (2007), Rogers (2007), Byrne and Fiess (2010), Siklos (2010), Lopez and Papell (2012) and Brož and Kočenda (2018), which provide evidence for inflation convergence, whereas the results contradict other studies such as those by Honohan and Lane (2003), Fritsche and Kuzin (2011), Giannellis (2013) and Cuestas, Gil-Alana, and Taylor (2016), which provide evidence for either weaker convergence or non-convergence. Potential reasons for the difference between the latter studies and the current one include conducting a time-varying investigation at the sector level in this paper. Due to these technical reasons, this paper also deviates from studies such as that by Brož and Kočenda (2018), because the convergence process within Europe has been disrupted in certain sectors and countries over time, especially during the 2008 financial crisis and starting in 2015.

Regarding implications for EU candidate countries, North Macedonia and Serbia have half-life estimates of about 7.9 and 7.4 months, respectively, for the latest period between 2015:M1 and 2019:M12, which was very close to the average value across European countries, although these measures have been slightly increasing since about 2015. Another candidate country, Turkey, had half-life estimates of about 16.1 months during the latest period between 2015:M1 and 2019:M12, and there was a trend of increasing half-life estimates there over time starting in 2012. It is implied that although North Macedonia and Serbia are in relatively good shape in terms of their price stability and thus integration into the EU, Turkey needs to work harder on its price stability. Since "alcoholic beverages, tobacco and narcotics" and "restaurants and accommodation services" are the two main sectors responsible the higher half-life measures in Turkey according to the Appendix tables in this paper, Turkey may wish to focus more on the integration of these sectors with those of European countries to achieve better price stability. As indicated in studies such as Campos and Macchiarelli (2020), this can be achieved by having greater labor mobility (which requires better coordination with the EU), product diversification and trade openness.

Similarly, regarding non-euro EU member countries (being evaluated for EA inclusion), half-life estimates were about 7.1 months for Bulgaria, about 6.8 months for Croatia, about 7.8 months for Czechia, about 8.0 months for Hungary, about 10.9 months for Hungary, about 9.5 months for Romania, and about 6.7 months for Sweden for the latest period between 2015:M1 and 2019:M12. It is implied that Bulgaria, Croatia, Czechia, Hungary and Sweden are in relatively good shape in terms of their price stability and thus inclusion in the EA, whereas the price stability of Poland and Romania may take more time to reach an acceptable level according to the findings in this paper. In particular, since "clothing

and footwear" and "housing, water, electricity, gas and other fuels" are responsible for the higher half-life measures in Poland according to the Appendix tables in this paper, Poland may wish to focus more on the integration of these sectors with those of other European countries to achieve better price stability. Similarly, since "health", "Insurance and Financial Services" and "restaurants and accommodation services" are responsible for the higher half-life measures in Romania according to the Appendix tables in this paper, Romania may wish to focus more on the integration of these sectors with those of other European countries to achieve better price stability.

Since the sustainability of price stability is also an important criterion of the Maastricht Treaty, similar policy implications can be obtained for current EU member countries as well by considering their expenditure share of converging sectors or the corresponding half-life measures.

5   Conclusion

This paper has investigated inflation convergence among European countries by using sector-level data for the period between 1997:M1 and 2019:M12. Panel unit root tests at the country-sector level were conducted by using moving windows, which is useful for analyzing changes in inflation convergence and the corresponding speed of convergence over time. The results suggest that inflation convergence has been achieved for all sectors in several countries, although the total expenditure share of sectors has been as low as about 75% in earlier periods. Regarding the speed of convergence, the average sector-level half-life estimate for the median country decreased from about 17 months to about 11 months during the sample period, and

there is evidence for heterogeneity across countries regarding the sectors that are responsible for non-convergence. As reductions in half-life estimates over time are mostly observed in tradable sectors, it is implied that EU candidate countries and non-euro EU member countries can focus on sector-specific policies (e.g., harmonization of tax rates), especially for non-tradable sectors, to speed up their inflation convergence as the sustainability of price stability is an important criterion of the Maastricht Treaty.

Once country-sector level results are aggregated across sectors (for each country) to obtain country-specific inflation convergence results, the corresponding findings suggest that there is evidence for stability over time for most countries except in certain time periods, mostly coinciding with the 2008 financial crisis; regarding the speed of convergence, the average half life across countries decreased from about 15 months to about 8 months during the sample period. In particular, countries such as Bulgaria, Estonia, France, Ireland, Iceland, Lithuania, Latvia and the United Kingdom experienced disruptions in their inflation convergence processes during the 2008 financial crisis, whereas countries such as Switzerland, Hungary, Italy, Poland, Slovakia and especially Turkey experienced disruptions in their inflation convergence processes starting around 2015. Based on international risk sharing, the severity of these disruptions can be reduced by having higher trade/finance openness, better product diversification, or higher labor mobility across countries.

6   Appendix: Aggregation across Sectors

This section provides technical details regarding the relationship between disaggregated-level autoregressive parameter ϕ_{is} at the country-sector (is) level and its aggregated-level version

of ϕ_i at the country (i) level. This relationship is based on aggregating sectors within each country.

Sector-level inflation rates (each represented by s) in country i are aggregated according to:

$$\pi_{it} = \sum_{s=1}^{S} \omega_{is} \pi_{ist} \tag{5}$$

where π_{it} is the CPI inflation in country i, ω_{is} is the expenditure share of sector s in country i, and S is the number of sectors. Defining $q_{it}^{j} = \pi_{it} - \pi_{jt}$ for the aggregate-level investigation, it is implied under the assumption of equal sector-level expenditure shares across countries (i.e., $\omega_{is} = \omega_{js}$ for all i, j) that:

$$q_{it}^{j} = \sum_{s=1}^{S} \omega_{is} \left(\pi_{ist} - \pi_{jst} \right) \tag{6}$$
$$= \sum_{s=1}^{S} \omega_{is} q_{ist}^{j}$$

Recall that the country-sector (is) unit-root test in the main text is given by:

$$\Delta q_{ist}^{j} = \mu_{is} + \phi_{is} q_{is,t-1}^{j} + \sum_{m=1}^{p} \theta_{ism}^{j} \Delta q_{is,t-m}^{j} + \varepsilon_{ist}^{j} \tag{7}$$

Using Equation 6, this expression can be rewritten as follows:

$$\sum_{s=1}^{S} \omega_{is} \Delta q_{ist}^{j} = \sum_{s=1}^{S} \omega_{is} \mu_{is} + \sum_{s=1}^{S} \phi_{is} \omega_{is} q_{is,t-1}^{j} \tag{8}$$
$$+ \sum_{m=1}^{p} \sum_{s=1}^{S} \theta_{ism}^{j} \omega_{is} \Delta q_{is,t-m}^{j} + \sum_{s=1}^{S} \omega_{is} \varepsilon_{ist}^{j}$$

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which implies, again according to Equation 6, that:

$$\Delta q_{it}^{j} = \sum_{s=1}^{S} \omega_{is} \mu_{is} + \left(\sum_{s=1}^{S} \left(\frac{\omega_{is} q_{is,t-1}^{j}}{\sum_{s=1}^{S} \omega_{is} q_{is,t-1}^{j}} \right) \phi_{is} \right) q_{it-1}^{j}$$

$$+ \sum_{m=1}^{p} \left(\sum_{s=1}^{S} \left(\frac{\omega_{is} \Delta q_{is,t-m}^{j}}{\sum_{s=1}^{S} \omega_{is} \Delta q_{is,t-m}^{j}} \right) \theta_{ism}^{j} \right) \Delta q_{i,t-m}^{j} + \sum_{s=1}^{S} \omega_{is} \varepsilon_{ist}^{j} \qquad (9)$$

Under the assumption of homogenous sectors (implying $q_{is,t-m}^{j} = q_{in,t-m}^{j}$ for all s, n, m), it is further implied (due to expenditure shares adding up to one, $\sum_{s=1}^{S} \omega_{is} = 1$ for all i, t) that:

$$\frac{\omega_{is} q_{is,t-1}^{j}}{\sum_{s=1}^{S} \omega_{is} q_{is,t-1}^{j}} = \omega_{is} \qquad (10)$$

and

$$\frac{\omega_{is} \Delta q_{is,t-m}^{j}}{\sum_{s=1}^{S} \omega_{is} \Delta q_{is,t-m}^{j}} = \omega_{is} \qquad (11)$$

Substituting the last two expressions into Equation 9 results in:

$$\Delta q_{it}^{j} = \mu_i + \phi_i q_{it-1}^{j} + \sum_{m=1}^{p} \theta_{im}^{j} \Delta q_{i,t-m}^{j} + \varepsilon_{it}^{j} \qquad (12)$$

where μ_i is the weighted average (across sectors) of μ_{is}'s given as follows:

$$\mu_i = \sum_{s=1}^{S} \omega_{is} \mu_{is}$$

and ϕ_i is the weighted average (across sectors) of ϕ_{is}'s given as follows:

$$\phi_i = \sum_{s=1}^{S} \omega_{is} \phi_{is} \qquad (13)$$

and θ_{im}^j is the weighted average (across sectors) of θ_{ism}^j's given as follows:

$$\theta_{im}^j = \sum_{s=1}^{S} \omega_{is}\theta_{ism}^j \tag{14}$$

and ε_{it}^j is the weighted average (across sectors) of ε_{ist}^j's given as follows:

$$\varepsilon_{it}^j = \sum_{s=1}^{S} \omega_{is}\varepsilon_{ist}^j \tag{15}$$

Therefore, under the assumption of homogenous sectors, country-sector (is) level unit-root test in Equation 7 can be aggregated across sectors to have a country (i) level unit-root test in Equation 12. It is implied that the disaggregated-level autoregressive parameter ϕ_{is} at the country-sector (is) level can be aggregated across sectors to have ϕ_i which is the autoregressive parameter for country i, representing the relationship between the CPI inflation rate in country i and that in all other countries in the sample.

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Figure 1 - Half-Life Estimates #1
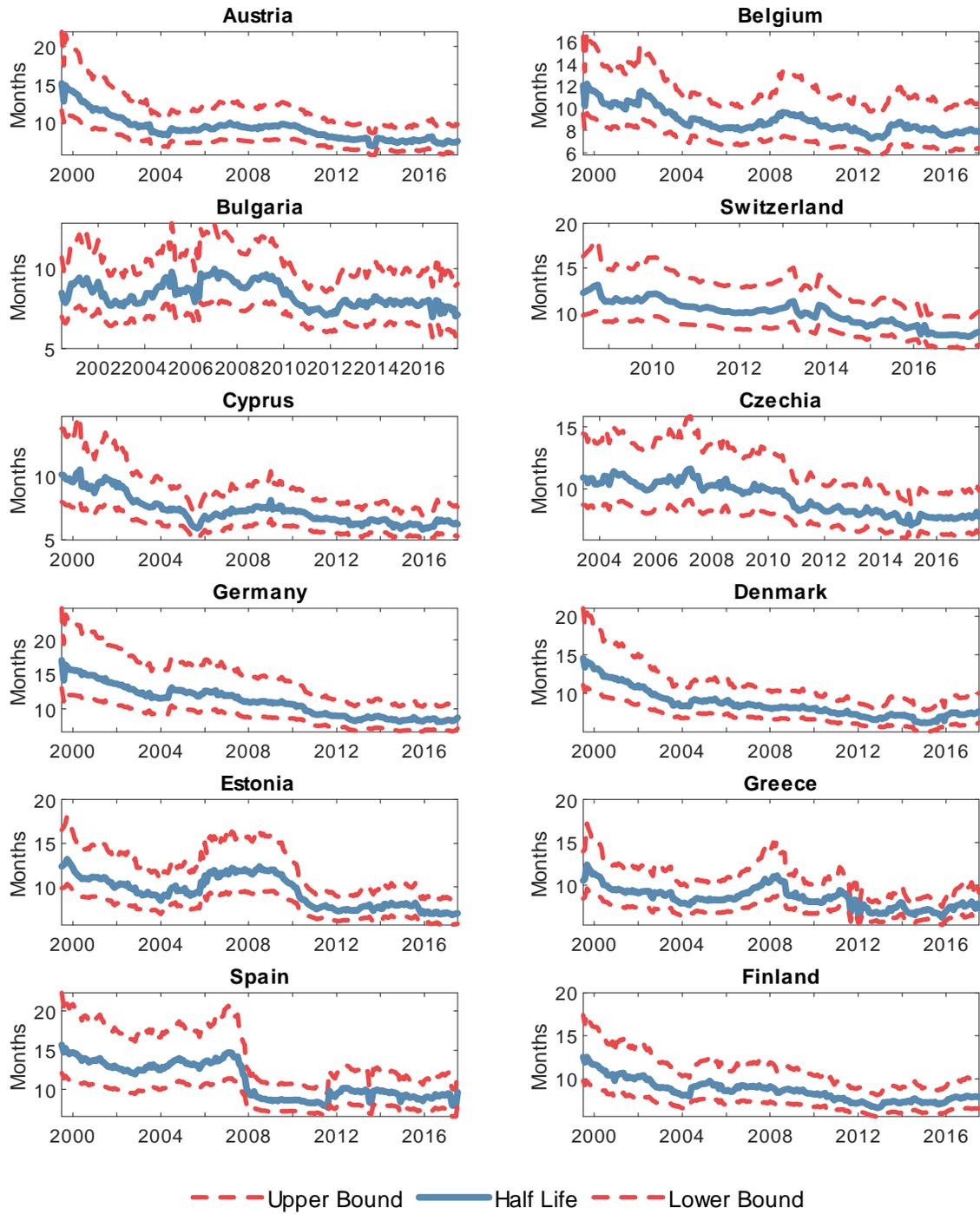
Notes: The results are based on continuous estimates.

Figure 2 - Half-Life Estimates #2
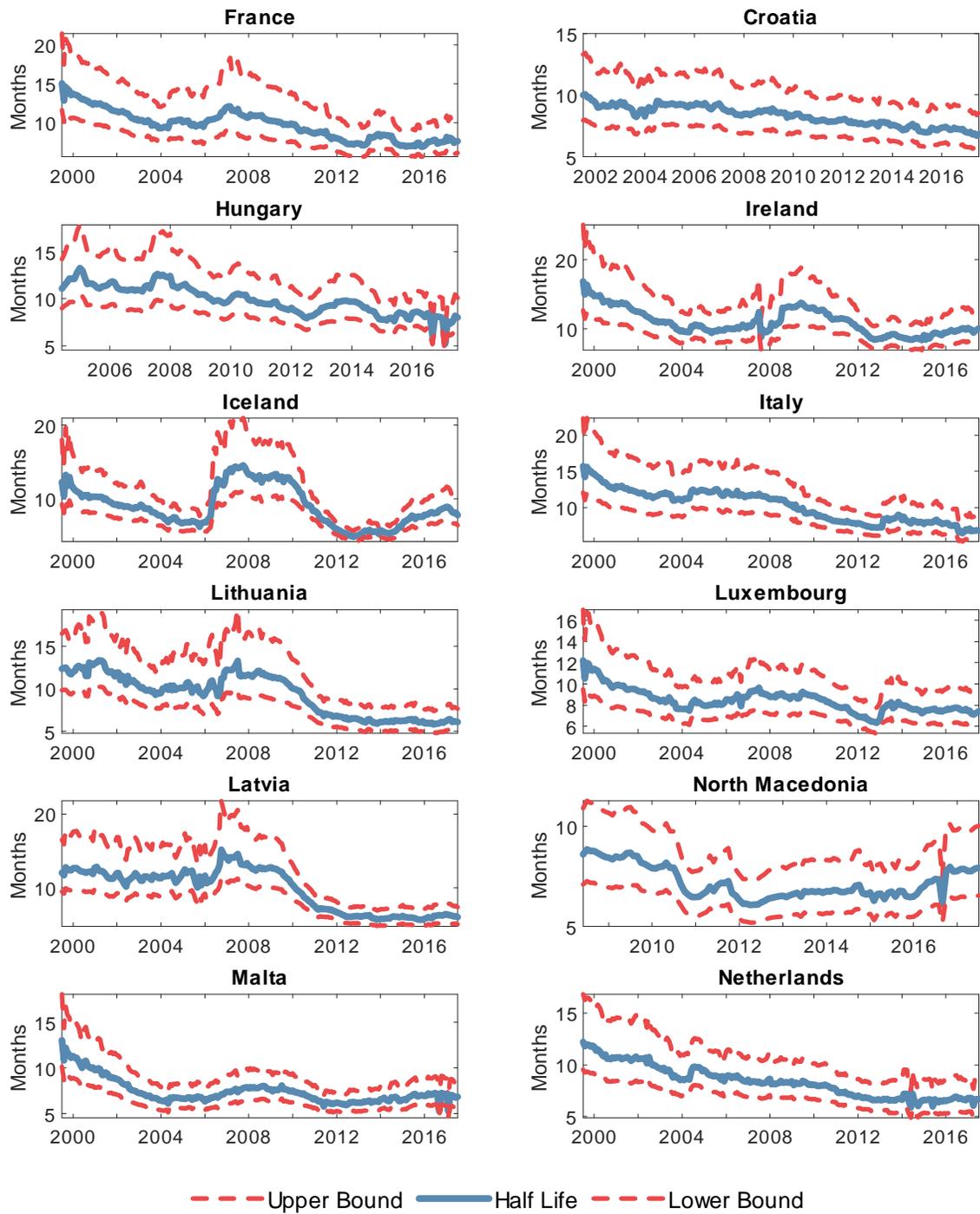
Notes: The results are based on continuous estimates.

Figure 3 - Half-Life Estimates #3
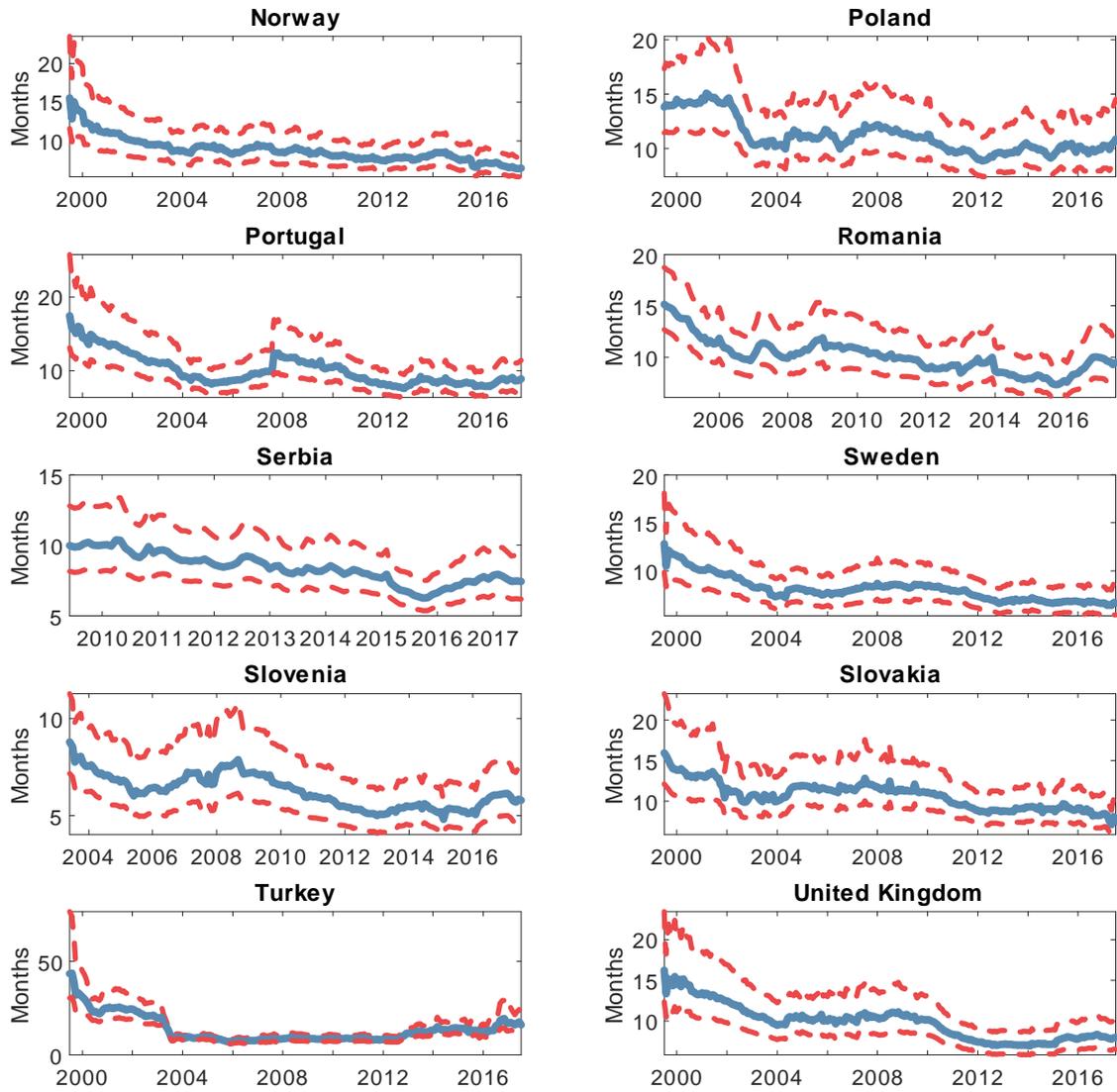
Notes: The results are based on continuous estimates.

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Table 1 - Expenditure Share (%) of Converging Sectors for Countries

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	5% Significance	1% Significance	10% Significance	5% Significance	1% Significance	10% Significance	5% Significance	1% Significance	10% Significance
Austria	100.0	99.1	100.0	100.0	100.0	100.0	99.4	99.4	99.4
Belgium	99.6	99.4	100.0	98.8	95.5	99.6	98.7	97.7	99.8
Bulgaria	-	-	-	100.0	100.0	100.0	88.7	88.7	88.9
Switzerland	-	-	-	100.0	100.0	100.0	83.7	83.7	83.7
Cyprus	100.0	100.0	100.0	99.2	99.2	100.0	98.2	98.2	100.0
Czechia	-	-	-	100.0	100.0	100.0	89.7	89.7	98.3
Germany	100.0	99.7	100.0	100.0	100.0	100.0	99.2	99.1	100.0
Denmark	97.8	97.8	100.0	99.3	99.3	99.3	99.5	99.4	100.0
Estonia	100.0	100.0	100.0	100.0	100.0	100.0	99.3	99.3	99.3
Greece	100.0	100.0	100.0	94.9	94.3	94.9	99.7	98.9	100.0
Spain	100.0	100.0	100.0	100.0	100.0	100.0	99.5	80.8	100.0
Finland	100.0	99.7	100.0	100.0	100.0	100.0	98.2	89.5	100.0
France	100.0	99.1	100.0	99.6	95.1	99.6	94.0	92.2	94.0
Croatia	-	-	-	100.0	100.0	100.0	99.4	99.4	99.4
Hungary	-	-	-	100.0	100.0	100.0	86.6	86.6	87.1
Ireland	98.4	98.4	98.7	77.2	73.7	97.7	99.8	94.3	99.8
Iceland	81.5	75.9	81.5	99.4	99.4	99.4	100.0	99.1	100.0
Italy	100.0	100.0	100.0	99.9	99.9	99.9	83.8	82.6	84.3
Lithuania	100.0	97.4	100.0	97.5	93.4	97.9	98.4	98.4	99.1
Luxembourg	100.0	100.0	100.0	99.2	99.2	99.2	100.0	97.2	100.0
Latvia	99.7	99.7	99.7	100.0	100.0	100.0	99.4	99.4	99.4
North Macedonia	-	-	-	100.0	100.0	100.0	99.4	98.9	99.4
Malta	100.0	100.0	100.0	99.3	99.3	100.0	100.0	100.0	100.0
Netherlands	100.0	99.9	100.0	100.0	100.0	100.0	98.8	88.0	100.0
Norway	100.0	90.3	100.0	100.0	98.8	100.0	100.0	100.0	100.0
Poland	100.0	99.9	100.0	100.0	100.0	100.0	91.8	81.3	91.8
Portugal	100.0	100.0	100.0	99.1	99.1	99.1	98.1	96.1	98.1
Romania	-	-	-	99.8	99.5	100.0	99.8	99.2	100.0
Serbia	-	-	-	-	-	-	100.0	100.0	100.0
Sweden	100.0	87.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Slovenia	-	-	-	97.4	94.7	98.8	96.6	96.6	98.4
Slovakia	100.0	97.5	100.0	96.3	94.4	97.1	90.4	87.9	90.4
Turkey	74.8	68.9	76.4	99.5	99.5	99.5	80.9	79.8	86.6
United Kingdom	100.0	92.9	100.0	99.1	99.1	99.4	99.8	99.8	100.0
Average	98.1	96.1	98.3	98.7	98.0	99.4	96.2	94.1	97.0
Median	100.0	99.7	100.0	99.9	99.5	100.0	99.2	97.9	99.6
Minimum	74.8	68.9	76.4	77.2	73.7	94.9	80.9	79.8	83.7
Maximum	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: The numbers represent to total expenditure share of sectors for which the null hypothesis of having a unit root is rejected at alternative signific ance levels.

Table 2 - Half-Life Estimates for Countries

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	15.2	11.6	21.9	9.5	7.7	12.2	7.6	6.1	9.8
Belgium	12.0	9.5	16.5	9.3	7.3	12.7	7.9	6.4	10.3
Bulgaria	-	-	-	9.0	7.5	11.1	7.1	5.8	9.1
Switzerland	-	-	-	12.5	9.9	16.8	7.9	6.5	10.2
Cyprus	10.1	8.0	13.8	7.6	6.3	9.5	6.2	5.3	7.6
Czechia	-	-	-	10.8	8.6	14.3	7.8	6.4	9.9
Germany	17.1	13.0	24.6	11.1	8.9	14.6	8.8	7.1	11.3
Denmark	14.5	11.1	21.1	8.3	6.8	10.5	7.7	6.2	10.0
Estonia	12.4	9.9	16.5	12.3	9.8	16.5	7.0	5.8	8.7
Greece	10.5	8.4	13.9	10.4	8.4	13.7	7.4	6.1	9.1
Spain	15.7	12.1	22.4	8.9	7.4	11.2	9.6	7.9	12.5
Finland	12.5	9.7	17.4	8.5	7.0	10.9	7.9	6.5	10.0
France	15.1	11.6	21.5	10.9	8.3	15.8	7.6	6.1	10.1
Croatia	-	-	-	8.6	7.1	10.9	6.8	5.7	8.5
Hungary	-	-	-	11.5	9.2	15.2	8.0	6.6	10.1
Ireland	16.8	12.6	25.0	11.2	8.9	15.2	10.0	8.2	12.9
Iceland	12.3	9.3	18.0	13.2	10.3	18.1	7.8	6.5	9.8
Italy	15.7	12.0	22.3	11.2	9.0	14.6	6.8	5.6	8.8
Lithuania	12.3	9.8	16.5	12.1	9.4	17.1	6.1	5.0	7.7
Luxembourg	12.2	9.5	17.0	9.1	7.4	11.8	7.4	6.2	9.3
Latvia	12.0	9.5	16.5	12.8	10.1	17.1	6.0	5.0	7.4
North Macedonia	-	-	-	8.8	7.3	11.3	7.9	6.5	10.0
Malta	13.0	10.1	18.1	7.9	6.6	9.9	6.8	5.7	8.5
Netherlands	12.2	9.6	16.8	8.5	6.9	10.7	6.7	5.5	8.6
Norway	15.6	11.6	23.5	9.2	7.5	11.8	6.5	5.5	8.0
Poland	13.8	11.4	17.3	11.7	9.5	15.1	10.9	8.7	14.5
Portugal	17.4	13.1	25.8	11.8	9.4	15.6	8.9	7.2	11.4
Romania	-	-	-	10.8	8.9	13.8	9.5	7.7	12.3
Serbia	-	-	-	-	-	-	7.4	6.2	9.2
Sweden	12.8	9.9	18.1	8.6	7.0	10.9	6.7	5.4	8.6
Slovenia	-	-	-	7.7	6.1	10.3	5.8	4.8	7.3
Slovakia	16.0	12.1	23.3	12.5	9.9	16.8	7.5	6.2	9.4
Turkey	43.4	30.2	76.5	8.9	7.4	11.2	16.1	12.7	22.0
United Kingdom	16.2	12.4	23.4	10.9	8.7	14.3	8.0	6.5	10.1
Average	15.1	11.5	21.9	10.2	8.2	13.4	7.9	6.5	10.1
Median	13.8	11.1	18.1	10.4	8.3	13.7	7.6	6.2	9.8
Minimum	10.1	8.0	13.8	7.6	6.1	9.5	5.8	4.8	7.3
Maximum	43.4	30.2	76.5	13.2	10.3	18.1	16.1	12.7	22.0

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters. Continuous half-life estimates at the country level are given in Figures 1-3.

Table 3 - Sector-Level Half-Life Estimates for the Median Country

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Food and non-alcoholic beverages	10.4	8.3	13.7	9.3	7.6	11.9	6.9	5.7	8.7
Alcoholic beverages, tobacco and narcotics	16.2	12.5	23.0	12.3	9.8	16.5	7.1	5.8	9.1
Clothing and footwear	20.0	14.7	30.1	9.9	7.6	13.6	4.6	3.9	5.6
Housing, water, electricity, gas and other fuels	17.8	13.1	27.7	9.7	7.9	12.9	10.3	8.3	13.8
Furnishings, household equipment and maintenance	21.5	16.2	32.0	13.7	10.5	18.3	7.9	6.5	10.6
Health	17.1	12.8	31.9	15.1	11.7	21.4	14.8	11.6	20.1
Transport	13.0	10.1	18.1	9.0	7.3	11.6	6.2	5.3	7.5
Information and communication	12.3	8.6	21.2	8.8	6.9	11.8	13.5	10.6	18.2
Recreation, sport and culture	12.8	9.9	18.1	9.5	7.6	12.7	7.8	6.4	10.1
Restaurants and accommodation services	25.9	19.7	38.4	26.8	19.6	41.9	34.7	23.1	59.0
Insurance and financial services	22.7	16.1	36.2	16.4	12.7	27.6	11.7	9.3	16.1
All sectors	13.8	11.1	18.1	10.4	8.3	13.7	7.6	6.2	9.8
Average	17.3	12.9	26.4	12.8	9.9	18.2	11.4	8.8	16.2
Median	17.1	12.8	27.7	9.9	7.9	13.6	7.9	6.5	10.6
Minimum	10.4	8.3	13.7	8.8	6.9	11.6	4.6	3.9	5.6
Maximum	25.9	19.7	38.4	26.8	19.6	41.9	34.7	23.1	59.0

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Appendix Table A.1 - Sectors Included

Sector Code	Sector Name	Sector Code	Sector Name
CP0111	Bread and cereals	CP0622	Dental services
CP0112	Meat	CP0623	Paramedical services
CP0113	Fish and seafood	CP0711	Motor cars
CP0114	Milk, cheese and eggs	CP0712	Motor cycles
CP0115	Oils and fats	CP0713	Bicycles
CP0116	Fruit	CP0721	Spare parts and accessories for personal transport equipment
CP0117	Vegetables	CP0722	Fuels and lubricants for personal transport equipment
CP0118	Sugar, jam, honey, chocolate and confectionery	CP0723	Maintenance and repair of personal transport equipment
CP0119	Food products n.e.c.	CP0724	Other services in respect of personal transport equipment
CP0121	Coffee, tea and cocoa	CP0731	Passenger transport by railway
CP0122	Mineral waters, soft drinks, fruit and vegetable juices	CP0732	Passenger transport by road
CP0211	Spirits	CP0733	Passenger transport by air
CP0212	Wine	CP0734	Passenger transport by sea and inland waterway
CP0213	Beer	CP0735	Combined passenger transport
CP0311	Clothing materials	CP0736	Other purchased transport services
CP0312	Garments	CP0820	Telephone and telefax equipment
CP0313	Other articles of clothing and clothing accessories	CP0830	Telephone and telefax services
CP0314	Cleaning, repair and hire of clothing	CP0911	Equipment for the reception, recording and reproduction of sound and picture
CP0321	Shoes and other footwear	CP0912	Photographic and cinematographic equipment and optical instruments
CP0322	Repair and hire of footwear	CP0913	Information processing equipment
CP0411	Actual rentals paid by tenants	CP0914	Recording media
CP0412	Other actual rentals	CP0915	Repair of audio-visual, photographic and information processing equipment
CP0431	Materials for the maintenance and repair of the dwelling	CP0921	Major durables for outdoor recreation
CP0432	Services for the maintenance and repair of the dwelling	CP0922	Musical instruments and major durables for indoor recreation
CP0441	Water supply	CP0923	Maintenance and repair of other major durables for recreation and culture
CP0442	Refuse collection	CP0931	Games, toys and hobbies
CP0443	Sewerage collection	CP0932	Equipment for sport, camping and open-air recreation
CP0444	Other services relating to the dwelling n.e.c.	CP0933	Gardens, plants and flowers
CP0451	Electricity	CP0934	Pets and related products
CP0452	Gas	CP0935	Veterinary and other services for pets
CP0453	Liquid fuels	CP0941	Recreational and sporting services
CP0454	Solid fuels	CP0942	Cultural services
CP0455	Heat energy	CP0951	Books
CP0511	Furniture and furnishings	CP0952	Newspapers and periodicals
CP0512	Carpets and other floor coverings	CP0953	Miscellaneous printed matter
CP0513	Repair of furniture, furnishings and floor coverings	CP0954	Stationery and drawing materials
CP0531	Major household appliances whether electric or not	CP1111	Restaurants, cafés and the like
CP0532	Small electric household appliances	CP1112	Canteens
CP0533	Repair of household appliances	CP1211	Hairdressing salons and personal grooming establishments
CP0551	Major tools and equipment	CP1212	Electrical appliances for personal care
CP0552	Small tools and miscellaneous accessories	CP1213	Other appliances, articles and products for personal care
CP0561	Non-durable household goods	CP1231	Jewellery, clocks and watches
CP0562	Domestic services and household services	CP1232	Other personal effects
CP0611	Pharmaceutical products	CP1252	Insurance connected with the dwelling
CP0612	Other medical products	CP1253	Insurance connected with health
CP0613	Therapeutic appliances and equipment	CP1254	Insurance connected with transport
CP0621	Medical services	CP1255	Other insurance

Table B.1 - Half-Life Estimates for Food and Non-alcoholic Beverages

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	10.8	8.5	14.6	7.4	6.1	9.2	6.9	5.7	8.7
Belgium	8.7	7.1	11.2	8.5	7.1	10.6	7.4	6.1	9.3
Bulgaria	-	-	-	6.5	5.6	7.6	6.2	5.2	7.6
Switzerland	-	-	-	10.4	8.4	13.5	6.1	5.0	7.7
Cyprus	6.7	5.6	8.4	5.4	4.7	6.4	4.1	3.5	4.9
Czechia	-	-	-	8.6	7.1	10.9	5.9	4.9	7.3
Germany	12.1	9.6	16.4	9.6	7.8	12.3	6.7	5.6	8.4
Denmark	11.5	9.0	15.9	8.3	6.8	10.7	5.8	4.8	7.2
Estonia	11.0	9.0	14.3	11.4	9.2	15.0	6.3	5.2	7.8
Greece	8.8	7.2	11.5	8.0	6.7	9.9	7.0	5.8	8.7
Spain	10.9	8.7	14.6	9.9	8.1	12.7	7.1	5.9	8.9
Finland	9.4	7.6	12.2	6.8	5.6	8.4	6.9	5.8	8.5
France	10.0	8.1	13.2	9.6	7.9	12.1	8.0	6.6	10.1
Croatia	-	-	-	7.3	6.1	9.0	6.4	5.3	7.9
Hungary	-	-	-	11.1	9.0	14.3	10.7	8.4	14.5
Ireland	12.8	10.0	17.9	12.6	10.0	17.0	11.4	8.9	15.6
Iceland	10.4	8.1	14.5	9.9	8.1	12.6	8.4	6.9	10.6
Italy	11.0	8.9	14.6	11.3	9.2	14.5	7.9	6.5	10.0
Lithuania	10.0	8.3	12.5	15.8	12.4	21.6	6.9	5.7	8.7
Luxembourg	9.7	7.8	12.8	9.3	7.6	11.9	6.7	5.5	8.4
Latvia	10.4	8.4	13.7	13.4	10.8	17.6	5.5	4.7	6.8
North Macedonia	-	-	-	8.7	7.3	10.9	7.1	5.9	8.9
Malta	9.7	7.8	12.8	6.3	5.3	7.5	7.7	6.3	9.7
Netherlands	8.7	7.0	11.2	9.3	7.7	12.0	6.8	5.6	8.6
Norway	16.6	11.7	28.1	6.7	5.6	8.3	4.9	4.1	6.0
Poland	8.4	7.3	9.9	9.7	8.0	12.1	12.2	9.5	17.0
Portugal	11.8	9.3	16.1	10.7	8.7	13.9	6.4	5.3	8.0
Romania	-	-	-	11.1	9.2	14.0	7.2	6.1	8.9
Serbia	-	-	-	-	-	-	6.0	5.0	7.2
Sweden	8.7	7.1	11.3	8.2	6.8	10.3	6.1	5.1	7.6
Slovenia	-	-	-	6.5	5.4	8.1	5.8	4.9	7.1
Slovakia	10.7	8.6	13.9	11.8	9.6	15.3	8.0	6.5	10.4
Turkey	37.5	25.8	67.8	6.8	5.8	8.2	10.2	8.4	13.0
United Kingdom	9.4	7.5	12.4	8.9	7.2	11.6	7.0	5.8	8.9
Average	11.4	9.0	16.1	9.3	7.6	11.8	7.2	5.9	9.1
Median	10.4	8.3	13.7	9.3	7.6	11.9	6.9	5.7	8.7
Minimum	6.7	5.6	8.4	5.4	4.7	6.4	4.1	3.5	4.9
Maximum	37.5	25.8	67.8	15.8	12.4	21.6	12.2	9.5	17.0

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.2 - Half-Life Estimates for Alcoholic Beverages, Tobacco and Narcotics

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	13.9	10.6	20.0	8.0	6.5	10.5	5.7	4.7	7.0
Belgium	17.8	13.5	25.9	14.1	10.8	19.9	7.8	6.4	10.1
Bulgaria	-	-	-	21.8	17.7	28.3	6.4	5.3	8.1
Switzerland	-	-	-	6.9	5.5	8.9	4.7	3.9	5.8
Cyprus	12.6	9.7	17.7	4.2	3.6	5.2	6.4	5.1	8.5
Czechia	-	-	-	11.4	8.9	16.0	3.3	2.8	3.9
Germany	27.3	19.5	45.3	15.2	11.7	21.6	7.4	6.0	9.5
Denmark	15.3	11.8	21.6	7.2	5.9	9.1	4.3	3.7	5.2
Estonia	13.8	10.9	18.6	11.2	8.8	15.2	11.3	8.7	16.0
Greece	12.8	10.4	16.6	20.8	14.9	34.2	6.3	5.2	7.9
Spain	16.2	13.0	21.5	14.7	11.4	20.7	9.2	7.5	11.9
Finland	20.0	14.4	32.3	9.6	7.7	12.8	7.1	5.9	9.0
France	19.5	14.7	28.8	15.3	11.8	21.4	9.7	7.8	12.9
Croatia	-	-	-	11.9	9.3	16.2	5.5	4.6	6.8
Hungary	-	-	-	13.8	10.7	19.4	8.8	7.3	11.0
Ireland	15.5	11.9	22.0	55.8	28.6	954.6	8.6	7.0	11.2
Iceland	15.2	11.3	23.0	19.1	14.5	27.8	8.3	6.8	10.8
Italy	16.8	13.1	23.4	13.8	10.8	19.0	7.4	6.0	9.5
Lithuania	22.3	16.0	36.6	12.3	9.8	16.5	5.9	5.0	7.2
Luxembourg	11.9	9.3	16.2	8.5	6.9	11.1	5.1	4.2	6.4
Latvia	17.5	13.3	25.5	9.3	7.5	12.0	3.8	3.3	4.6
North Macedonia	-	-	-	12.7	9.9	17.7	8.2	6.6	10.7
Malta	11.8	9.1	16.6	13.1	10.3	17.9	10.4	8.3	13.8
Netherlands	16.4	12.5	23.6	8.1	6.7	10.5	4.7	4.0	5.8
Norway	14.4	11.0	20.7	12.4	9.8	16.9	8.1	6.6	10.4
Poland	19.1	15.5	24.8	15.6	12.2	21.4	7.7	6.3	9.8
Portugal	17.1	13.6	23.0	12.0	9.5	16.3	5.7	4.7	7.1
Romania	-	-	-	17.9	13.6	26.0	8.5	6.9	11.1
Serbia	-	-	-	-	-	-	8.3	6.7	10.7
Sweden	15.5	11.2	24.9	15.8	12.1	22.7	6.5	5.4	8.1
Slovenia	-	-	-	8.7	7.1	11.3	6.5	5.4	8.1
Slovakia	18.4	14.1	26.5	11.0	8.8	14.8	4.5	3.8	5.4
Turkey	21.0	15.1	33.9	5.1	4.4	6.0	69.2	39.2	290.7
United Kingdom	14.8	11.0	22.1	7.3	5.8	9.5	7.0	5.7	9.2
Average	16.7	12.7	24.5	13.5	10.1	45.2	8.8	6.7	17.2
Median	16.2	12.5	23.0	12.3	9.8	16.5	7.1	5.8	9.1
Minimum	11.8	9.1	16.2	4.2	3.6	5.2	3.3	2.8	3.9
Maximum	27.3	19.5	45.3	55.8	28.6	954.6	69.2	39.2	290.7

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.3 - Half-Life Estimates for Clothing and Footwear

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	17.6	13.6	25.0	3.9	3.3	4.7	2.9	2.5	3.5
Belgium	5.7	4.6	7.5	3.6	3.0	4.6	2.4	2.1	2.9
Bulgaria	-	-	-	34.6	24.2	60.6	4.7	3.8	6.1
Switzerland	-	-	-	7.2	5.9	9.2	6.9	5.8	8.5
Cyprus	9.6	7.0	15.1	4.0	3.4	4.8	2.2	1.9	2.5
Czechia	-	-	-	17.9	13.7	25.4	7.9	6.5	9.9
Germany	35.0	26.0	53.2	10.2	8.1	13.7	3.2	2.8	3.8
Denmark	20.6	15.1	32.3	4.7	3.9	5.7	5.1	4.2	6.5
Estonia	34.1	24.5	55.5	18.4	13.7	27.9	4.6	3.9	5.5
Greece	24.4	17.6	39.2	10.4	8.2	14.2	1.5	1.3	1.7
Spain	19.1	13.9	30.1	1.8	1.6	2.0	5.3	4.5	6.5
Finland	18.3	13.6	27.4	7.3	5.9	9.4	3.8	3.2	4.5
France	21.0	15.4	32.8	7.0	5.3	10.2	2.3	1.9	2.7
Croatia	-	-	-	9.3	7.4	12.2	1.8	1.6	2.0
Hungary	-	-	-	10.2	8.1	13.6	5.4	4.5	6.5
Ireland	36.6	25.3	65.6	27.6	18.9	50.4	8.9	7.2	11.5
Iceland	10.9	8.4	15.2	13.9	10.6	19.9	4.9	4.1	5.9
Italy	17.8	13.2	26.9	6.5	5.4	8.2	2.8	2.4	3.3
Lithuania	26.5	19.9	39.7	24.4	13.9	91.1	3.0	2.5	3.7
Luxembourg	17.1	12.6	26.2	9.3	7.4	12.4	4.6	3.9	5.6
Latvia	20.9	16.6	28.2	15.6	11.4	24.4	2.6	2.3	3.0
North Macedonia	-	-	-	7.2	5.9	9.2	6.6	5.5	8.2
Malta	15.5	11.7	22.9	3.7	3.2	4.4	3.1	2.7	3.7
Netherlands	14.6	11.1	21.3	3.6	3.1	4.3	2.1	1.8	2.4
Norway	14.6	10.9	21.8	12.4	9.5	17.9	3.0	2.6	3.5
Poland	36.1	28.1	50.5	43.5	30.1	77.9	20.7	16.0	29.1
Portugal	20.0	14.7	30.7	9.9	7.6	13.9	5.2	4.4	6.3
Romania	-	-	-	26.1	19.6	38.7	14.4	11.2	20.0
Serbia	-	-	-	-	-	-	7.3	6.1	9.2
Sweden	14.8	11.0	22.7	4.9	4.2	6.0	3.8	3.2	4.7
Slovenia	-	-	-	4.6	3.5	6.6	2.7	2.3	3.2
Slovakia	39.9	27.6	71.4	19.0	14.2	28.6	6.6	5.5	8.2
Turkey	112.0	71.6	255.7	11.9	9.2	16.8	19.3	14.9	27.1
United Kingdom	83.4	46.0	434.8	22.4	16.5	34.5	4.9	4.1	5.9
Average	27.4	19.2	58.1	12.6	9.4	20.7	5.5	4.5	7.0
Median	20.0	14.7	30.1	9.9	7.6	13.6	4.6	3.9	5.6
Minimum	5.7	4.6	7.5	1.8	1.6	2.0	1.5	1.3	1.7
Maximum	112.0	71.6	434.8	43.5	30.1	91.1	20.7	16.0	29.1

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.4 - Half-Life Estimates for Housing, Water, Electricity, Gas and Other Fuels

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	18.6	13.6	29.4	12.0	9.6	16.2	12.7	9.9	17.7
Belgium	20.9	14.9	34.7	9.2	7.1	12.9	12.0	9.3	17.0
Bulgaria	-	-	-	8.2	6.6	10.6	13.8	10.5	20.0
Switzerland	-	-	-	7.7	6.3	9.8	7.6	6.2	9.8
Cyprus	11.4	8.9	15.6	8.9	7.4	11.2	7.7	6.5	9.5
Czechia	-	-	-	9.4	7.5	12.4	11.5	9.0	15.8
Germany	19.9	14.6	30.9	11.3	9.1	14.7	15.8	11.8	23.9
Denmark	15.3	11.1	24.4	8.7	7.0	11.3	12.5	9.5	18.0
Estonia	10.9	8.3	15.5	10.9	8.7	14.5	7.0	5.7	9.0
Greece	13.2	10.0	19.5	7.0	5.8	8.8	8.3	6.8	10.8
Spain	20.0	14.7	31.0	10.6	8.5	14.2	8.8	7.1	11.5
Finland	18.7	13.7	29.0	10.2	8.1	13.6	10.2	8.2	13.5
France	17.8	13.1	27.7	12.9	9.1	21.8	15.3	11.3	23.8
Croatia	-	-	-	7.9	6.5	10.1	7.6	6.2	9.8
Hungary	-	-	-	10.0	8.0	13.2	14.7	11.2	21.1
Ireland	17.1	12.4	27.6	7.9	6.4	10.2	7.3	6.0	9.3
Iceland	16.0	11.4	26.6	16.5	12.3	24.6	10.3	8.4	13.2
Italy	15.6	11.9	22.8	12.0	9.4	16.4	10.1	8.1	13.3
Lithuania	14.7	10.8	22.9	13.3	10.1	19.3	8.8	7.0	11.8
Luxembourg	13.1	9.7	19.8	6.3	5.2	7.9	7.9	6.5	10.2
Latvia	13.7	10.3	20.4	11.4	9.0	15.6	8.2	6.6	10.7
North Macedonia	-	-	-	6.7	5.5	8.4	13.1	10.1	18.3
Malta	19.8	15.1	28.5	10.4	8.4	13.6	13.7	10.4	19.6
Netherlands	22.0	15.3	38.9	9.1	7.3	11.9	21.9	15.0	40.0
Norway	15.6	11.8	22.8	7.5	6.3	9.2	9.2	7.5	12.1
Poland	21.8	16.4	32.1	12.5	10.1	16.3	15.9	11.9	23.5
Portugal	21.7	15.7	35.1	12.6	10.1	17.0	12.8	9.9	17.8
Romania	-	-	-	8.5	7.0	10.6	11.4	9.1	15.3
Serbia	-	-	-	-	-	-	9.4	7.6	12.4
Sweden	29.3	19.0	63.2	8.9	7.4	11.1	13.0	9.7	19.4
Slovenia	-	-	-	6.3	5.1	8.1	7.6	6.1	10.0
Slovakia	15.6	11.0	26.0	11.3	8.8	15.5	10.3	8.1	14.2
Turkey	56.3	35.5	134.7	9.7	7.9	12.5	15.8	12.5	21.4
United Kingdom	19.3	14.0	30.5	12.7	10.1	17.0	8.2	6.7	10.6
Average	19.1	13.7	32.4	10.0	7.9	13.3	11.2	8.7	15.7
Median	17.8	13.1	27.7	9.7	7.9	12.9	10.3	8.3	13.8
Minimum	10.9	8.3	15.5	6.3	5.1	7.9	7.0	5.7	9.0
Maximum	56.3	35.5	134.7	16.5	12.3	24.6	21.9	15.0	40.0

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.5 - Half-Life Estimates for Furnishings, Household Equipment and Maintenance

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	16.9	13.2	23.3	9.9	8.0	13.0	9.0	6.8	12.9
Belgium	29.9	22.2	45.6	14.9	10.5	25.3	7.9	6.1	11.1
Bulgaria	-	-	-	19.1	14.6	27.6	6.6	5.0	9.4
Switzerland	-	-	-	11.1	8.8	14.9	6.6	5.4	8.4
Cyprus	16.7	12.6	24.5	10.4	8.3	13.8	6.3	5.3	7.7
Czechia	-	-	-	19.3	14.8	27.5	9.0	7.2	12.1
Germany	26.0	20.4	35.6	12.9	10.1	17.6	9.5	7.6	12.8
Denmark	21.8	16.4	32.2	5.3	4.5	6.5	4.4	3.5	5.7
Estonia	13.8	11.4	17.3	14.7	11.4	20.5	6.5	5.4	8.2
Greece	19.7	15.4	27.2	12.5	9.9	17.0	11.6	9.2	15.5
Spain	31.5	22.8	50.9	19.7	15.2	27.9	13.8	10.7	19.3
Finland	18.0	13.8	25.7	12.6	9.8	17.7	4.8	4.0	5.8
France	21.9	16.6	32.0	11.7	8.1	20.9	7.7	5.9	10.9
Croatia	-	-	-	13.7	10.9	18.3	6.4	5.3	8.1
Hungary	-	-	-	14.2	11.4	18.8	12.7	9.7	18.2
Ireland	22.5	16.2	36.4	19.8	15.3	27.9	19.6	14.6	29.9
Iceland	20.6	13.8	39.6	23.8	17.6	36.6	7.9	6.5	10.1
Italy	21.5	16.4	31.3	15.9	12.4	22.1	8.9	6.8	12.7
Lithuania	43.3	29.0	84.4	17.5	12.3	29.6	4.5	3.6	5.9
Luxembourg	11.6	9.1	16.1	8.4	6.8	10.8	11.7	9.1	16.0
Latvia	15.6	12.7	20.1	18.4	13.9	27.1	5.0	4.2	6.2
North Macedonia	-	-	-	9.3	7.5	12.2	6.0	5.0	7.4
Malta	18.7	14.1	27.7	15.3	11.9	21.1	12.6	9.9	17.2
Netherlands	21.0	15.6	31.9	11.2	8.9	14.8	6.5	5.2	8.6
Norway	21.2	15.8	31.6	10.9	8.7	14.7	8.0	6.5	10.2
Poland	39.5	32.4	50.6	16.6	13.0	22.9	8.4	6.8	11.1
Portugal	24.6	17.9	39.1	24.3	18.0	37.6	12.3	9.4	17.6
Romania	-	-	-	14.0	11.5	18.0	9.5	7.7	12.4
Serbia	-	-	-	-	-	-	7.8	6.5	9.8
Sweden	26.0	18.9	41.7	9.0	7.3	11.8	5.1	4.1	6.7
Slovenia	-	-	-	10.2	7.8	14.5	4.9	3.9	6.4
Slovakia	37.5	27.1	60.5	29.9	21.8	47.5	9.9	8.1	12.8
Turkey	65.1	43.7	126.6	8.1	6.8	9.9	21.0	15.8	31.1
United Kingdom	17.4	13.0	26.0	6.1	5.0	7.8	7.1	5.8	8.9
Average	24.9	18.4	39.1	14.3	11.0	20.4	8.8	7.0	12.0
Median	21.5	16.2	32.0	13.7	10.5	18.3	7.9	6.5	10.6
Minimum	11.6	9.1	16.1	5.3	4.5	6.5	4.4	3.5	5.7
Maximum	65.1	43.7	126.6	29.9	21.8	47.5	21.0	15.8	31.1

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.6 - Half-Life Estimates for Health

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	-	-	-	16.3	12.5	23.1	6.7	5.2	9.4
Belgium	-	-	-	15.4	9.9	34.1	8.5	6.5	12.1
Bulgaria	-	-	-	8.2	7.0	9.9	20.5	14.5	34.6
Switzerland	-	-	-	28.1	19.6	49.0	18.1	13.6	26.8
Cyprus	15.4	10.8	26.8	11.2	8.9	15.0	23.6	16.9	38.9
Czechia	-	-	-	10.0	8.0	13.3	19.5	14.7	28.7
Germany	22.5	15.3	41.8	16.9	12.9	24.3	20.1	15.7	27.9
Denmark	-	-	-	14.1	11.0	19.6	5.8	4.6	7.6
Estonia	-	-	-	16.6	12.7	23.9	10.7	8.5	14.2
Greece	16.4	11.9	26.3	18.5	13.7	28.1	8.4	6.9	10.7
Spain	17.1	11.6	31.9	25.9	18.5	42.5	24.5	17.7	39.6
Finland	15.0	10.4	26.0	14.2	11.1	19.7	7.5	6.1	9.5
France	20.7	13.9	39.7	11.6	7.7	22.7	10.2	7.3	16.7
Croatia	-	-	-	17.3	13.1	25.0	23.0	16.1	39.6
Hungary	-	-	-	12.2	9.9	15.8	26.8	19.2	44.5
Ireland	-	-	-	11.6	9.1	16.0	15.1	11.6	21.4
Iceland	-	-	-	15.1	11.9	20.5	11.8	9.4	15.9
Italy	-	-	-	15.5	12.1	21.4	20.3	13.7	38.4
Lithuania	35.8	22.3	89.6	17.9	12.7	30.3	13.1	9.7	20.0
Luxembourg	-	-	-	14.9	11.7	20.6	21.9	16.1	34.2
Latvia	15.6	10.4	30.3	21.0	15.4	32.8	17.4	13.1	25.6
North Macedonia	-	-	-	7.1	5.8	9.0	9.9	7.7	13.6
Malta	24.9	16.2	53.0	10.8	8.8	13.8	11.9	9.3	16.6
Netherlands	-	-	-	22.5	16.6	35.0	9.8	7.3	14.9
Norway	-	-	-	21.1	15.6	32.4	16.0	12.0	23.9
Poland	35.7	22.8	81.1	18.4	13.9	27.4	14.0	10.8	20.0
Portugal	-	-	-	16.3	12.8	22.4	25.4	18.1	42.5
Romania	-	-	-	17.5	13.2	25.8	19.3	14.5	28.7
Serbia	-	-	-	-	-	-	14.8	11.7	20.1
Sweden	-	-	-	12.2	9.6	16.6	7.7	5.9	10.9
Slovenia	-	-	-	10.9	7.2	21.1	10.5	7.6	16.8
Slovakia	16.8	12.8	24.4	10.0	8.0	13.1	12.1	9.5	16.6
Turkey	40.6	24.4	117.4	7.0	5.9	8.5	-	-	-
United Kingdom	16.0	11.1	28.3	8.9	7.3	11.5	17.3	12.7	26.8
Average	22.5	14.9	47.4	15.0	11.3	22.5	15.2	11.3	23.3
Median	17.1	12.8	31.9	15.1	11.7	21.4	14.8	11.6	20.1
Minimum	15.0	10.4	24.4	7.0	5.8	8.5	5.8	4.6	7.6
Maximum	40.6	24.4	117.4	28.1	19.6	49.0	26.8	19.2	44.5

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.7 - Half-Life Estimates for Transport

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	16.2	12.1	24.2	10.5	8.4	13.9	6.9	5.7	8.7
Belgium	13.1	10.1	18.5	10.7	8.5	14.4	9.6	7.8	12.4
Bulgaria	-	-	-	7.9	6.6	9.9	5.5	4.7	6.6
Switzerland	-	-	-	12.1	9.5	16.4	6.8	5.7	8.5
Cyprus	12.0	9.3	16.8	8.8	7.1	11.6	5.6	4.7	6.7
Czechia	-	-	-	10.7	8.5	14.3	7.0	5.9	8.8
Germany	13.5	10.4	19.0	8.8	7.2	11.2	8.2	6.7	10.4
Denmark	13.1	10.1	18.6	8.8	7.2	11.2	7.2	5.9	9.1
Estonia	11.8	9.2	16.2	9.2	7.5	11.7	4.7	4.1	5.6
Greece	10.2	8.0	14.0	9.1	7.4	11.9	5.3	4.6	6.3
Spain	13.0	10.1	18.1	10.4	8.4	13.8	6.8	5.7	8.4
Finland	9.7	7.7	13.0	7.3	6.1	9.1	7.1	5.9	8.9
France	14.9	11.4	21.5	9.9	7.9	13.1	7.5	6.1	9.4
Croatia	-	-	-	6.8	5.7	8.5	6.0	5.0	7.4
Hungary	-	-	-	9.0	7.3	11.6	3.9	3.4	4.5
Ireland	11.0	8.5	15.4	8.3	6.7	10.7	4.8	4.2	5.7
Iceland	8.7	6.8	12.1	12.4	9.8	16.9	6.0	5.1	7.4
Italy	15.2	11.5	22.0	9.7	8.0	12.5	7.3	6.1	9.2
Lithuania	9.0	7.3	11.9	4.7	4.1	5.6	4.3	3.7	5.1
Luxembourg	12.0	9.3	16.9	8.9	7.2	11.4	6.1	5.1	7.4
Latvia	9.6	7.6	12.9	8.4	7.0	10.5	5.3	4.5	6.4
North Macedonia	-	-	-	7.1	5.9	8.8	5.1	4.3	6.1
Malta	11.3	8.9	15.4	6.8	5.7	8.4	5.3	4.5	6.3
Netherlands	11.4	8.9	15.6	7.6	6.3	9.6	5.1	4.3	6.2
Norway	14.8	11.1	22.0	9.8	8.1	12.4	6.9	5.8	8.5
Poland	18.6	14.3	26.6	7.8	6.5	9.6	6.5	5.5	8.0
Portugal	23.6	16.7	40.2	8.8	7.3	11.2	7.8	6.5	9.8
Romania	-	-	-	9.6	7.9	12.2	8.7	7.1	11.2
Serbia	-	-	-	-	-	-	6.3	5.4	7.7
Sweden	11.7	8.9	16.6	8.1	6.6	10.3	5.6	4.7	6.9
Slovenia	-	-	-	9.4	7.6	12.2	4.9	4.2	5.9
Slovakia	16.0	11.8	24.6	13.9	10.7	19.8	3.1	2.8	3.5
Turkey	40.7	30.3	61.8	9.9	8.1	12.8	16.5	12.6	23.8
United Kingdom	14.7	11.2	21.2	9.1	7.5	11.4	7.3	6.0	9.1
Average	14.2	10.9	20.6	9.1	7.4	11.8	6.5	5.4	8.1
Median	13.0	10.1	18.1	9.0	7.3	11.6	6.2	5.3	7.5
Minimum	8.7	6.8	11.9	4.7	4.1	5.6	3.1	2.8	3.5
Maximum	40.7	30.3	61.8	13.9	10.7	19.8	16.5	12.6	23.8

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.8 - Half-Life Estimates for Information and Communication

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	10.2	7.3	16.6	7.1	5.8	9.2	9.1	7.4	11.8
Belgium	9.9	7.2	15.6	8.1	6.4	10.8	14.7	11.3	20.9
Bulgaria	-	-	-	6.8	5.6	8.6	10.9	8.8	14.2
Switzerland	-	-	-	11.1	8.7	15.3	12.1	9.4	16.9
Cyprus	8.4	6.2	12.9	7.7	6.2	10.0	9.5	7.6	12.7
Czechia	-	-	-	9.3	7.3	12.5	18.6	13.1	32.0
Germany	16.4	10.8	32.6	12.3	9.4	17.8	15.8	11.9	23.4
Denmark	-	-	-	7.5	5.9	10.1	11.1	8.7	15.1
Estonia	-	-	-	-	-	-	13.7	10.6	19.3
Greece	-	-	-	9.1	7.1	12.3	15.8	11.9	23.1
Spain	-	-	-	12.0	9.2	17.2	17.0	13.0	24.5
Finland	12.6	8.8	21.6	6.7	5.6	8.5	13.8	10.7	19.1
France	10.5	7.5	16.8	6.8	5.5	8.6	10.3	8.2	13.7
Croatia	-	-	-	10.0	7.9	13.4	11.8	9.3	16.1
Hungary	-	-	-	-	-	-	14.5	11.1	20.9
Ireland	-	-	-	-	-	-	-	-	-
Iceland	15.6	10.1	33.5	23.5	16.4	41.1	32.1	22.6	55.0
Italy	12.1	8.5	20.7	7.2	5.8	9.4	18.8	13.3	31.8
Lithuania	14.8	10.0	27.6	8.8	7.0	11.8	9.0	7.3	11.7
Luxembourg	14.7	9.6	31.0	11.0	8.5	15.5	11.1	8.7	15.3
Latvia	11.5	8.1	19.0	9.0	7.2	12.1	13.5	10.3	19.3
North Macedonia	-	-	-	14.0	10.6	20.5	13.0	10.6	16.7
Malta	-	-	-	-	-	-	-	-	-
Netherlands	-	-	-	-	-	-	13.5	10.7	18.2
Norway	-	-	-	7.9	6.3	10.6	21.6	14.8	39.4
Poland	-	-	-	-	-	-	10.2	8.1	13.6
Portugal	11.5	8.1	19.1	8.5	6.7	11.5	18.9	13.8	30.0
Romania	-	-	-	8.2	6.7	10.6	18.1	12.9	29.9
Serbia	-	-	-	-	-	-	11.1	8.8	15.2
Sweden	-	-	-	-	-	-	11.6	9.2	15.7
Slovenia	-	-	-	8.9	6.9	12.5	9.0	7.1	12.0
Slovakia	33.3	18.3	177.5	6.2	5.1	7.9	9.9	7.8	13.3
Turkey	15.4	11.3	23.8	10.4	8.2	14.2	22.4	16.2	36.3
United Kingdom	-	-	-	-	-	-	-	-	-
Average	14.0	9.4	33.5	9.5	7.4	13.3	14.3	10.8	21.2
Median	12.3	8.6	21.2	8.8	6.9	11.8	13.5	10.6	18.2
Minimum	8.4	6.2	12.9	6.2	5.1	7.9	9.0	7.1	11.7
Maximum	33.3	18.3	177.5	23.5	16.4	41.1	32.1	22.6	55.0

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.9 - Half-Life Estimates for Recreation, Sport and Culture

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	10.4	8.1	14.4	6.9	5.7	8.7	5.4	4.4	6.8
Belgium	12.0	9.5	16.2	7.5	5.9	10.1	5.5	4.5	7.0
Bulgaria	-	-	-	12.9	10.2	17.2	9.5	7.4	13.1
Switzerland	-	-	-	13.3	10.5	18.2	11.8	9.3	16.0
Cyprus	10.2	7.9	14.1	8.9	7.3	11.5	10.5	8.5	13.8
Czechia	-	-	-	10.4	8.3	13.9	8.8	7.1	11.4
Germany	15.1	11.6	21.5	10.1	8.1	13.2	7.4	6.1	9.3
Denmark	14.2	10.7	21.0	7.2	6.1	8.9	6.9	5.6	9.1
Estonia	13.6	10.7	18.7	14.0	10.9	19.3	8.1	6.6	10.4
Greece	2.7	2.4	3.0	9.1	7.4	11.7	11.8	9.3	16.2
Spain	16.8	12.7	24.7	12.3	9.8	16.7	9.2	7.4	11.9
Finland	10.8	8.4	15.2	7.3	6.0	9.2	10.4	8.2	13.9
France	14.1	10.9	19.8	10.4	8.1	14.3	7.3	5.7	9.8
Croatia	-	-	-	9.8	7.8	12.9	9.0	7.3	11.7
Hungary	-	-	-	14.2	11.1	19.6	8.1	6.6	10.3
Ireland	15.3	11.3	23.1	10.5	8.3	14.3	11.1	8.9	14.8
Iceland	12.4	9.4	17.9	9.5	7.6	12.7	7.6	6.2	9.6
Italy	15.8	12.0	23.1	8.2	6.7	10.6	5.6	4.5	7.3
Lithuania	8.9	7.3	11.4	11.9	9.0	17.3	6.5	5.3	8.3
Luxembourg	9.0	7.1	12.0	5.9	5.0	7.3	6.7	5.5	8.4
Latvia	12.4	9.8	16.7	16.5	12.5	24.0	5.1	4.4	6.2
North Macedonia	-	-	-	9.1	7.5	11.7	9.2	7.5	11.9
Malta	12.8	9.9	17.9	10.2	8.2	13.3	4.6	3.9	5.4
Netherlands	8.7	6.9	11.4	6.9	5.8	8.6	5.4	4.4	7.0
Norway	12.7	9.8	18.1	9.1	7.3	11.9	4.8	4.2	5.6
Poland	30.8	23.3	45.3	10.6	8.6	13.8	10.5	8.4	13.9
Portugal	16.1	12.1	23.8	7.6	6.3	9.6	5.2	4.4	6.3
Romania	-	-	-	14.0	11.3	18.5	11.4	9.1	15.5
Serbia	-	-	-	-	-	-	8.6	7.0	11.0
Sweden	11.4	8.9	15.9	7.3	6.0	9.3	4.3	3.6	5.4
Slovenia	-	-	-	6.5	5.2	8.7	4.5	3.7	5.6
Slovakia	17.5	13.0	26.7	10.5	8.5	13.6	10.4	8.2	13.9
Turkey	27.5	19.4	46.6	8.6	7.1	10.7	17.9	13.5	26.2
United Kingdom	15.5	11.7	22.8	8.3	6.7	10.7	5.8	4.8	7.1
Average	13.9	10.6	20.1	9.9	7.9	13.1	8.1	6.5	10.6
Median	12.8	9.9	18.1	9.5	7.6	12.7	7.8	6.4	10.1
Minimum	2.7	2.4	3.0	5.9	5.0	7.3	4.3	3.6	5.4
Maximum	30.8	23.3	46.6	16.5	12.5	24.0	17.9	13.5	26.2

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.10 - Half-Life Estimates for Restaurants and Accommodation Services

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	31.1	23.0	47.8	35.1	25.1	58.4	43.9	29.6	84.7
Belgium	34.8	25.3	55.6	32.6	23.5	52.6	46.2	30.4	94.9
Bulgaria	-	-	-	41.7	29.7	69.6	20.0	12.9	43.4
Switzerland	-	-	-	45.5	32.2	76.9	44.6	26.8	129.7
Cyprus	20.5	15.7	29.6	19.8	14.8	29.6	47.0	31.3	93.7
Czechia	-	-	-	22.0	16.6	32.4	24.9	18.3	38.7
Germany	32.6	24.3	49.6	33.7	25.2	50.6	43.3	28.3	92.0
Denmark	25.9	19.7	37.6	24.4	18.8	34.7	29.5	20.3	53.3
Estonia	17.2	14.5	21.3	35.6	26.0	56.2	14.2	11.1	19.4
Greece	23.1	16.5	38.4	24.6	17.8	39.7	29.5	21.2	47.9
Spain	40.1	28.1	69.6	32.2	24.8	46.1	117.9	54.8	-
Finland	21.6	16.9	30.0	22.1	15.8	36.7	49.8	29.3	162.4
France	36.3	26.1	59.2	41.0	28.3	73.9	34.7	20.4	111.7
Croatia	-	-	-	24.8	18.1	38.8	22.0	16.2	34.1
Hungary	-	-	-	24.9	18.2	38.8	-	-	-
Ireland	41.3	27.1	85.3	15.6	12.1	21.7	35.7	24.4	65.8
Iceland	24.2	16.8	42.6	23.5	17.1	37.3	20.3	15.5	29.3
Italy	27.7	21.0	40.7	32.5	23.9	50.3	27.8	18.9	51.9
Lithuania	19.8	15.3	27.8	43.1	30.3	74.5	80.0	46.5	280.4
Luxembourg	23.8	18.8	32.3	24.1	18.1	35.7	20.5	15.8	29.1
Latvia	20.2	16.3	26.7	47.3	32.4	87.2	19.7	14.9	29.1
North Macedonia	-	-	-	19.1	14.3	28.3	35.7	24.7	63.9
Malta	21.3	15.7	33.2	14.6	11.3	20.5	8.0	6.6	10.2
Netherlands	29.2	20.8	48.7	27.7	20.4	42.7	52.5	30.3	191.9
Norway	20.8	16.2	29.0	16.0	12.2	23.2	17.9	13.3	27.0
Poland	30.3	26.4	35.4	43.7	30.6	75.8	-	-	-
Portugal	24.4	18.1	37.5	26.8	19.6	41.9	53.3	32.3	149.6
Romania	-	-	-	17.9	15.0	22.1	25.0	18.4	38.7
Serbia	-	-	-	-	-	-	32.4	23.1	54.0
Sweden	23.9	18.2	34.8	22.3	16.4	34.4	28.6	19.9	50.1
Slovenia	-	-	-	30.4	21.5	51.6	44.3	27.8	108.6
Slovakia	41.2	27.7	79.5	22.7	17.2	33.2	-	-	-
Turkey	90.8	64.7	152.1	143.4	85.2	449.0	118.4	75.5	273.4
United Kingdom	30.6	22.7	46.5	36.9	25.2	68.4	57.1	34.0	176.3
Average	30.1	22.2	47.6	32.3	23.0	58.6	40.1	25.6	87.8
Median	25.9	19.7	38.4	26.8	19.6	41.9	34.7	23.1	59.0
Minimum	17.2	14.5	21.3	14.6	11.3	20.5	8.0	6.6	10.2
Maximum	90.8	64.7	152.1	143.4	85.2	449.0	118.4	75.5	280.4

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.

Table B.11 - Half-Life Estimates for Insurance and Financial Services

Country	1997:M1 - 2001:M12			2006:M1 - 2010:M12			2015:M1 - 2019:M12		
	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound	Half Life	Lower Bound	Upper Bound
Austria	25.0	17.4	43.4	15.1	11.6	21.7	8.6	6.5	12.5
Belgium	34.0	23.3	62.4	15.8	10.3	33.1	10.4	7.7	16.0
Bulgaria	-	-	-	24.9	19.1	35.6	4.1	3.3	5.5
Switzerland	-	-	-	25.5	18.1	42.8	11.9	9.4	16.1
Cyprus	17.8	12.8	28.9	10.6	8.5	13.8	8.0	6.6	10.2
Czechia	-	-	-	21.4	15.7	33.3	15.7	12.0	22.4
Germany	26.4	18.8	44.0	17.6	12.8	27.9	14.5	10.9	21.5
Denmark	19.5	14.3	30.5	14.4	11.1	20.4	11.6	8.4	18.7
Estonia	15.7	12.7	20.6	18.5	13.3	30.4	12.1	9.5	16.5
Greece	10.7	8.3	14.9	11.4	9.0	15.4	11.5	9.3	15.2
Spain	31.6	22.3	53.8	25.4	18.1	42.3	24.3	17.0	41.9
Finland	17.6	13.0	26.9	15.1	11.6	21.6	8.1	6.7	10.2
France	30.3	21.4	51.4	14.5	9.5	30.0	7.0	5.3	9.9
Croatia	-	-	-	20.2	15.3	29.8	13.1	10.3	17.9
Hungary	-	-	-	21.2	16.1	30.9	8.5	6.8	11.3
Ireland	22.7	16.1	37.9	17.8	13.2	27.0	19.6	14.7	29.4
Iceland	18.8	13.6	30.2	16.4	12.7	23.0	10.6	8.6	13.8
Italy	27.5	19.8	44.9	20.4	15.4	30.1	7.6	5.7	11.3
Lithuania	27.2	19.6	44.2	10.3	6.5	23.4	7.5	5.5	11.5
Luxembourg	16.4	12.0	25.8	15.7	11.9	22.9	15.2	11.7	21.6
Latvia	23.6	17.7	35.4	28.8	20.9	46.0	11.7	9.6	15.1
North Macedonia	-	-	-	12.8	10.0	17.7	20.7	15.3	31.9
Malta	13.5	9.9	20.8	16.4	12.1	25.2	11.1	8.9	14.8
Netherlands	19.6	14.3	30.9	18.5	13.9	27.6	5.9	4.5	8.2
Norway	24.1	17.2	39.7	21.4	15.7	33.5	18.4	14.0	26.8
Poland	17.5	12.2	30.5	16.1	12.5	22.4	14.6	11.4	20.2
Portugal	23.8	17.6	36.2	25.4	18.7	39.4	15.8	12.3	22.1
Romania	-	-	-	21.0	16.5	28.6	20.8	15.7	30.4
Serbia	-	-	-	-	-	-	11.3	9.2	14.5
Sweden	15.9	11.8	23.9	11.7	9.2	15.8	7.8	5.9	11.3
Slovenia	-	-	-	7.6	5.3	13.1	5.3	4.2	7.3
Slovakia	20.0	12.9	43.6	22.4	16.9	33.3	31.9	21.9	57.9
Turkey	78.3	53.8	143.6	12.9	10.3	17.0	22.3	16.6	33.7
United Kingdom	25.0	17.7	42.2	13.7	10.8	18.7	12.3	9.7	16.7
Average	24.1	17.2	40.3	17.6	13.1	27.1	12.9	9.9	18.9
Median	22.7	16.1	36.2	16.4	12.7	27.6	11.7	9.3	16.1
Minimum	10.7	8.3	14.9	7.6	5.3	13.1	4.1	3.3	5.5
Maximum	78.3	53.8	143.6	28.8	20.9	46.0	31.9	21.9	57.9

Notes: Half-life measures are in months. Lower and upper bounds have been constructed by using the 95% confidence interval of the corresponding autoregressive parameters.