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Inflation cycles: evidence from international data[1]

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Abstract

We identify and document key stylised facts of inflation cycles for a large panel of advanced and emerging market economies. To this end, we propose three complementary inflation cycle concepts: (1) cycles in inflation levels, reflecting mostly the low- and medium-frequency components of inflation; (2) cycles in higher-frequency deviation of inflation from its trend; and (3) a categorisation of inflation into high and low inflation regimes. For each concept, we document key stylised facts within and across countries and examine how these have evolved over time. We also show that the relationship between inflation and business cycles matters: entry in a high-inflation regime is associated with a significantly higher chance of a recession in the following quarters. A cross-country dataset with the inflation cycles is made publicly available.

Keywords: inflation cycles, business cycle, monetary policy

JEL classification: E31, F44, C53, C55

[1] Alberto, Douglas, Johannes, Daniel, Rafael and Christian are affiliated with the Bank for International Settlements. Sjur is affiliated with the Norges Bank. The authors are thankful to Claudio Borio, Julián Caballero, Ben Cohen, Georg Junge and Dubravko Mihajlek for useful comments and suggestions. All errors are our own. The opinions in this paper do not necessarily reflect the views of the Bank for International Settlements or of the Norges Bank.

1. Introduction

Understanding inflation dynamics is of central importance to market participants, households, firms and central banks. The outlook for inflation is an important factor in economic decision-making in its own right, and also influences other economic variables. A key consideration is to distinguish periods of low inflation from those when inflation is persistently higher, given that higher inflation can be self-reinforcing (BIS (2022, 2024)).

The contribution of our paper is to introduce three complementary concepts of inflation cycles. The first one is the cycle measured in inflation levels, which reflects mainly medium- and long-term developments. The second measure represents the deviation of inflation from its low-frequency trend, revealing shorter-term inflation dynamics. The third measure categorises inflation into a "high regime" and a "low regime", based on a simple heuristic with empirical support for a broad range of countries. To the best of our knowledge, this is the first cross-country endeavour to consistently apply different concepts of inflation cycles to long time series across multiple advanced economies (AEs) and emerging market economies (EMEs).[2]

These three inflation cycles concepts offer different policy-relevant insights. The cycles in inflation levels correspond to the medium- to long-term frequencies over which inflation targets and expectations are often measured.[3] And while this cycle measure does not explicitly model the underlying trend, it tends to reflect it as the bulk of inflation volatility is due to long-term movements (eg Ascari and Sbordone (2014) and references therein). The second measure intuitively maps to theoretical models of inflation ranging from the Phillips Curve to DSGE models (Hamilton (2018)). And the third measure serves as a summary statistic about the inflation regime, which tends to be self-reinforcing in the case of high inflation.

We view our descriptive, long-term international perspective on inflation cycles as the nominal counterpart to the concept of a "business cycle", commonly used to describe the evolution of gross domestic product (GDP) or broader economic developments. Our complementary working definitions of inflation cycles mirror corresponding papers on business cycles (eg Wolla (2023)), with an important difference. For business cycles, the economically interesting aspects are often *deviations* from growth trends, such as the output gap or recessions. In contrast, the lower-frequency inflation dynamics itself also offers key policy-relevant insights.

To this end, we analyse key patterns of long-dated inflation series of 14 advanced and 13 emerging economies to establish stylised facts about inflation cycles. Some of the series start in the 1920s, and we have near-complete coverage from 1970 onward for the advanced economies. We find that the average peak-to-peak length of inflation cycles hovers around 7 years. This length is surprisingly stable over time and across countries, both in advanced and emerging market economies. Inflation cycles also tend to be fairly symmetric vis-à-vis their four stages (recovery, expansion, slowdown and contraction), especially the cycles with larger amplitudes. Inflation cycles are highly correlated between advanced economies, but less correlated between emerging market economies. Correlations among inflation rates tend to increase during periods of elevated inflation. This hints at the effects from common shocks on inflation, as observed during the 1970s' oil shock and the 2022 inflation surge, even if base rates of inflation depend more on local factors.

While some cycle characteristics have remained stable for the last 7-10 decades, we also observe some changes over time. Since 1985, the median amplitude of inflation cycles has dropped substantially

[2] Our cycles time series are publicly available at https://www.bis.org/publ/work1264.htm.

[3] Borio and Chavaz (2025) document that the horizon over which inflation targeting central banks are expected to achieve their targets has generally lengthened over time.

compared to the earlier periods, from 4.1 to 2.1 percentage points for the advanced economies; for the emerging market economies, the median amplitude dropped from 6.5 to 4.5 percentage points. One of the factors that probably contributed to the narrower amplitude of inflation cycles might have been the introduction of inflation targeting regimes.

Beyond the important long-term component of inflation, shorter-term deviations of inflation from its trend can also have considerable economic significance. Specifically, Phillips curve models associate measures of slack to deviations of inflation from its full-sample mean or, in more sophisticated models, from slower-moving trends.[4] These relationships help make sense of inflation dynamics as it responds to conjunctural factors, as opposed to more structural factors. A recent example is the 2022 inflation surge, associated with unusually high post-Covid demand coupled with tight supply chain constraints (Eickmeier and Hofmann (2022)). As was the case in 2022, these deviations from trend can be difficult to forecast (Koch and Noureldin (2023)) and present unique policy challenges. For example, it can be challenging to know in real time if higher inflation is a deviation from its trend (and thus transitory) or more a permanent development – an increase in the trend. Short-term fluctuations may be influenced by temporary factors such as supply shocks, while longer-term trends reflect underlying structural changes in the economy (Mankiw (2019)). Broadly speaking, cycles in detrended inflation can also be useful to compare or benchmark macroeconomic models focused on deviations from steady state, such as DSGE models.

We measure the higher-frequency deviation of inflation from its low-frequency trend as long-run autoregressive forecast errors (Hamilton (2018)). This flexible and "model-free" technique enables a real-time assessment of inflation through trend-cycle decomposition. Our findings reveal that these deviations from long-term trends are quite limited *most of the time*, but may go up markedly in periods known to be cyclically high inflation regimes. In addition, this decomposition reveals that cycles in AEs tend to be positively correlated with each other, but in the case of EMEs, national detrended inflation tends to be more idiosyncratic. Interestingly, for both AEs and EMEs correlation goes up markedly during the post-Covid high inflation period.

Underlying these analyses is the evidence that economies behave differently when in a high-inflation regime. As argued by Borio et al (2023), during low-inflation regimes, inflation fluctuates within a narrow range and displays strong mean-reverting properties. But in high inflation regimes, inflation becomes unmoored; ceases to revert to mean and is more volatile. Building on these insights, we propose an intuitive and simple heuristic that can be applied across countries to capture this binary characterisation of inflation. We define high inflation periods when year-on-year inflation rises more than 2 percentage points above its 5-year moving average, and stays at least 1 percentage point above that moving average for at least 5 quarters.[5] This rule-of-thumb matches well the quantitative definition of cyclically high inflation as per the Hamilton filter for a diverse panel of countries. This underpins the usefulness of the simpler heuristic in cases where a simple classification of periods into either regime is needed, or a fully-fledged cyclical estimate is not possible to estimate (for example, countries with short inflation series). Barring structural changes, this the rule may continue to hold for a reasonable amount of time.

Given the dichotomy between the well-behaved cyclical inflation and the periods of high (cyclical) inflation, we test whether there are any broader implications when countries switch from one to the other. Using local projections (Jordà (2005), Jordà and Taylor (2025)), we estimate the dynamic effect on recession probability caused by a country entering a period of high inflation. On average, entering a high inflation

4 The former is the traditional Phillips Curve formula with a constant intercept, linking demeaned inflation to measures of slack. The later type of models can be estimated with moving averages (as in Bańbura and Bobeica (2020)) or time-varying intercepts (Koester et al (2021)), thus associating slack to the gap between inflation and its trend.

5 The minimum duration is to avoid identifying regime shifts based on transitory developments, such as changes in sales taxes or short-lived volatility in commodity prices.

regime increases the probability of recession by approximately 10 percentage points in the following year.[6] The onset of the cyclically high inflation according to our detrended measure lead to similar effects. This result further underscores the importance of spotlighting more the cyclical component of inflation.

This work builds on a voluminous literature. Collectively, the literature emphasises the complexity of inflation dynamics and the crucial role of adaptive monetary policies in different economic contexts. Since inflation is a complex phenomenon with multiple drivers, a well-grounded definition of inflation cycles (eg high vs low inflation periods) as presented herein can facilitate understanding of these complex dynamics. Key inflation drivers include economic activity (Blanchard and Fischer (1989); Friedman (1968); Phillips (1958)) and financial conditions (Mishkin (1990)). Inflation cycles also reciprocally influence economic cycles. For instance, high inflation can lower purchasing power and instigate uncertainty, while excessively low inflation may result in lower expenditure and investment (Mishkin (2019); Blanchard (2016); Fischer, Sahay and Végh (2002)). Inflation expectations are also relevant to current spending and saving habits, which subsequently can affect actual inflation (Mankiw and Reis, (2002); Bernanke (2007); Clarida, Galí, & Gertler (1999); Woodford (2003)). Cecchetti and Schoenholtz (2020), examine how inflation dynamics have changed since the Great Recession, with a focus on the role of global factors and monetary policy in shaping these dynamics. Focusing on trend inflation, Ascari and Fosso (2024) find a structurally disinflationary role for globalisation in US inflation. More broadly, central bank policy (Jordà et al (2020), Castillo-Martinez and Reis (2024)) and even communication (Blinder et al (2008); Araujo et al (2024)) influence inflation levels.

Consistent with the importance of co-movement of inflation across countries for the analysis of inflation, various studies offer insights on this topic. For example, Mumtaz et al (2021) use a dynamic factor model that decomposes inflation movements into global, regional and national factors, and document a greater importance for global factors in explaining inflation after 1985. Forbes (2019) also argues for a greater role of global factors in modelling inflation, also consistent with Cicarelli and Mojon (2010). Relatedly, Auer et al (2024), building upon seminal work by Bordo et al (2005), posit that global factors have increasingly influenced national inflation rates. This suggests that the globalisation of goods and financial markets has resulted in more synchronised inflation cycles across countries, including emerging market economies (Aizenman et al (2016)). Prior research also underscores the role of global commodity prices, particularly oil prices, in affecting inflation (Barsky and Kilian (2004)), while highlighting the influence of global output gaps as a driver of inflation (Borio and Filardo (2007)). Additionally, the spillover effects of the monetary policy from major economies, notably the United States, are identified as significant contributors (eg, Neely (2015)).

The remainder of the paper is organised as follows: Section 2 defines our concept of inflation cycles, followed by stylised facts about inflation cycles in Section 3. Section 4 presents an analysis of high inflation periods. Section 5 documents our analysis of the relationship between inflation and GDP growth, and Section 6 concludes.

[6] A voluminous literature studies the Phillips Curve, including how inflation responds to recessions; see Ball and Mazumder (2011) and Del Negro et al (2015) as examples re-examining inflation in the wake of the GFC. In our case, we are interested in switching roles between these variables, examining the role of entering a high-inflation state has on recession. While we don't explore the mechanisms, since our goal is only to point to the economic relevance of the cyclical decomposition of inflation, potential mechanisms could be, for example, due to monetary tightening, reduced purchasing power or increased uncertainty in business planning.

2. Defining and measuring inflation cycles

We start by describing our three conceptual measures of the inflation cycle. We view these as a nominal counterpart to the concept of the business cycle commonly used to describe the evolution of gross domestic product (GDP) or the broader economic activity.

Business cycles can be measured in a number of ways. One approach is to identify turning points in the *level* of GDP, or other measures of economic activity, ie recessions and expansions (eg Burns and Mitchell (1946), Harding and Pagan (2002)). An alternative is to examine the characteristics of GDP after detrending to remove its permanent component (or trend), ie an output gap (eg Cooley and Prescott 1995).[7] In what can be considered a third approach to identify stages of the business cycle, a binary indicator of "recession" is widely used to summarise materially slower real activity. These periods can be identified in an analytical way (eg, business cycle dating committees) or by rules-of-thumb (eg, two consecutive negative GDP growth rates).

Similarly, we propose different measures to characterise the inflation cycle. We view the measures as complementary, with each reflecting a different concept of the cycle. The first concept uses turning points in long-term inflation trends to identify the different stages. The second identifies cycles in a de-trended measure of inflation. The third concept proposes a rule-of-thumb identification of "high inflation" regimes. These are described in the subsections below.

The *first* measure captures low-frequency movements in inflation. Note that, in contrast to business cycle analysis, which typically seeks to abstract from the permanent component of economic activity, in this case the low-frequency trend is itself the variable of interest. The reasons for this are three-fold. First, even highly persistent shifts in trend inflation are rarely permanent. For example, the high inflation that many economies experienced in the 1970s was followed by a long period of much lower inflation after that. Second, to the extent that monetary policy objectives are specified in terms of a target for a given inflation rate, then clearly the question of whether inflation is persistently near or far away from that rate is of great importance. Third, low frequency inflation movements can themselves be a function of macroeconomic stabilisation policy. One common explanation for the high inflation of the 1970s, for example, is that central banks did not adjust their policy rates strongly enough to emerging inflationary pressures (Clarida, Gali and Gertler (1999)).

We identify this first inflation cycle measure by applying the Hodrick-Prescott filter (Hodrick and Prescott (1980, 1997)), henceforth "HP", to year-on-year inflation of each country. The HP filter is used to establish – ex post – stylised facts about inflation cycles for historical data. This method requires the definition of a smoothing parameter λ>0. Lower values of λ cause the trend to be closer to the variable itself; higher values of lambda broadly correspond to flatter trends that approximate a least squares regression fit on a time trend. We impose a relatively light filter to the data (λ = 100) to smooth the inflation rates without removing more defined peaks and troughs that define a cycle. (Graph 2, top row; Graph 4, bottom right).[8] We then identify peaks and troughs in the series by applying the simple algorithm:

$$\text{Peak: } \pi_{t-1}^{HP} < \pi_t^{HP} > \pi_{t+1}^{HP}$$
$$\text{Trough: } \pi_{t-1}^{HP} > \pi_t^{HP} < \pi_{t+1}^{HP} ,$$

7 We do not take a stand on the question of whether GDP is trend stationary or has a unit root. See for example, Perron and Wada (2009) and Luo and Starz (2014) and the references therein.

8 Ravn and Uhlig (2002) present analytical insights for adjusting λ according to the frequency of observations.

where π_t^{HP} is the value of the HP-filtered inflation trend at time t. Since each inflation series is smoothed by the HP filter, the identification of peaks and troughs is not influenced by small, short-term movements that might be mistaken for turning points in the absence of filtering.

The *second* measure represents the deviation of price indices from their low frequency trend. We measure this concept by applying a Hamilton filter (Hamilton (2018)). The Hamiton filter is based on the intuitive interpretation that the high frequency cyclical component of a series reflects short-term variations that were not captured in the longer-term structure of the data, or shocks that die out in a relatively short time span. This filter is as "model-free" as possible for a filter.

The cyclical developments identified by the Hamilton filter are the difference between the log price indices at time $t + h$ (for h set to multiples of one year), and a projection of the same series from the last 4 quarterly (or 12 monthly) values up to time t. This difference represents the unexpected value of the series considering a seasonality-adjusted projection – any such difference in outcomes would be attributable to "cyclical" as opposed to the longer-term developments which would be reflected in the projection. This detrended cycle then reflects "structural shocks" such as productivity shocks, etc that are typically estimated to die out in the space of a few quarters for inflation.

More formally, the Hamilton filter breaks down the trend prices[9] observations for country i in time periods $t + h$, $\Pi_{i,t+h}$, into components representing the trend, $\mathbb{E}[\Pi_{i,t+h}|\Pi_{i,t}, \dots, \Pi_{i,t-\ell}]$, and a cyclical component, $c_{i,t+h} = \Pi_{i,t+h} - \mathbb{E}[\Pi_{i,t+h}\,|\Pi_{i,t}, \dots, \Pi_{i,t-\ell}]$. The trend-cycle breakdown can be estimated with a linear regression, with ℓ being the number of lags that complete the number of periods in one year (eg, ℓ =3 for quarterly data and ℓ =11 for monthly data). Using from now on the definitions for a quarterly dataset, the filter estimator is:

$$\hat{c}_{i,t+h} = \Pi_{i,t+h} - (\hat{\alpha}_i + \sum\nolimits_{L=0}^{\ell} \hat{\beta}_{i,L}\Pi_{i,t-L}), \tag{1}$$

with the coefficients of the country-specific regressions estimated via OLS using the whole sample. This decomposition nests a variety of cases of practical importance, including the random walk case (where $\hat{\beta}_{i,0}$ will be close to 1 and the others, to zero) as well as higher orders of integration, and thus it also adequately represents the *inflation* case. Another advantage is that it can be estimated only autoregressively, dispensing with a panel dimension or other covariates.

We use h=8 quarters (2 years) to reflect the horizon when most price adjustment constraints would no longer be binding (see Wulfsberg (2016) for an example of micro-data study of price adjustment frequency). Put differently, this cycle measure captures the changes in inflation within the usual frequency of price changes that are not accounted for by its past trend. The values of $\hat{c}_{i,t+h}$ for the countries in the sample are shown in Graph 7.

The Hamiton filter avoids important drawbacks of the HP filter when the latter is used to detrend time series, namely the creation of spurious dynamics in the data, end-of sample bias and the need to set parameters ad-hoc. In addition, its definition is based on the intuitive interpretation that the cyclical component reflects short-term variations that were not captured in the longer-term structure of the data. In other words, it is as "model-free" as possible for a filter. But the Hamilton filter has important limitations to be considered, originating from the fact that it is not a band pass filter designed to keep a constant variance across frequencies. For our purposes, the main drawback is that the Hamilton filter can alter the

9 Note that, for $\{\Pi_t\}$ measured in logs, $\pi_t = \Pi_t - \Pi_{t-1}$.

variance of the different frequencies that form the cyclical component.[10] However, this is not as important given that it fulfils the primary role of detrending the inflation series "in real time", without spurious ability to predict the future as shown for the HP filter. This in turn allows the use of the onsets of high-inflation periods as shocks to see the dynamic effects on business cycle recessions, as shown later in this paper.

In sum, we recognise that filtering is by definition empirical as it does not explicitly consider a structural definition of which values are due to cyclical variations and which ones are attributable to longer-term factors. Filtering techniques also abstain from relating the dynamics of cyclical variations to other economic series. Hence, our definitions trade off the model risk associated with theory-based estimates (the possibility of not using an adequate type of structural model) with estimation risk, ie accepting in return the possibility that the numerical estimations do not correctly identify cyclical elements of inflation, especially in case of structural breaks.

The *third* measure categorises inflation into two regimes: a "high inflation regime" and a "low inflation regime". This measure operationalises the characterisation of inflation proposed by Borio et al (2023b). According to these authors, the properties of inflation differ starkly across regimes. In a low inflation regime, inflation fluctuates within a narrow range and displays strong mean-reverting properties. In a high inflation regime, inflation becomes more variable and ceases to be mean-reverting.

We propose an intuitive heuristic to capture this characterisation. We identify the start of a high inflation regime as times when inflation moves significantly above its recent moving average. This captures the increased volatility and loss of mean-reversion of inflation as it moves to a high inflation regime. We date the return to a low inflation regime as occurring when inflation falls sufficiently close to its average level before the inflation surge.[11]

The algorithm is defined by three parameters. The first (X) is the *entrance parameter,* the second (Y) is the *exit parameter* and the third (Z) is the *phase length parameter*. Conditional on being in a low inflation regime, we identify the start of a high inflation regime as occurring when an economy's year-on-year inflation rate is more than *X* ppt above its average rate over the previous five years, and is at least *X*. Hence, the parameter *X* defines the threshold for the *entrance* to a high inflation regime.

Once in a high inflation regime, we date the return to a low inflation regime as occurring when year-on-year inflation declines to within *Y* ppt of the five-year moving average in the quarter in which the economy entered the high inflation regime. Hence, the parameter *Y* defines the threshold for the exit from a high inflation regime.

To avoid spuriously identifying the entry to high or low inflation regimes following temporary inflation spikes or troughs we impose a minimum phase length for both regimes of *Z* quarters.

Graph 1 shows an example of the algorithm with synthetic data, using an entrance parameter of 2 ppt, an exit parameter of 1 ppt and a minimum phase length of 5 quarters. In the figure the black line shows the simulated inflation data. The grey bars show the identified high inflation periods. The red dashed line shows the threshold for a transition from a low to high inflation regime, while the blue dashed line shows the threshold for the return to a low inflation regime. During low inflation regimes the threshold for entry in a high inflation regime equals the 5-year moving average of inflation plus 2 ppt. During the

10 This is also more consistent than the HP filter with the fact that a random walk is an extremely challenging benchmark for out-of-sample inflation forecasting (Atkeson and Ohanian (2001)), since the HP filter adds structure to cyclical data even when it is purely random (Cogley and Nason (1995)). Schüler (2024) details some of these trade-offs, while Phillips and Shi (2021) argue that a boosted version of the HP filter can be more consistent than the Hamilton filter.

11 We also impose a minimum phase length for both regimes. This reduces the chance of spuriously identifying a regime shift due to large by short-lived developments, including from changes in sales taxes or large oil price movements.

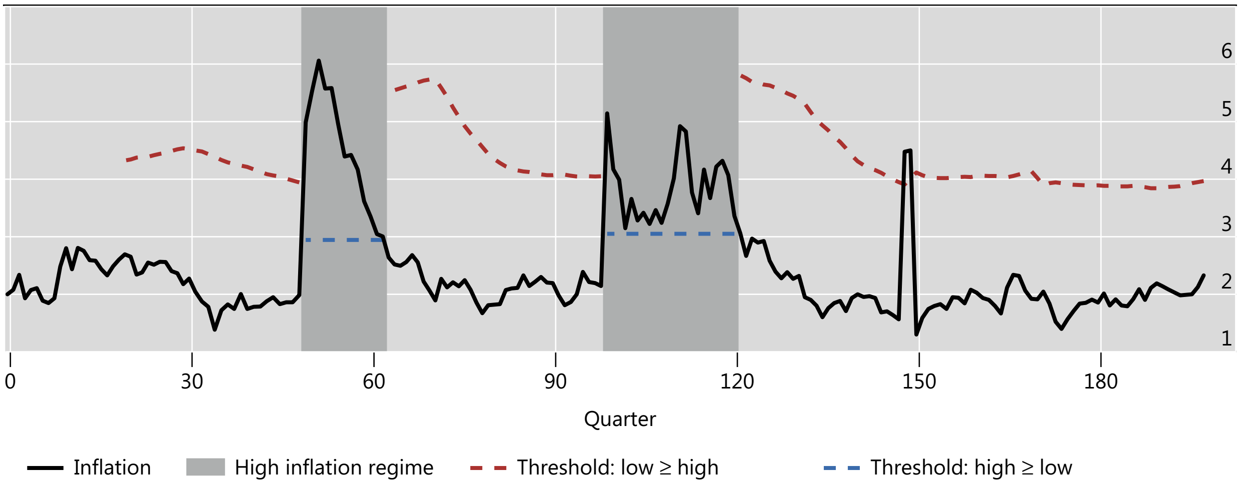
high inflation periods, the threshold for the return to a low inflation regime equals the 5-year moving average in the quarter at which the economy shifted to a high inflation period plus 1 ppt.

The algorithm dates two high inflation period, the first beginning in quarter 50, the second in quarter 100. The importance of the minimum phase length is illustrated in quarter 150, when inflation moves above the threshold for a transition to a high inflation regime, but for only two quarters. As this is less than the phase length parameter, the algorithm does not identify a high inflation regime.

Illustration of the inflation regime dating algorithm

Simulated inflation data

Graph 1



Source: Authors' calculations.

3. Stylised facts about inflation cycles

For each measure, we document a series of stylised facts, both within and across countries. For the first measure, these include (1) the peaks and troughs; (2) cycle length, measured as the time distance between two consecutive peaks; and (3) amplitude, or the difference between a peak value and the ensuing trough value. For the second measure, we document the overall trajectory of detrended inflation measures, highlighting periods where this measure was noticeably different from zero. For the third measure, these include the frequency and average duration of high inflation episodes, and the unconditional probability of going from a low inflation regime to a high inflation regime. For all measures, we present the correlation between countries.

We use quarterly long-term time series[12] on Consumer Price Indices (CPI) in 27 economies, of which 13 are advanced economies (AEs) and 14 emerging market economies (EMEs) (see Annex 1 for a list

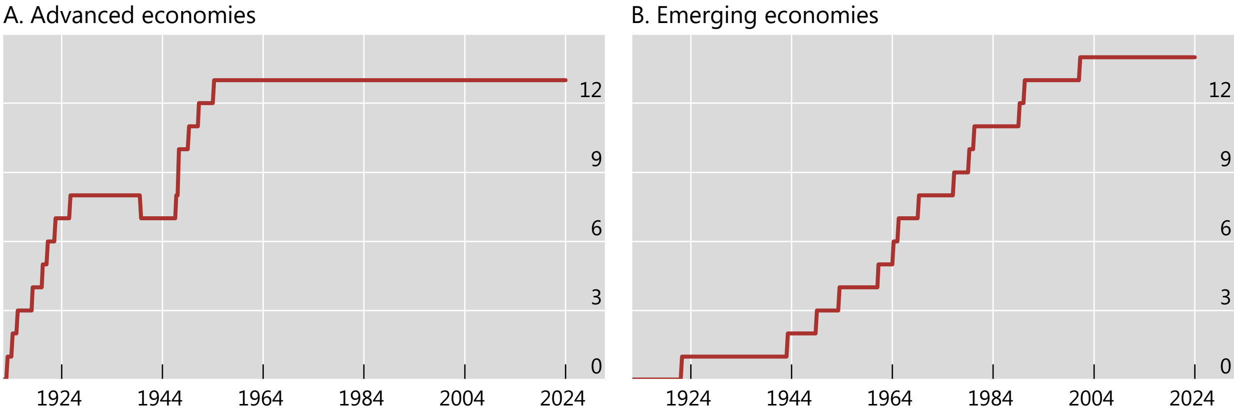
[12] The series are sourced from the BIS Data Portal (https://data.bis.org/topics/CPI/data) but are originally published by the respective national statistical offices. See https://www.bis.org/statistics/cp/cp_long_documentation.pdf for more detailed information. In some cases, the series were extended using the proxy indicators, such as a consumer price index with limited coverage or the retail price index.

of countries). The series go back to the 1910s for several AEs and to the 1950s for some of the EMEs (Graph 2).[13]

Inflation data sample

Number of economies

Graph 2



Note that the number of countries with available series dropped slightly during the second world war period.

Source: BIS.

3.1 Cycles in inflation levels

We first discuss features of cycles in the smoothed level of inflation, plotted in Graph 3 (left and middle panels) below. The cycles in inflation levels for each country are shown in Annex 2.

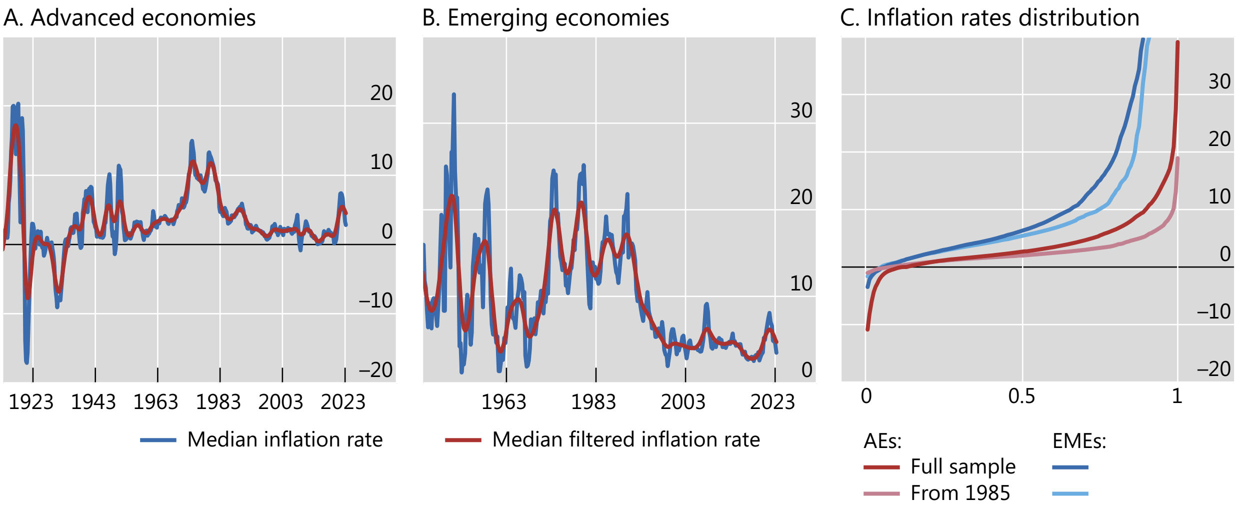
On average over our sample, AEs have experienced lower inflation rates than EMEs. The median inflation rate in advanced economies has been 2.6% for the entire sample going back to the mid-1910s, and 2% since 1985. For EMEs, the equivalent levels are 6.3% and 5.4%. We find that inflation rates exhibit significant skewness, reflecting infrequent instances of sharp inflation escalations and declines. The comparative level of inflation rates between EMEs and AEs remains relatively stable within the median range of the distribution, but this is not the case in the tail, as clearly depicted in Graph 3 (right panel), given the potential for more extreme inflation levels in emerging markets.

Looking at long-term patterns of inflation cycles, we observe that inflation rates in the AEs reached three noticeable peaks during the past 100 years (Graph 3, left panel) – after the two World Wars, which had been a defining pattern in the past, but also during the late 1970s / early 1980s, which surfaced new phenomena. For the EMEs, inflation was also elevated after the second World War period, and from the 1970s till the 1990s (Graph 3, middle panel). During the other periods, inflation had been contained, especially from 1990 until the recent Covid-19 pandemic, where it saw a sharp increase. A striking observation is that inflation rates in EMEs have dropped massively in recent decades.

[13] Mumtaz et al (2021) also use historical inflation data for a varied panel of countries, in their case going back to the XIXth century. Their data is sourced from a vendor, who in turn compiled it originally from historical tables such as from the League of Nations. In our case, our dataset comes directly from the national official sources and BIS calculations.

Inflation rates: the big picture for the long term

In per cent Graph 3



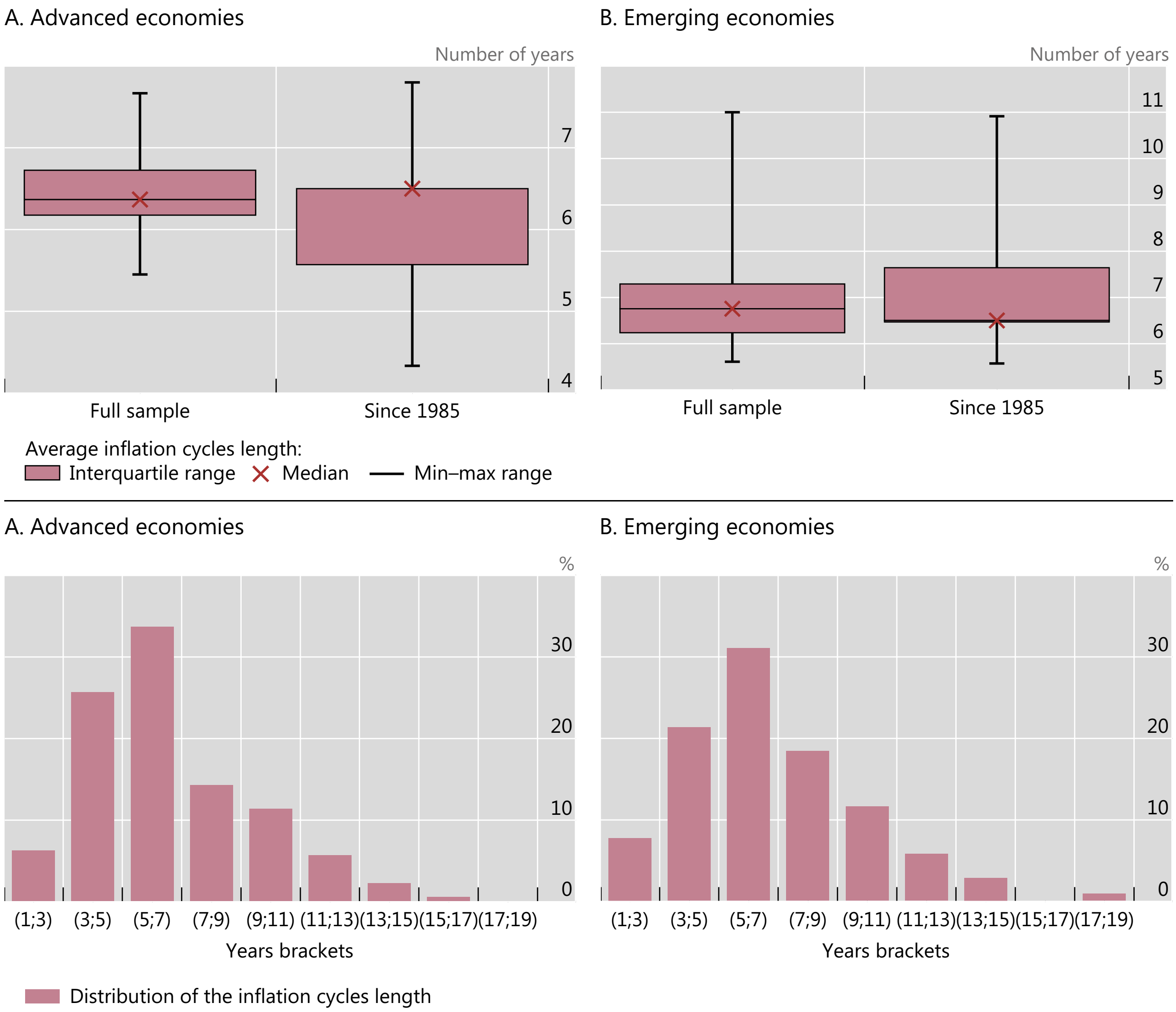
The left and middle graphs show the median inflation rates for those countries (AE / EMEs) for the data available for that particular quarter. These series were then HP filtered using λ = 100. The right graph shows the distribution of inflation rates for all observed values across time as available, and for the last 40 years, respectively. Observations with inflation rates above 40 percent are not shown in panel C.

Sources: BIS; authors' calculations.

The average length of inflation cycles, as measured by the distance between peaks, is 6-7 years in AEs and seven years in EMEs (Graph 4, top row). We identify some defining characteristics for the length of inflation cycles:

- The average duration of inflation cycles has remained stable over time (Graph 4, top row). In AEs, the average duration of the inflation cycle from 1910 to 2024 was 6.7 years, compared to 6.2 years post-1985. A similar pattern is observed in EMEs since 1945, where the average cycle length was 7.4 years, and 7.1 years post-1985.
- The average duration of inflation cycles is remarkably consistent across countries, with the vast majority of countries clustering within one year around the mean (Graph 4, top row). For the 13 AEs, the country-specific average length varies from 5.5 years to 7.7 years since 1910 and between 4.3 years to 7.8 years post-1985. For the 14 EMEs, the average cycle lengths range from 5.6 years to 11 years for the entire sample and from 5.6 years to 10.9 years for the last 40 years since 1985.
- At the level of individual cycles, the variation in duration is slightly higher, although 55% of the cycles in the AEs fall into a length between 3.5 and 7 years (Graph 4, bottom row). The distribution for EMEs is similar, with a higher likelihood for comparably short and longer inflation cycles.

Inflation cycles: stylised facts about duration of inflation cycles — Graph 4



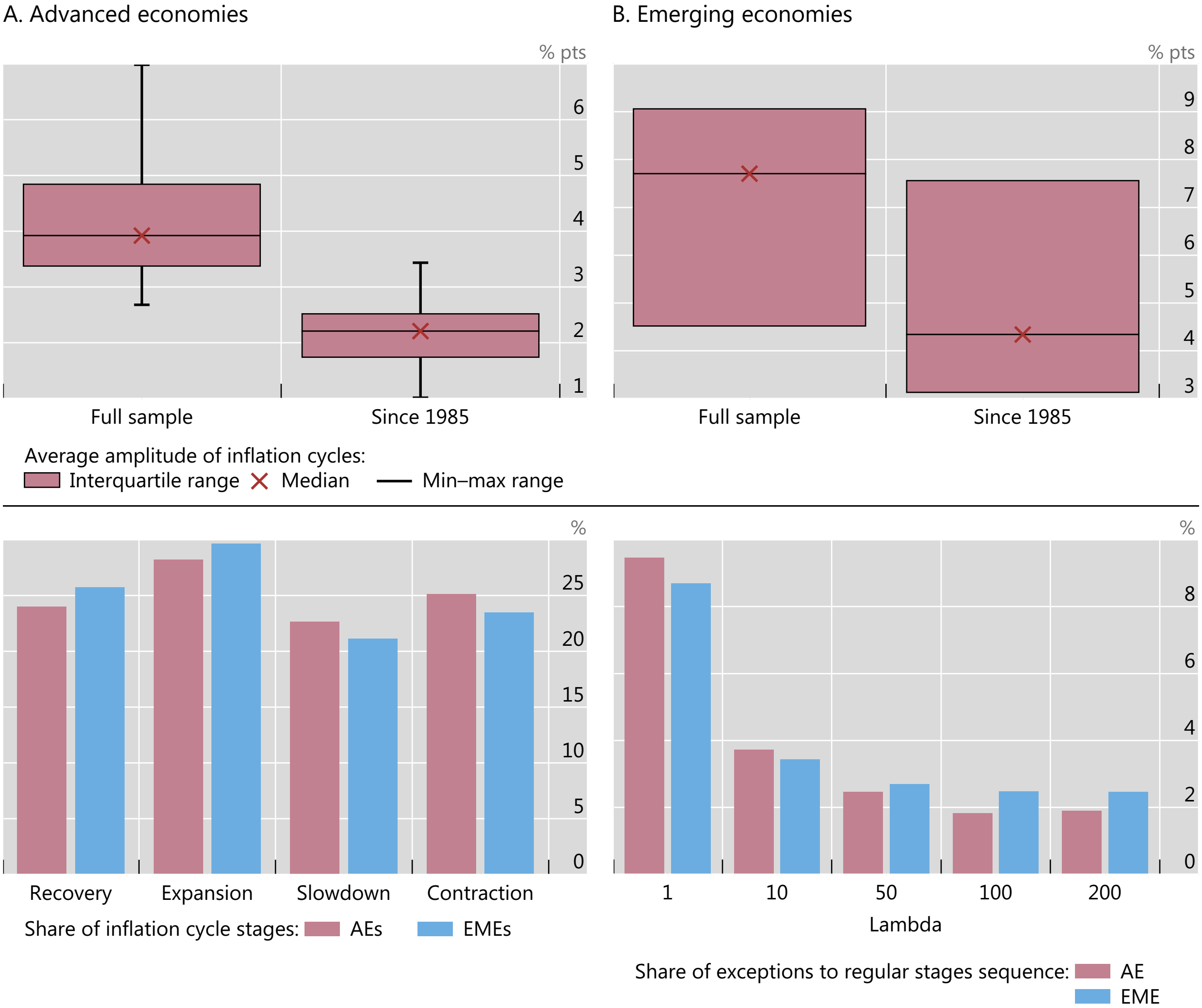
The boxplot graphs in the top row show the range of the average length of the inflation cycle across the AE and EME sample of countries. The graphs in the bottom row illustrate the distribution of the length of each specific inflation cycle across all AEs (left graph) and EMEs (right graph).

Sources: BIS; authors' calculations.

The amplitude of inflation cycles decreased over time, especially for EMEs. We find an average (median) amplitude of about 6 (4) ppt for the full sample, compared to 3 (2) ppt since 1985 (Graph 5, top row). For the EMEs, the median amplitude for the individual cycles was 6.5 ppt for the full sample, compared to 4.5 percentage points since 1985. As illustrated in the graph, the variation for the emerging markets was very high, especially before the 1990s.

The stages of the inflation cycle are four, in sequence: expansion, when inflation rates are increasing and positive marginal growth; slowdown, when inflation rates still increase but with negative marginal growth; contraction, when inflation rates decrease with negative marginal change; and recovery, or declining inflation rates with positive marginal change. The sequence of the inflation stages is fairly regular (Graph 5, left panel in bottom row). Although the cycles do not strictly follow the distinct phases (expansion, slowdown, contraction, recovery), with the applied soft filtering, only about 2-3% of the sequence of the stages is irregular. Moreover, the cycles are fairly symmetric with respect to the peaks and troughs, especially for those cycles with a higher amplitude (Graph 3). We find that expansion phases are slightly longer than recovery phases, while contraction and slowdown phases are shortest (Graph 5, left panel in bottom row), also a common feature of business cycle phases. However, the difference between their length is rather minor, with very similar patterns for advanced and emerging economies.

Inflation cycles: stylised facts about the amplitude and cycle shape Graph 5



The boxplot graphs in the top row show the range of the median amplitude of the inflation rates by country in the AEs (left) and EMEs (right). The bottom left graph shows the share of the different inflation stages observed for AEs and EMEs (ie the count of observations assigned to the different cycles using the HP filtered series). The bottom right graph depicts the share of observations in the HP filtered series that do not follow the expected sequence (recovery – expansion – slowdown – contraction) conditional on the level of filtering (ie the level of the lamdas used).

Sources: BIS; authors' calculations.

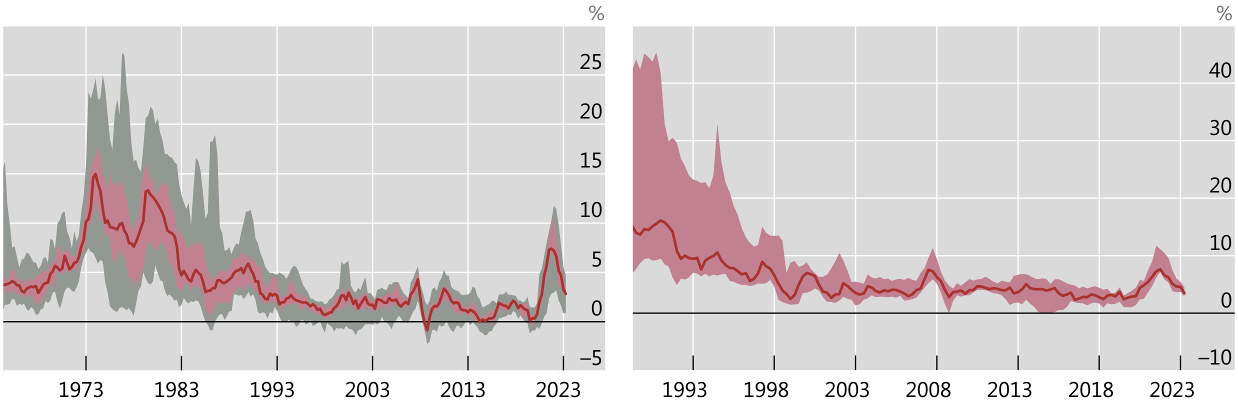
In line with previous studies, we observe that the range of inflation rates across AE and EME countries has narrowed (Graph 6, top row) and that inflation rates are correlated between countries, especially for the advanced economies (Graph 6, middle row). But these correlation patterns change substantially over time. For the AEs, we find that long-term pairwise correlations are consistently surpassing 0.5, averaging at 0.8 (Graph 6, bottom row).

Inflation cycles: cross-country comparison

Graph 6

A. Advanced economies

B. Emerging economies

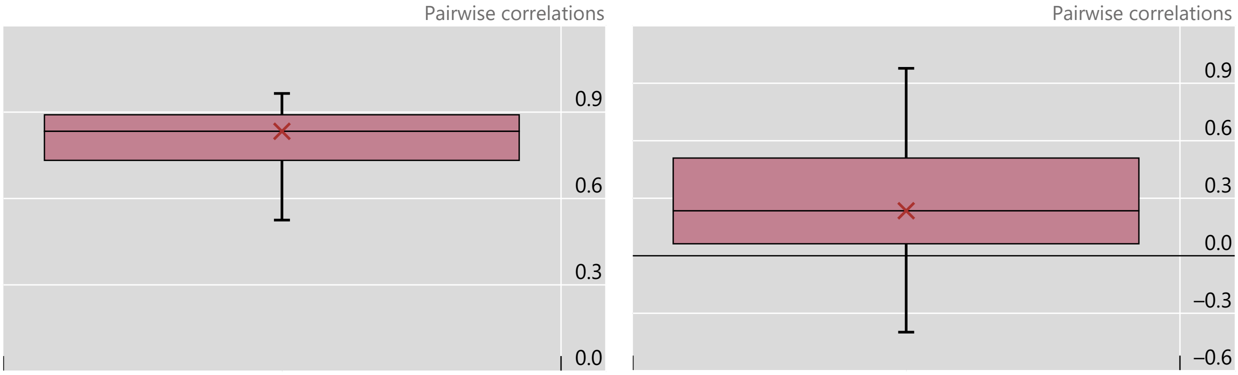


Inflation: Interquartile range — Median

Min–max range

A. Advanced economies

B. Emerging economies

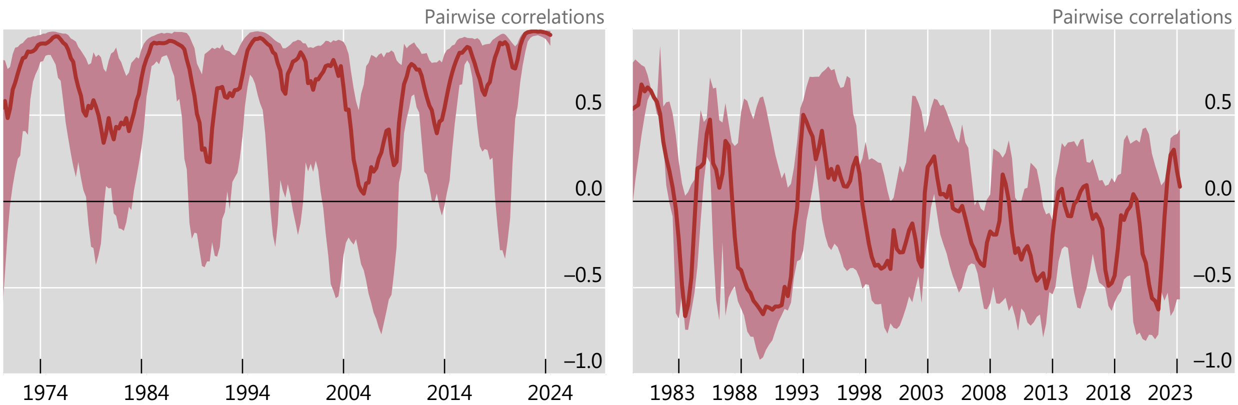


Pairwise correlations: Interquartile range × Median

Min–max range

A. Advanced economies

B. Emerging economies



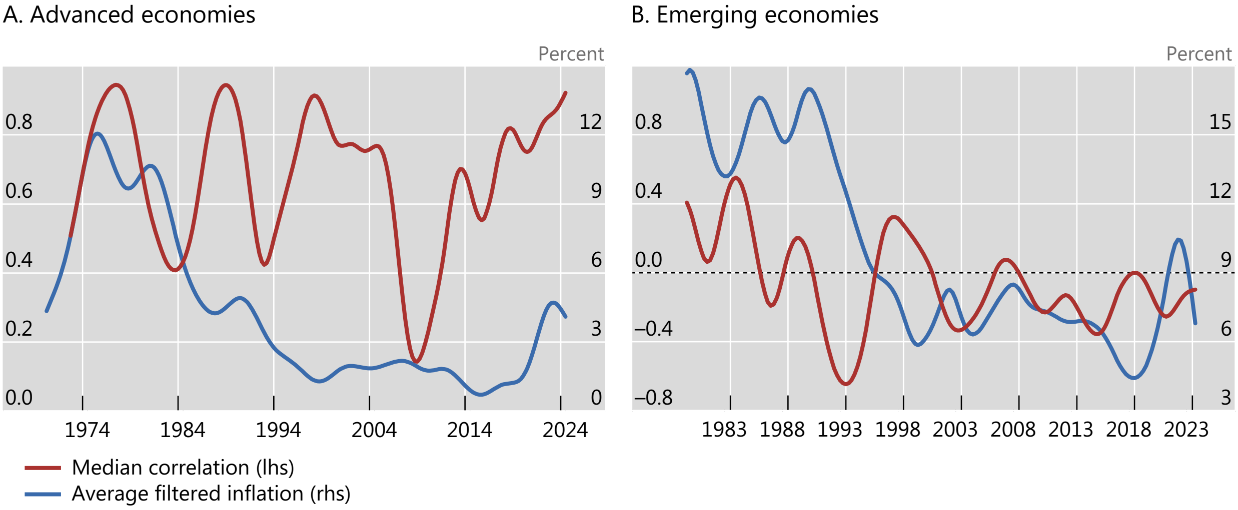
Correlation: Interquartile range — Median

Note: Pairwise correlation computed for all years available; correlations over time computed for 5-year sliding window (eg correlation for Q1/1960 is correlation during Q2/1955-Q1/1960), For the graph comparing inflation correlations with the level of inflation the correlations are centred (eg correlation for Q1/1980 is correlation during Q3/1977-Q2/1983),

Sources: BIS; authors' calculations.

During the 1970s and the Covid pandemic, elevated inflation levels coincide with high inflation correlation, while the opposite was true during the GFC (Graph 7). Conversely, pairwise correlations among inflation rates in EMEs are more volatile and less correlated than in AEs (Graph 5, middle and bottom rows). However, many periods of high inflation, including during the 1970s, the GFC and the Covid pandemic, were associated with high levels of correlation (Graph 7).

Inflation cycles: pairwise correlations vis-a-vis level of inflation — Graph 7



The pairwise correlations computed are computed for 5-year sliding windows. For this graph, the correlations are "centred" (ie correlation for Q1/1980 is the correlation computed for the period Q3/1977-Q2/1983).

Sources: BIS; authors' calculations.

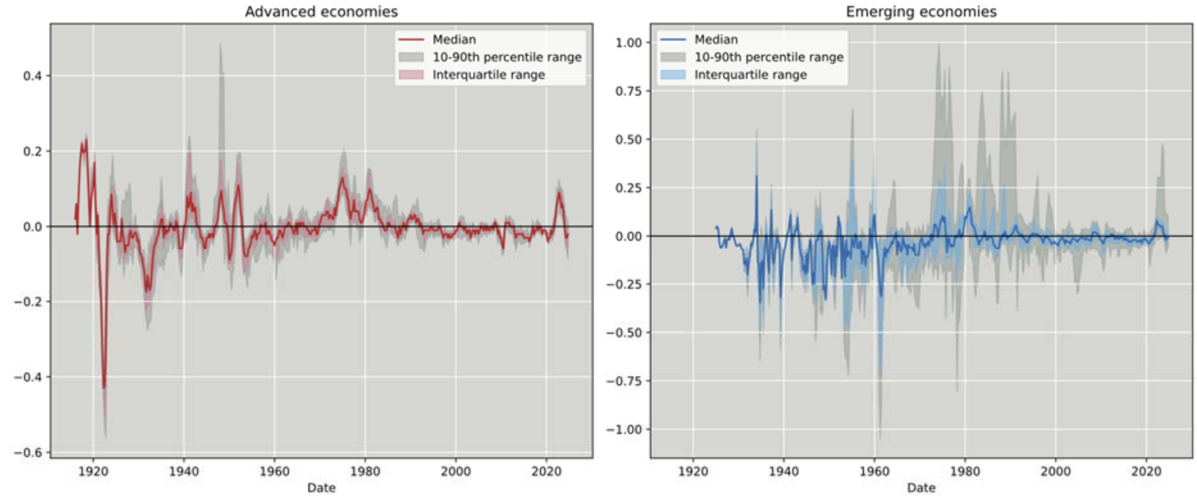
3.2 Cycles in detrended inflation

Next, we discuss features of cycles in detrended inflation, plotted in Graph 8 (left and middle panels) below. The cycles in detrended inflation for each country are shown in Annex 3.

Graph 8 displays the cyclical components of country-specific inflation series using the Hamilton (2018) regression filter. The periods of high cyclical inflation coincide with those in Graph 3, ie after the two World Wars, during the 1970s/80s/(90s) and most recently after the Covid-19 pandemic episode. AEs also experienced cyclically low inflation around the GFC. Interestingly, the dispersion in inflation cycles is visibly larger for the EMEs in our sample (right panel) compared to the AEs (left panel).

Cyclical components of inflation

Graph 8



Note: cyclical component calculated at the country level with the Hamilton filter, using a two year (8 quarter) offset.

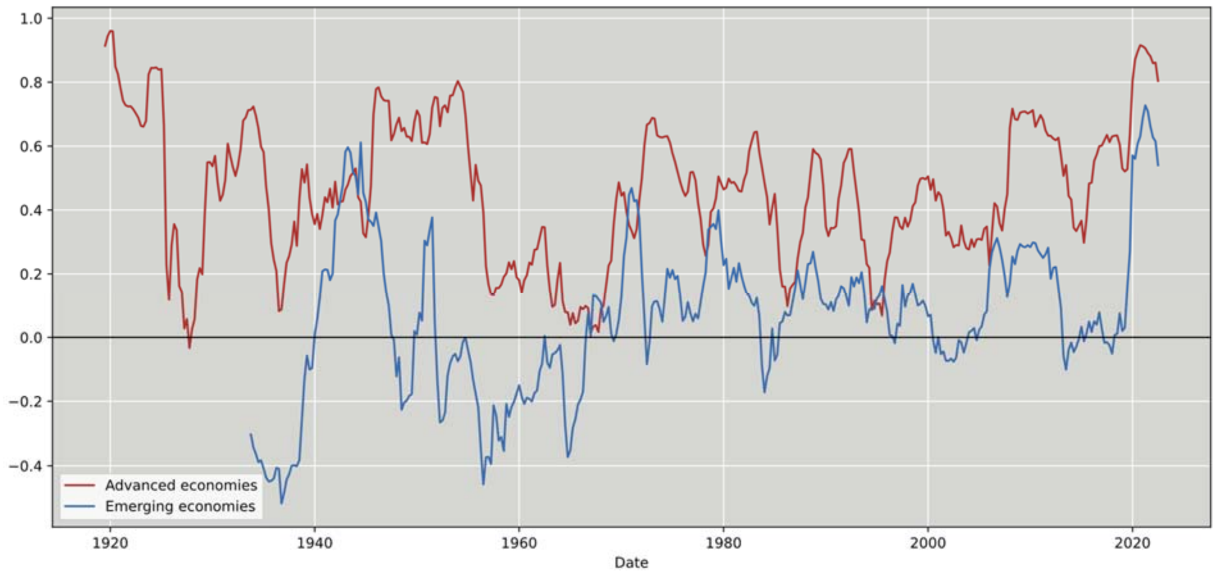
Source: BIS data portal; Author computations.

The co-movements of the cycles in detrended inflation are also different between these two groups. The moving correlations between detrended inflation cycles in AEs and EMEs reveal a striking pattern: detrended inflation tends to be positively correlated amongst AEs, while for EMEs the correlation oscillates between positive and negative (Graph 9). Specifically, AEs experience occasional episodes of low correlation, such as during the 1960s, 1980s and 1990s, but usually they tend to move in tandem. For EMEs, there are periods such as the 1950s and 1960s of considerable negative correlation; with most of the other periods showing an alternating pattern of low positive and negative correlation. The exception proving the rule for EMEs is the recent high-inflation period, where correlations became strongly positive, similar to the observed co-movement in AEs.

Cycles in detrended inflation: cross-country correlations

Median correlation Graph 9

In percent



The pairwise correlations computed are computed for 5-year sliding windows. For this graph, the correlations are "centred" (ie correlation for Q1/1980 is the correlation computed for the period Q3/1977-Q2/1983).

Source: BIS data portal; Author computations.

3.3 High vs low inflation regimes

We now discuss results for our third concept of the inflation cycle, which identifies periods in which economies are in low and high inflation regimes. We present results for an *entrance* parameter of 2 ppt (ie if inflation starts to be above 2%), an *exit* parameter of 1 ppt (ie if inflation drops below 1%) and a *phase length* parameter of 5 quarters.

To illustrate the algorithm in practice, Graph 10 plots results for three economies: the United States, Germany and Thailand; similar series for the other countries in our sample are in Annex 4. The US has the longest data series in our sample, stretching back to 1920. High inflation regimes were rare in the first five decades of our sample, occurring on only three occasions, coinciding with the end of the two world wars and the Korean War. The algorithm then identifies a prolonged high inflation era beginning in 1970 and continuing until 1991. The US then remained in a low inflation regime until the aftermath of the Covid pandemic, when it experienced a high inflation regime from 2021 to 2023.

Consistent with standard narratives, our algorithm suggests a much shorter high inflation regime for Germany in the 1970s than for the US. We identify a high inflation regime from 1972 to 1978. Although inflation returned to 7% in 1984, this increase was too brief to be categorised as another high inflation regime. We also identify another, short, high inflation regime around the time of German unification and then again in the aftermath of the Covid pandemic.

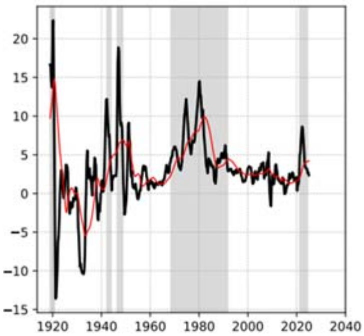
The results for Thailand are systematic of the much-improved inflation performance of many EMEs in recent decades (Ha et al (2019)). Our algorithm identifies a lengthy high inflation regime lasting from 1990 to around the time of the Asian Financial Crisis in 1998. It also identifies another, shorter, high inflation regime from 2007 – 2009. Thereafter, Thailand's economy was in a low inflation regime, with the inflation spike in 2021 being too short-lived to trigger another high inflation regime.

Low vs high inflation: illustration with three different economies

Graph 10

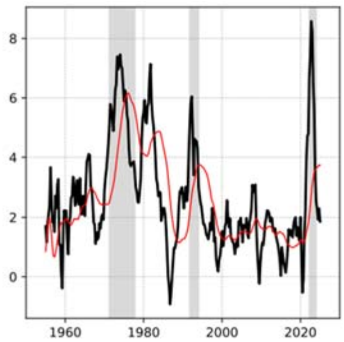
A. United States

Percent



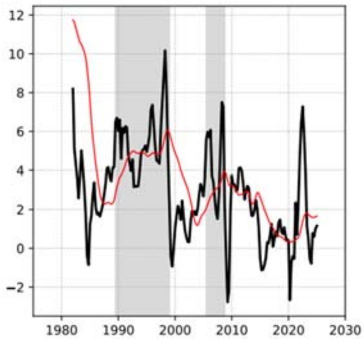
B. Germany

Percent



C. Thailand

Percent



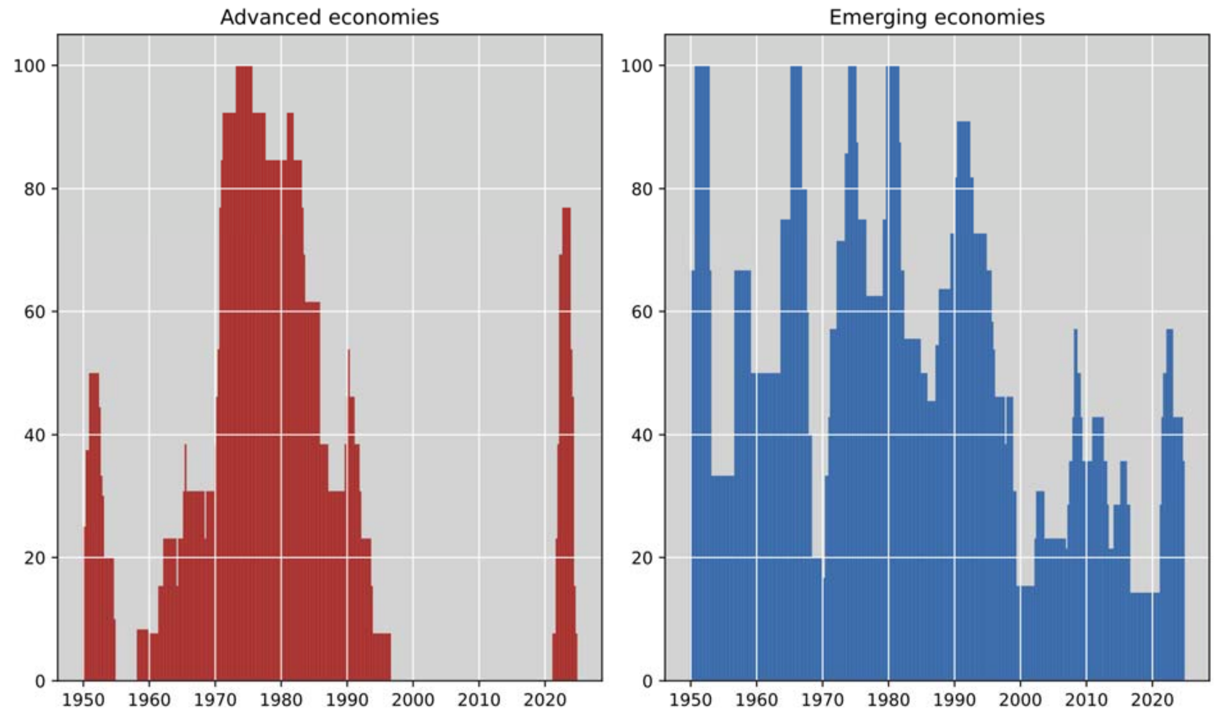
Black lines: year-on-year inflation. Red lines: 5-year moving averages. The greyed periods represent high inflation periods; other periods are considered low inflation.

Sources: BIS; authors' calculations.

For both AEs and (to a lesser extent) EMEs, low inflation regimes have been the norm across our sample. Historically, at least a few EMEs experience high inflation at any given date, but most AEs tend to enter this adverse state only in periods of generalised high inflation (Graph 11). For example, the vast majority of AEs in our sample experienced recorded high-inflation regime in the 1970s according to our methodology, a number that gradually lowered until no AE was in this regime by the mid-1990s. Strikingly, in our definition a larger share of AEs than EMEs was considered to be in a high inflation regime after the Covid-19 pandemic.

Share of countries in high inflation regime

In per cent | Graph 11



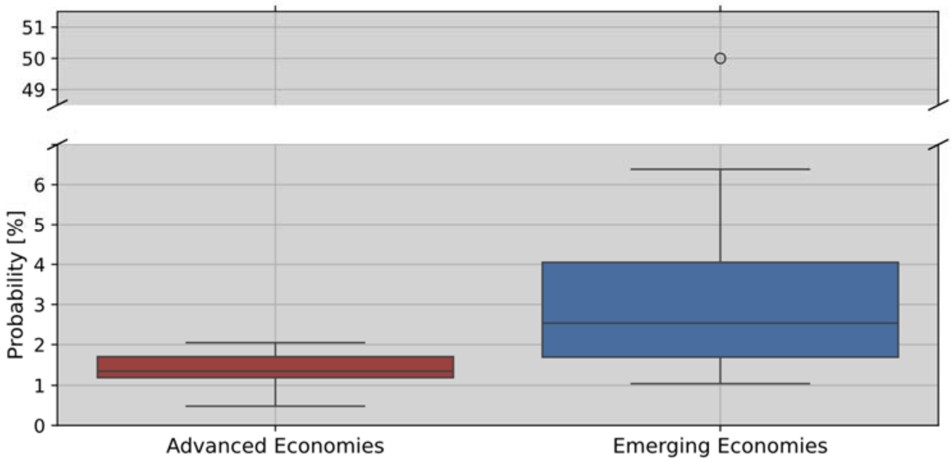
Entrance parameter of 2 ppt, an *exit* parameter of 1 ppt and a *duration* parameter of 5 quarters.

Sources: BIS; authors' calculations.

One outcome of the binary classification into low- and high-inflation regimes is the possibility to assess the unconditional probability of transitioning into a high-inflation regime. For each country, we identify all quarters characterised by a low-inflation regime. We then calculate the percentage of low-inflation quarters that are immediately followed by a high-inflation regime at the country level. Aggregated results for AEs and EMEs are shown in Graph 12, with country-level details provided in Annex 5. Our findings reveals that both the mean and ranges of this probability are higher for EMEs compared to AEs. This supports the observation that low-inflation periods are more prevalent and stable in AEs than in EMEs.[14]

[14] It is worth noting that Türkiye stands out as an outlier in this measure. Specifically, Türkiye experienced only two quarters of low inflation in 1970, which were followed by a prolonged high-inflation regime. As a result, the calculated probability for Türkiye is very high at 50%.

Unconditional probability of entering a high-inflation regime | Graph 12

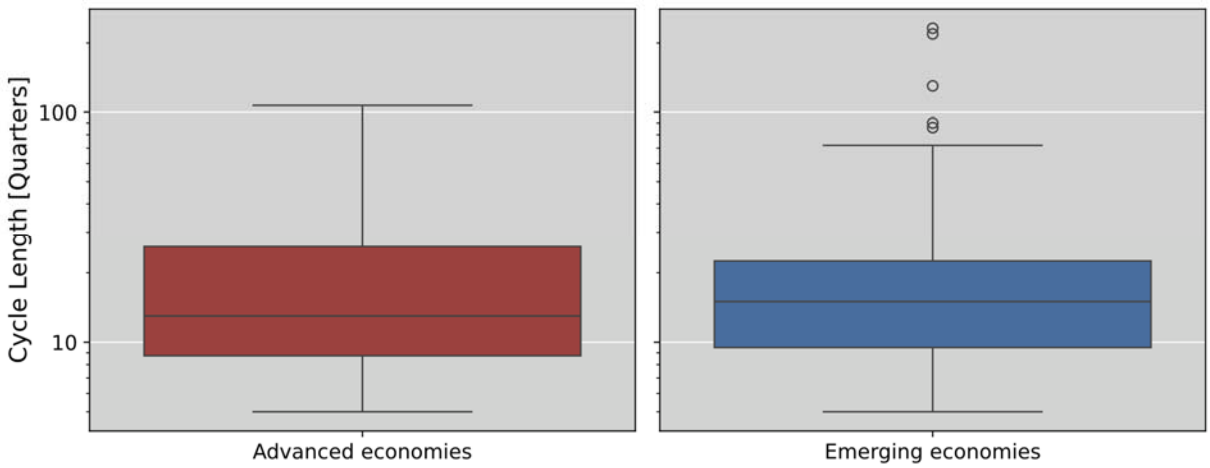


We use a broken y-axis in the boxplot due to the outlier Türkiye in the group of emerging economies.

Sources: BIS; authors' calculations.

We also calculate the average length of high-inflation regimes for each country; the aggregates for AEs and EMEs are shown in Graph 13, with country-level details provided in Annex 6. On average, AEs exhibit slightly shorter high-inflation periods (26.3 quarters compared to 32.5 quarters for EMEs). EMEs also show a wider range in durations, largely driven by a few countries with exceptionally long high-inflation periods, particularly Chile and Türkiye.

Average length of high-inflation regime periods Graph 13



Sources: BIS; authors' calculations.

4. Relationship between inflation and business cycles

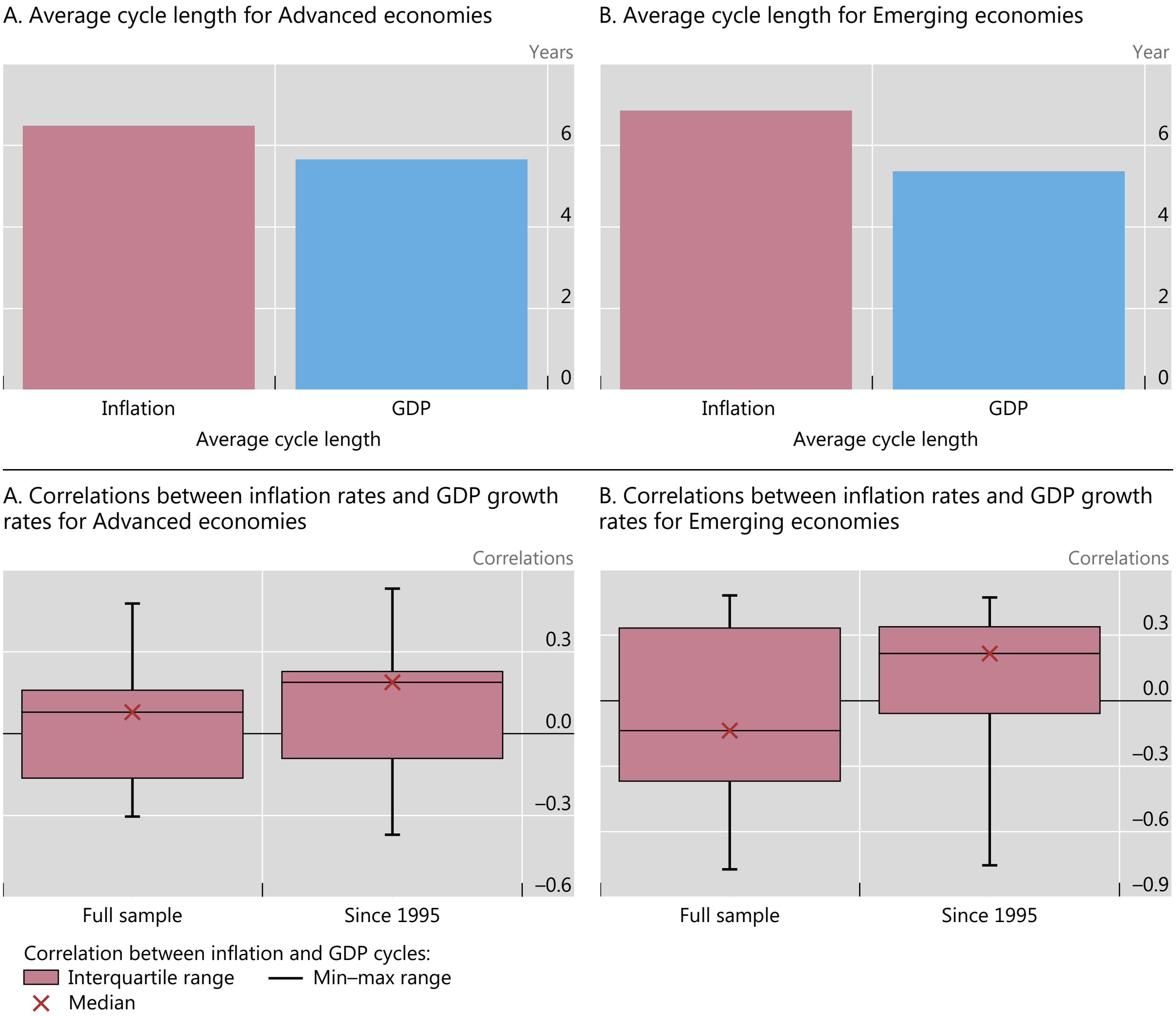
Inflation cycles interact with business cycles in potentially complex ways. But while a considerable literature examines the effects of business cycles on inflation (eg, Bianchi et al (2023) and references therein), it is rarer to find systematic studies of the effects of inflation – especially high inflation - on business cycles. In addition to directly influencing wealth distribution and risk aversion, inflation cycles change the policy function (and policy space) and thus also how policy affect financial stability (Smets (2018)). All of this in a context where high inflation episodes are historically difficult to tame (Ari et al (2023)). More broadly, existing insights from somewhat related literature suggest a meaningful role of inflation on activity. Particular channels would be due to the negative role of inflation on welfare due to the opportunity cost of money (Burstein and Hellwig (2008)), and the sensitivity of output to demand shocks and inflation due to nominal and real rigidities (Nakamura and Steinsson (2013).

Inflation cycles, measured by the HP-filtered series (ie the long-term trend), are slightly longer than the corresponding business cycles measured by NBER for the US and using the algorithm of Bry and Boschan (1971) for other countries. This difference is about one year (6.5 vs 5.5 years; Graph 14, top row).[15] There is little difference in the length of the inflation and GDP growth cycles between AEs and EMEs, at least on average. The pairwise, country-specific correlation between the inflation and business cycles is moderately positive (Graph 14, bottom row), both in the AEs and EMEs. However, there is considerable variation in each country group, documented by countries that exhibit no or even a small negative correlation between the two cycles. These findings underline the complex interrelation between inflation and economic activity.

[15] Business cycles are found to be shorter in duration and exhibit a lower amplitude compared to financial cycles (Claessens et al (2012) and Borio et al (2018)).

Comparison of characteristics of inflation and GDP cycles

Graph 14



Sources: BIS; authors' calculations.

To uncover time patterns in the relationship between the onset of high-inflation periods and business cycle downturns, we use panel local projections (Jordà (2005), Jordà and Taylor (2025)) to explore what happens to business cycle indicators over time after the *onset* of a high-inflation regime. This onset is defined as a dummy that identifies the quarter where a country's inflation turns from a normal to a high-inflation regime according to our inflation heuristic. For robustness, we also calculate the response to the onset of a cyclically high inflation according to our second, detrended measure.

Formally, we aim to estimate the impulse response of the onset of a high-inflation period on the business cycles, controlling for the dynamic interrelationship between these cycles. To facilitate interpretation, we use dummy variables representing business cycle downturns or recessions; this allows coefficients to be interpreted as in a linear probability model. We build on the connection between local projection and vector autoregressions (Plagborg-Møller and Wolf (2021)) to construct panel local projections that estimate, for each business cycle dummy time series encoded by y_t,[16] the average effect θ_h in the h-th quarter ahead after onset of the high inflation regime, $\bar{\pi}_t = 1$, while also considering the dynamics of business cycles:

$$\theta_h = E\left[y_{t+h} \middle| \bar{\pi}_t = 1, \bar{\pi}_{t-1} = 0\,; y_{t-1,\dots,t-p}, \bar{\pi}_{t-1,\dots,t-p}\right] \text{-} E\left[y_{t+h} \middle| \bar{\pi}_t = 0; y_{t-1,\dots,t-p}, \bar{\pi}_{t-1,\dots,t-p}\right].$$

We estimate θ_h as a coefficient in this set of panel local projections regressions:

$$y_{i,t+h} = \alpha_i + \beta_t + \beta_q + \theta_h \eta_{i,t} + \sum_{p=1}^{4} \theta_h^p \eta_{i,t-p} + \sum_{p=1}^{4} \rho_h^p y_{i,t-p} + \epsilon_{i,t+h},$$

where p=4 is the number of lags to capture the dynamic relations between these two variables,[17] α_i is the fixed effect for each country, β_t and β_q are fixed effects for each date and the quarter of the year, $\eta_{i,t}$ is a dummy marking the onset of the high-inflation period for country i according to our third measure. The dependent variable itself is an indicator of business cycle downturn: for the US, it is the NBER recession dummies; for other countries, it corresponds to quarters where the amplitude, or difference between peaks and troughs (as identified by the Bry-Boschan algorithm) is greater than 2 percentage points.

Since the model is a linear panel regression with a dummy as dependent variable, it corresponds to a linear probability model, with an interpretation of θ_h as follows: when a given country *enters* a period of high inflation, what is the impact on the probability of a business cycle downturn occurring some quarters later? This baseline specification, based on the high-inflation heuristic, identifies more clearly the effect from switching into a high inflation regime. In a related specification, we use the *onset* of a cyclically high period, ie when our second measure of inflation cycles goes from negative to positive. The impulse responses based on this alternative specification offer a somewhat cleaner way to measure the impact of inflation shocks on the probability of recession, even if not all of them are ultimately leading to a full-blown switch into a high inflation regime.

In line with expectations, moving to a high-inflation regime lowers growth. The probability that countries will face a recession increases by almost 9 percentage points one year afterwards (Graph 15, panel A). Using the detrended inflation cycles measure yields broadly the same results (panel B). Exploring the specific mechanisms is outside the scope for this work. But the consistency of the results and their statistical significance - even with a diverse sample in both time and cross-section dimensions – underscore the importance of studying more closely the effects of inflation cycles on economic fluctuations.

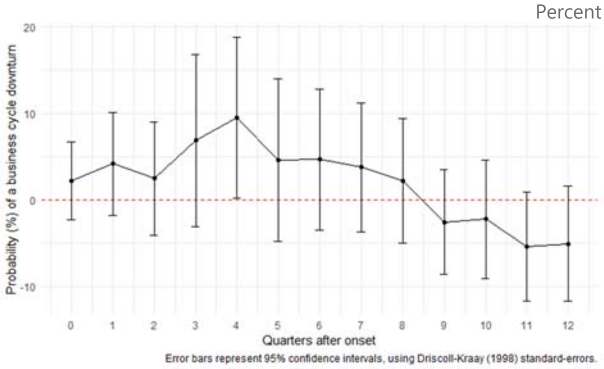
16 All these series are normalised such that a value of 1 corresponds to the undesirable outcome (eg, recession).

17 It is known that the asymptotic convergence of the impulse response differs from a VAR beyond the lags used in the local projection estimates. We use p=4 to keep the smallest lag structure that is still able to represent the full seasonality within a year, to keep data also for countries that have shorter time series. However, the shape of the results and their statistical significant are essentially the same with lags up to 24 quarters (not shown).

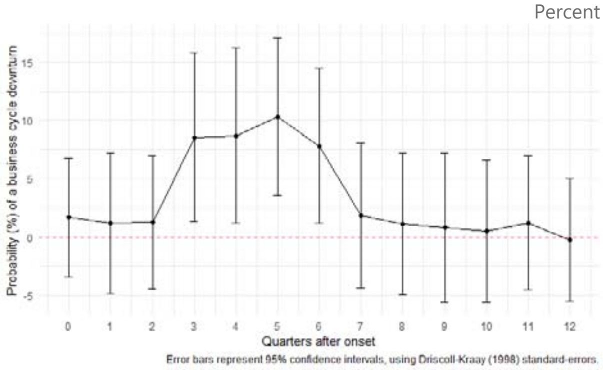
Response of business cycle downturn to onset of high-inflation regime

Graph 15

A. Response to onset of high-inflation regime



B. Response to onset of positive detrended inflation



Estimates of local projections of the onset of high-inflation (panel A) or the onset of a positive detrended inflation period (panel B) on the probability of recession.

Sources: BIS; authors' calculations.

5. Conclusion

The recent surge in inflation has reignited interest in understanding inflation trends, particularly in AEs, which had experienced low inflation levels for an extended period of time. While inflation has somewhat subsided in the meantime, not least due to tighter monetary policies, the potential for ongoing (supply-side) inflationary pressures remains a concern.

With this study, we seek to contribute to the general understanding of inflation cycles, ie what to expect for their duration and amplitude, as well as their relationship vis-à-vis economic growth cycles, based on long-term patterns. Our findings suggest that there are some defining characteristics which have remained stable over time – inflation cycle length, pairwise cross-country correlations and relationship with growth cycles – other dimensions, most notably the amplitude of inflation cycles, have changed over time. We also point to differences for emerging market economies, which have more distinct inflation patterns, although the trend has become more aligned to advanced economies in recent decades.

We offer a simple rule-of-thumb to identify periods of high inflation, which tracks well a more formal definition for a broad range of countries. Along with the stylised facts on inflation cycles established in this paper, our work can serve other research endeavours to clarify inflation cycle patterns and their implications for the broader macro-financial conditions. For instance, we show evidence that the onset of cyclically high inflation periods significantly increases the chance of worse business cycle outcomes starting one year ahead.

References

Aizenman, J, M Chinn and H Ito (2016), "Monetary policy spillovers and the trilemma in the new normal: Periphery country sensitivity to core country conditions", Journal of International Money and Finance, v.68, issue C, p.298-330.

Araujo, D K G, N Bokan, F A Comazzi and M Lenza (2024): "Word2Prices: embedding central bank communications for inflation prediction", CEPR Discussion Paper no 19784.

Ari, A, C Mulas-Granados, V Mylonas, L Ratnovski and W Zhao (2023): "One hundred inflation shocks: seven stylized facts", IMF Working paper, no WP/23/190.

Ascari, G and L Fosso (2024): "The international dimension of trend inflation", Journal of International Economics, v.148.

Ascari, G and A M Sbordone (2014): "The macroeconomics of trend inflation", Journal of Economic Literature, v.52, n.3, p.679-739.

Atkeson A and L E Ohanian (2001): "Are Phillips curves useful for forecasting inflation?", Federal Reserve Bank of Minneapolis Quarterly Review, v.25, n.1, p.2-11.

Auer, R, M Pedemonte and R Schoenle (2024). "Sixty years of global inflation: a post-GFC update," BIS Working Papers 1189, Bank for International Settlements.

Bańbura, M and E Bobeica (2020): "Does the Phillips curve help to forecast euro area inflation?", International Journal of Forecasting, v.39, n.1, p.364-390.

Bank for International Settlements (2022): "Inflation: a look under the hood", Annual Economic Report, Chapter 2.

——— (2024): "Monetary policy in the 21st century: lessons learned and challenges ahead", Annual Economic Report, 30 June 2024.

Barsky, R B and L Kilian (2004): "Oil and the macroeconomy since the 1970s", Journal of Economic Perspectives, v.18, n.4, p.115-134.

Bernanke, B S (2007), "Inflation expectations and inflation forecasting." Speech at the Monetary Economics Workshop of the National Bureau of Economic Research Summer Institute, Cambridge, Massachusetts, July 10, 2007.

Bianchi, F, G Nicolò and D Song (2023): "Inflation and real activity over the business cycle", NBER Working Paper no 31075, March.

Blanchard, O, & S Fischer (1989). "Lectures on Macroeconomics". MIT Press.

Blanchard, O (2016): "The Phillips curve: back to the '60s?", American Economic Review, v.106, n.5, p.31-34.

Blinder, A, M Ehrmann, M Fratzscher, J De Haan and D-J Jansen (2008): "Central bank communication and monetary policy: a survey of theory and evidence", Journal of Economic Literature, v.46, n.4, December.

Bordo, M, A Filardo, A Velasco, and C A Favero (2005): "Deflation and monetary policy in a historical perspective: remembering the past or being condemned to repeat It?" Economic Policy 20, v.44, p.801–44.

Borio, C and M Chavaz (2025): "Moving targets? Inflation targeting frameworks, 1990-2025", BIS Quarterly Review, March 2025, pp 31 – 52.

Borio, C, M Drehmann and D Xia (2018): "The financial cycle and recession risk", BIS Quarterly Review, December 2018.

Borio, C and A Filardo (2007): "Globalisation and inflation: New cross-country evidence on the global determinants of domestic inflation", BIS Working Papers 227.

Bry, G and C Boschan (1971): "Cyclical analysis of time series: selected procedures and computer programs", NBER Technical Paper, no 20.

Burstein, A and C Hellwig (2008): "Welfare costs of inflation in a menu cost model", Annual Economic Review, v.98, n.2, p.438-443.

Castillo-Martinez, L and R Reis (2024): "How do central banks control inflation? A guide for the perplexed", mimeo.

Cecchetti, S G and K L Schoenholtz (2020): "Inflation dynamics and the great recession." Journal of Economic Perspectives, v.34, n.2, p.141-166.

Ciccarelli, M and B Mojon (2010): "Global inflation", Review of Economics and Statistics, v.92, n.3, p.524-535.

Clarida, R, J Galí and M Gertler (1999): "The science of monetary policy: a New Keynesian perspective." Journal of Economic Literature, v.37, n.4, p.1661-1707.

Claessens, S, M Ayhan Kose, M Terrones (2012): "How do business and financial cycles interact?", Journal of International Economics, v.87, n.1, p.178-190.

Cogley, T and J M Nason (1995): "Effects of the Hodrick-Prescott filter on trend and difference stationary time series: implications for business cycle research", Journal of Economic Dynamics and Control, v.19, p.253-278.

Fischer, S, R Sahay and C A Végh (2002): "Modern Hyper- and High Inflations", Journal of Economic Literature, v.40, n.3, p.837-880.

Forbes, K J (2019), "Has Globalization Changed the Inflation Process?" BIS Working Papers, No. 791.

Friedman, M (1968): "The role of monetary policy", Presidential address delivered at the 80th Annual Meeting of the American Economic Association, American Economic Review, v.58, n.1, p.1-17.

Ha, J, M A Kose and F Ohnsorge (2019): "Inflation in emerging and developing economies: evolution, drivers, and policies", World Bank Group.

Hamilton, J D (2018): "Why you should never use the Hodrick-Prescott filter", Review of Economics and Statistics, v.100, n.5, p.831-843.

Hodrick, R J and E C Prescott (1980): "Postwar U.S. business cycles: an empirical investigation", Carnegie Mellon University discussion paper no 451.

--- (1997): "Postwar U.S. business cycles: an empirical investigation", Journal of Money, Credit and Banking, v.29, n.1, p.1-16.

Jordà, Ò (2005): "Estimation and inference of impulse responses by local projections", American Economic Review, v.95, n.1, p.161-182.

Jordà, Ò, S R Singh and A M Taylor (2020): "The long-run effects of monetary policy." Journal of Monetary Economics, v.114, p.103-120.

Jordà, Ò and A M Taylor (2025): "Local projections", Journal of Economic Literature, v.63, n.1, p.59-110.

Koester, G, E Lis, C Nickel, C Osbat and F Smets (2021): "Understanding low inflation in the Euro area from 2013 to 2019: cyclical and structural drivers", ECB Strategy Review Occasional Paper Series no 280.

Mankiw, N G and R Reis (2002): "Sticky Information versus Sticky Prices: A Proposal to Replace the New Keynesian Phillips Curve." Quarterly Journal of Economics, v.117, n.4, p.1295-1328.

Mishkin, F S (1990), "The information in the longer maturity term structure about future inflation", Quarter Journal of Economics, v.105, n.3, p.815-828.

Mishkin, F. S. (2019): "The Economics of Money, Banking, and Financial Markets". Pearson.

Mumtaz, H, S Simonelli and P Surico (2011): "International comovements, business cycle and inflation: a historical perspective", Review of Economic Dynamics, v.14, n.1, p.176-198.

Nakamura, E and J Steinsson (2013): "Price ridigity: microeconomic evidence and macroeconomic implications", Annual Review of Economics, v.5.

Neely, C J (2015): "How much do oil prices affect inflation?," Economic Synopses, Federal Reserve Bank of St. Louis, n.10.

Phillips, A W (1958), "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957." Economica, 25(100), 283-299.

Phillips, P and Z Shi (2021): "Boosting: why you can use the HP filter", International Economic Review, v.62, p.521-570.

Plagborg-Møller, M and C K Wolf (2021) "Local projections and VARs estimate the same impulse responses", Econometrica, v.89, n.2, p.955–980.

Ravn, M O and H Uhlig (2002): "On adjusting the Hodrick-Prescott filter for the frequency of observations", Review of Economics and Statistics, v.84, n.2, p.371-376.

Schüler, Y S (2024): "Filtering economic time series: on the cyclical properties of Hamilton's regression filter and the Hodrick-Prescott filter", Review of Economic Dynamics, v.54, n.101237.

Smets, F (2018): "Financial stability and monetary policy: how closely linked?", International Journal of Central Banking, v.35.

Wolla, S A (2023): "All About the Business Cycle: Where Do Recessions Come From?", Federal Reserve Bank of St Louis.

Woodford, M (2003): "Interest and prices: foundations of a theory of monetary policy". Princeton University Press.

Wulfsberg, F (2016): "Inflation and price adjustments: micro evidence from Norwegian consumer prices 1975-2004", American Economic Journal: Macroeconomics, v.8, n.3, p.175-194.

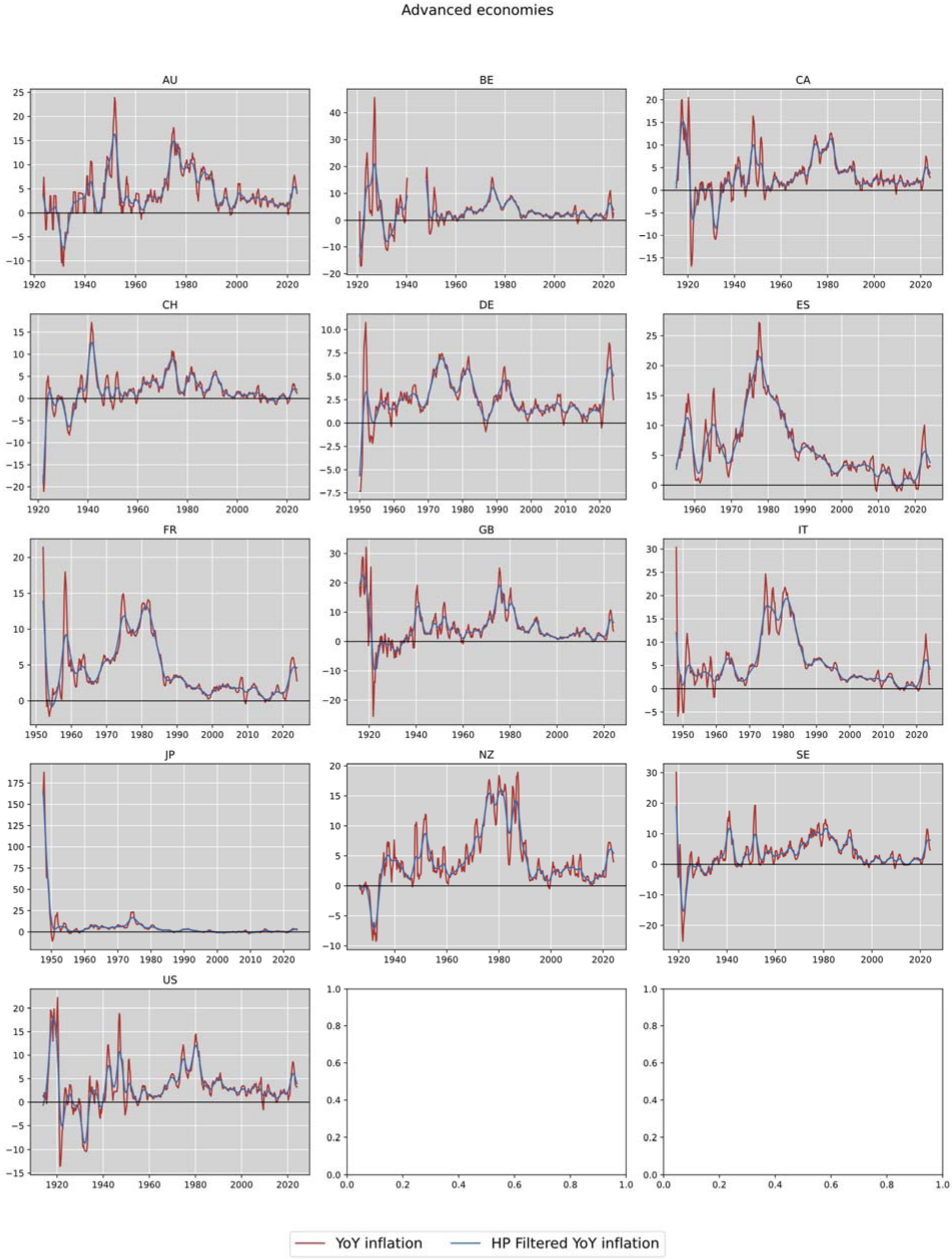
Annex 1: Inflation data by country: Overview

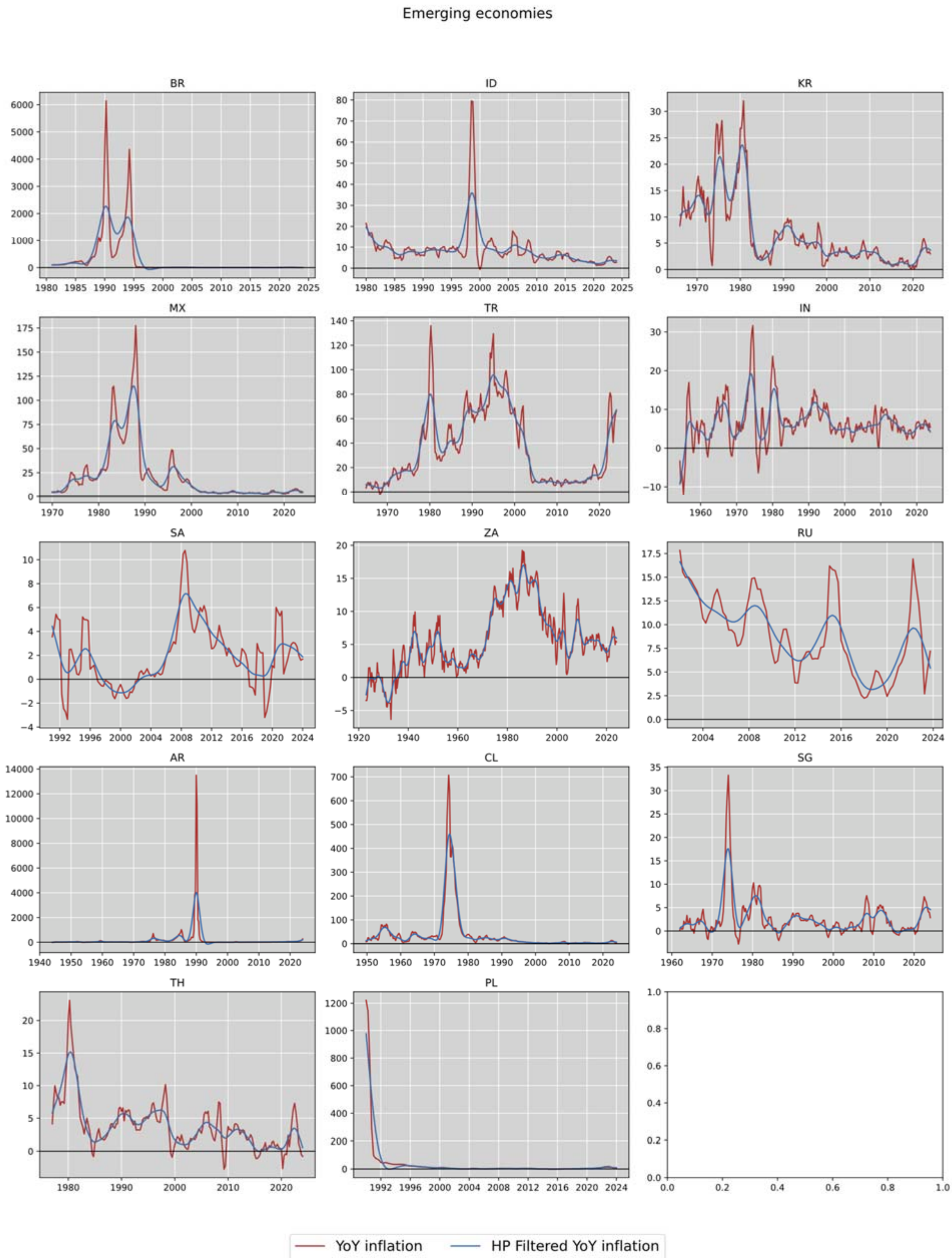
Country name	ISO code	Type	Series starts in
Australia	AU	AE	1923
Belgium	BE	AE	1921
Canada	CA	AE	1915
Switzerland	CH	AE	1922
Germany	DE	AE	1950
Spain	ES	AE	1955
France	FR	AE	1952
United Kingdom	GB	AE	1916
Italy	IT	AE	1948
Japan	JP	AE	1947
New Zealand	NZ	AE	1926
Sweden	SE	AE	1919
United States of America	US	AE	1914
Argentina	AR	EM	1944
Brazil	BR	EM	1981
Chile	CL	EM	1949
Indonesia	ID	EM	1980
India	IN	EM	1954
Korea (the Republic of)	KR	EM	1966
Mexico	MX	EM	1970
Poland	PL	EM	1990
Russian Federation	RU	EM	2002
Saudi Arabia	SA	EM	1991
Singapore	SG	EM	1962
Thailand	TH	EM	1977
Türkiye	TR	EM	1965
South Africa	ZA	EM	1923

AE: Advanced economy; EM: Emerging market economy

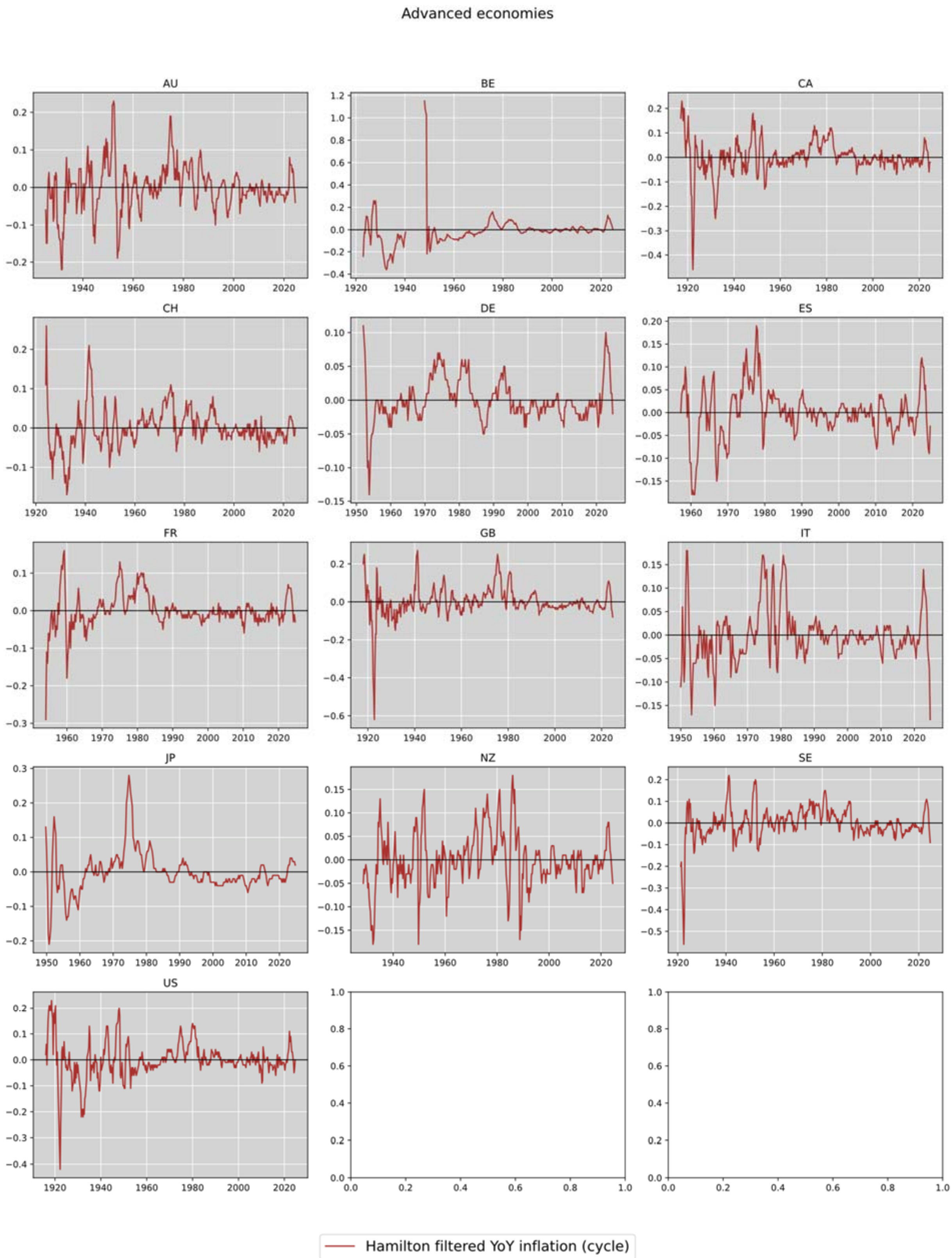
Source: Consumer prices - data | BIS Data Portal

Annex 2: Cycles in inflation levels by country

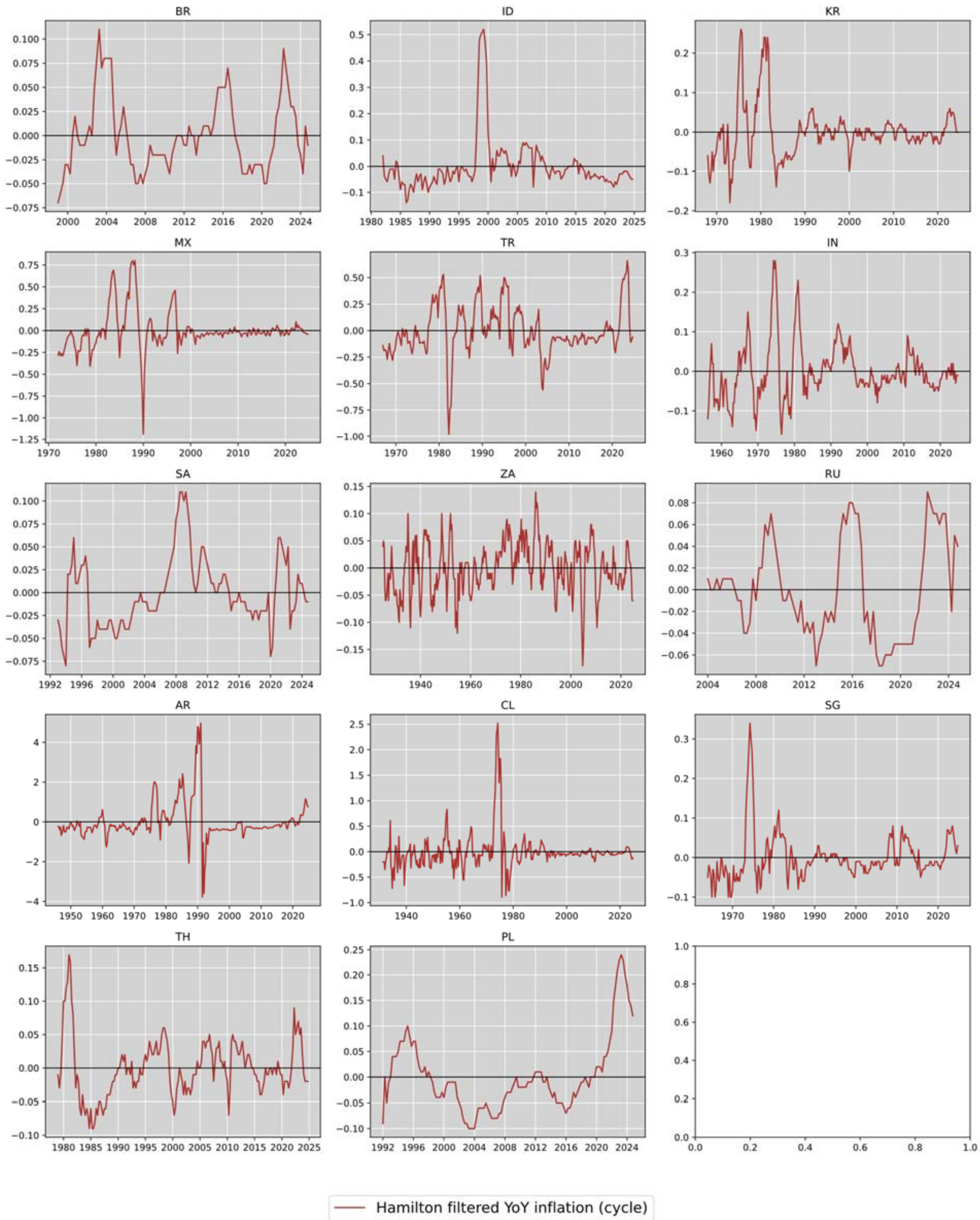



Emerging economies
BR
ID
KR
MX
TR
IN
SA
ZA
RU
AR
CL
SG
TH
PL
YoY inflation
HP Filtered YoY inflation

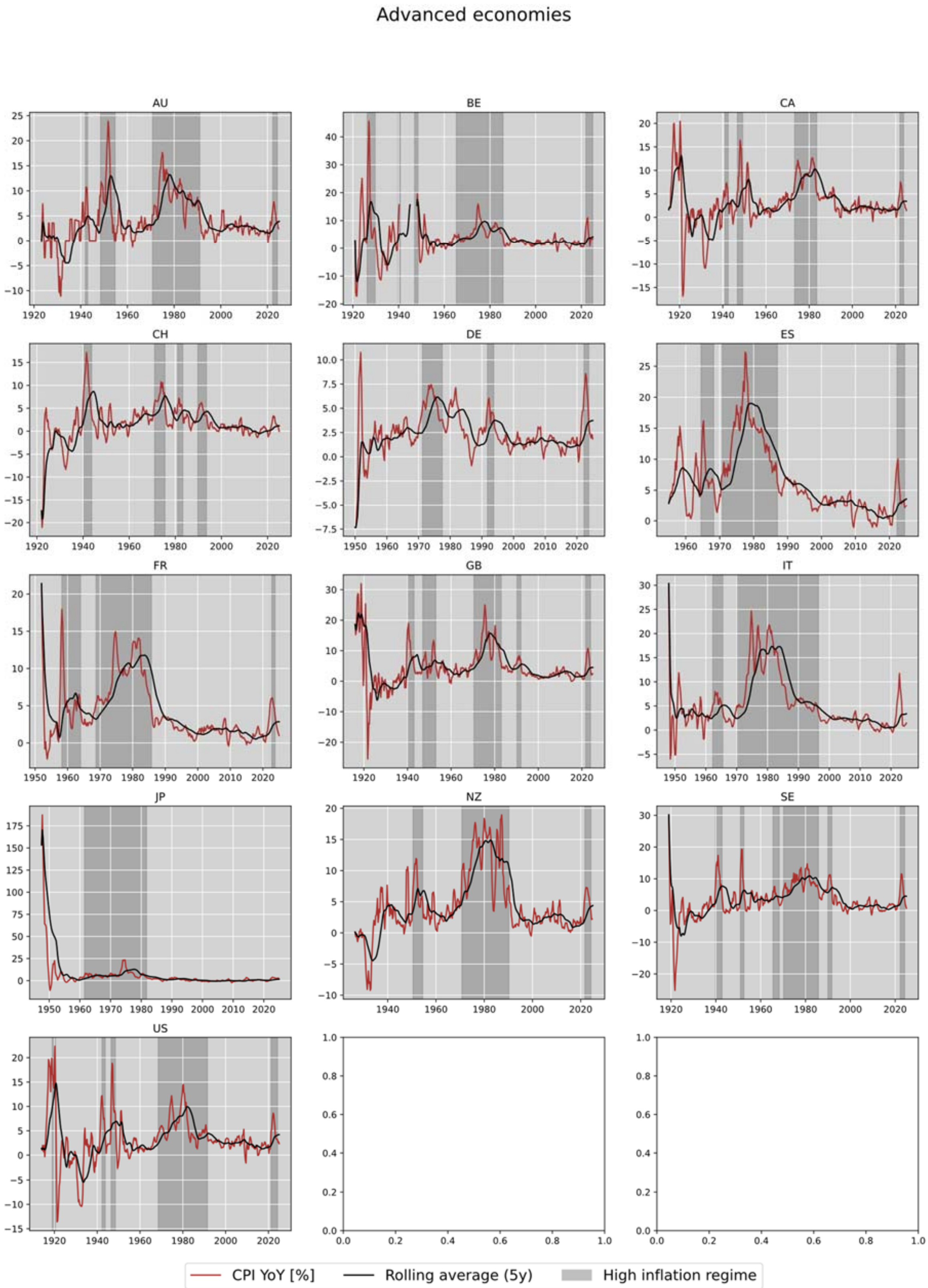
Annex 3: Cycles in detrended inflation by country



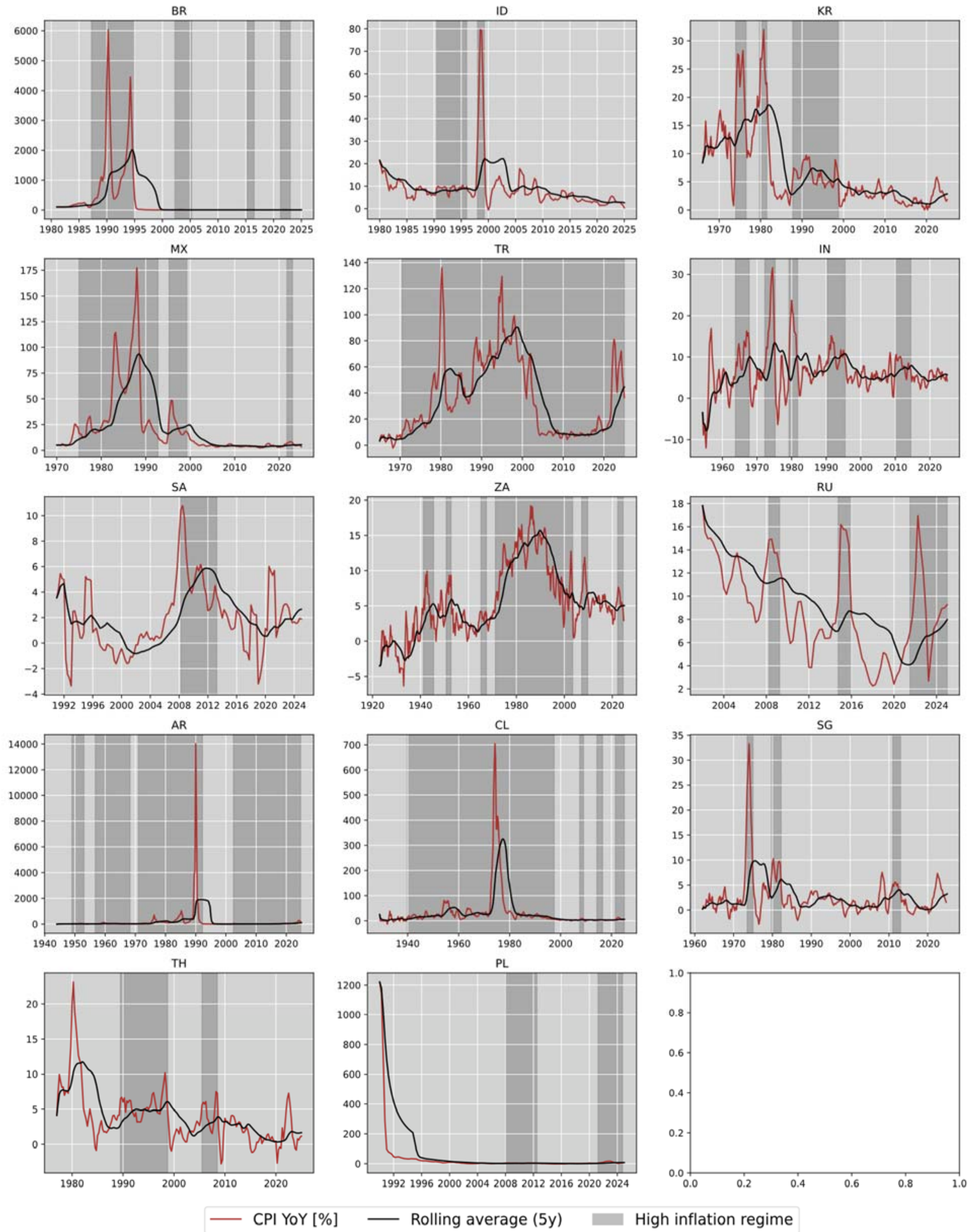
Emerging economies



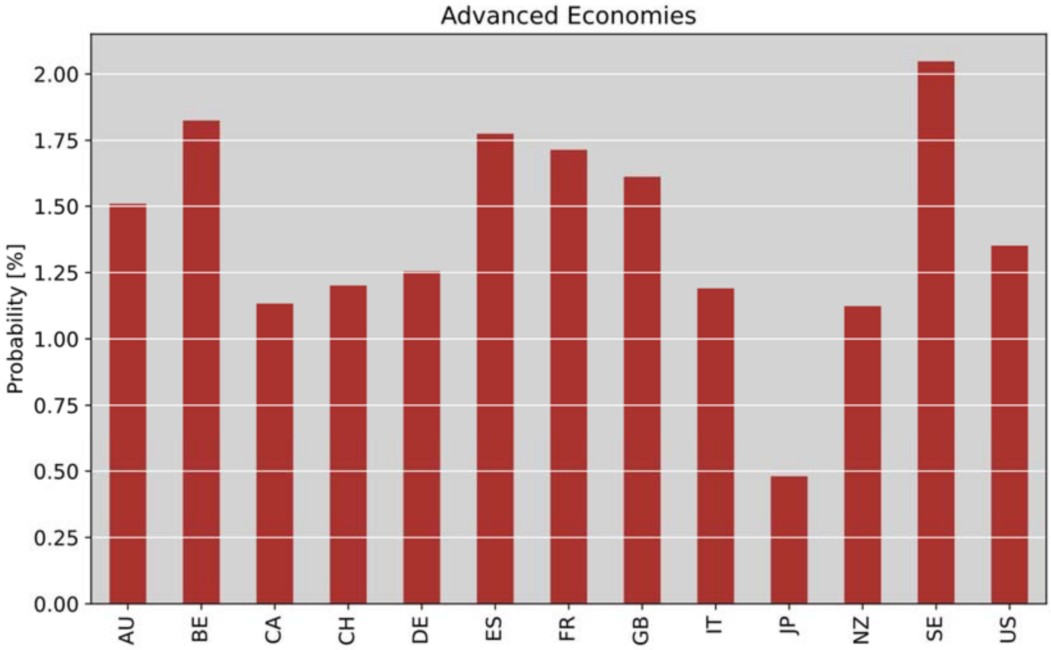
Annex 4: High vs low inflation regimes by country

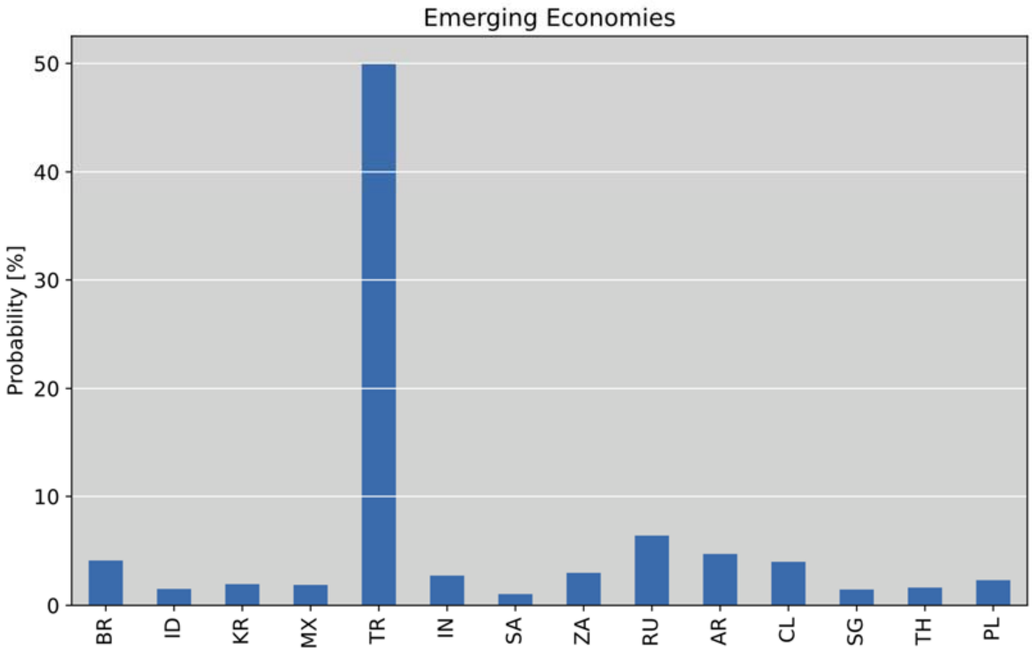


Emerging economies

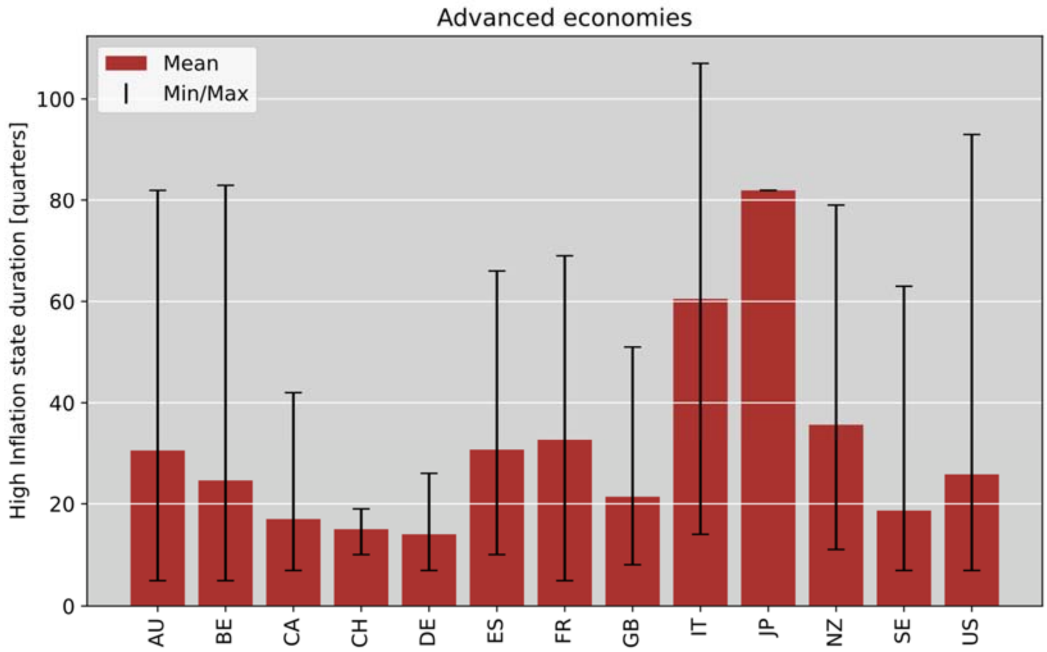


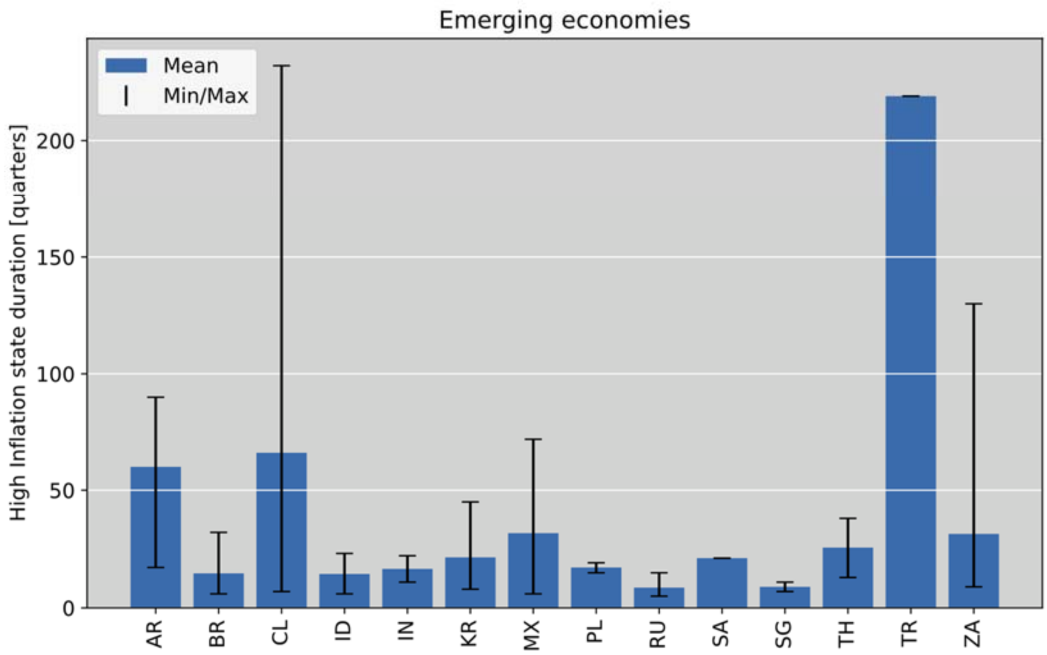
Annex 5: Probability of entering high inflation regimes by country





Annex 6: High inflation state duration by country





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