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Abstract: Global inflation has risen sharply from its lows in mid-2020, on rebounding global demand, supply bottlenecks, and soaring food and energy prices, especially since the Russian Federation's invasion of Ukraine. Markets expect inflation to peak in mid-2022 and then decline, but to remain elevated even after these shocks subside and monetary policies are tightened further. Global growth has been moving in the opposite direction: it has declined sharply since the beginning of the year and, for the remainder of this decade, is expected to remain below the average of the 2010s. In light of these developments, the risk of stagflation—a combination of high inflation and sluggish growth—has risen. The recovery from the stagflation of the 1970s required steep increases in interest rates by major advanced-economy central banks to quell inflation, which triggered a global recession and a string of financial crises in emerging market and developing economies. If current stagflationary pressures intensify, they would likely face severe challenges again because of their less well-anchored inflation expectations, elevated financial vulnerabilities, and weakening growth fundamentals.

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1. Introduction

The global economy is in the midst of a sharp growth slowdown following the extraordinarily strong rebound last year. This slowdown coincides with a steep runup in global inflation to multi-decade highs. Looking ahead, growth over the next decade is expected to be considerably weaker than over the past two decades. Although global inflation is for now projected to return close to its 2019 average by 2024, there is a growing risk that it may remain elevated as global supply disruptions persist and some structural drivers that depressed inflation over the past three decades dissipate.

These developments raise concerns about stagflation—a period of both weak growth and elevated inflation similar to what happened during the 1970s. The experience of the 1970s is a reminder of the damage this could cause to the global economy and, especially, to emerging market and developing economies (EMDEs).[1] The stagflation of the 1970s ended with a global recession and a series of financial crises in EMDEs.

There has been considerable debate about current stagflation risks. Some researchers have warned that the recent surge in inflation around the world could mark a permanent ratcheting up of price pressures after two decades of low and stable inflation.[2] Some have also noted parallels between the current episode and the stagflation of the 1970s, including similarly negative real interest rates in both periods and the possibility of a wage-price spiral set off by rapid wage growth (Blanchard 2022; Summers 2022).[3] However, others have pointed to material differences from the 1970s, especially in the conduct of monetary policy, which may help prevent another bout of stagflation: the inflation-fighting credentials accumulated since the 1980s and recent evidence of broadly stable long-term inflation expectations (DeLong 2022, Reifschneider and Wilcox 2022).[4]

Thus far, markets expect that inflation in the near future will decline, albeit remaining elevated, as global growth cools, monetary policy gets tighter, fiscal support is withdrawn,

[1] While there is no precise definition of stagflation, the term has been used to refer to a combination of high inflation and low growth (or high unemployment). Some researchers have focused on output growth and considered stagflation as a "combination of low or negative output growth, and inflation that is high by historical standards" (Barsky and Killian 2002). Others have focused on unemployment, and defined stagflation as "combinations of either increasing or persistently high levels of unemployment and inflation," even defining an "economic misery index" as the sum of the unemployment rate and inflation (Bruno and Sachs 1979, Welsch 2007).

[2] For these arguments, see Borio et al (2022); Eo, Uzeda, and Wong (2022); Forbes, Gagnon, and Collins (2021); and Ha, Kose, and Ohnsorge (2022).

[3] Gagnon (2022) cautions that the relationship between unemployment and inflation (the Phillips curve) is highly nonlinear and, as a result, current expectations of declining inflation with limited increases in unemployment may prove too optimistic. Rogoff (2021) discusses the role of politically motivated spending in driving inflation by drawing parallels between mounting fiscal pressures in the 1970s and the current growth in public pension obligations.

[4] Wilcox (2022) cautions against interpreting the 1970s as a lesson that only forceful policy tightening can lower inflation; instead, he argues, the lesson is that an excessive policy tightening in response to supply shocks, to compensate for previous excessive loosening, will cause a recession.

energy and food prices level off, and supply bottlenecks ease. Moreover, most commentators argue that monetary policy has the tools to return inflation to target rates over time. However, if inflation expectations de-anchor, as they did in the 1970s, as a result of persistently elevated inflation and repeated inflationary shocks, the interest rate increases required to bring inflation back to target will be greater than those currently anticipated by financial markets. This raises the specter of the steep increases in interest rates that brought inflation under control but also triggered a global recession in 1982 (Goodfriend 2007). That global recession also coincided with a string of financial crises and marked the beginning of a protracted period of weak growth in many EMDEs.

Against this background of highly uncertain global economic prospects and complex policy challenges, this paper addresses three questions. First, how have inflation and growth evolved over time? Second, how does the current period compare with the stagflation of the 1970s? Third, what challenges do stagflationary risks now pose for EMDEs?

The paper makes several contributions to the literature. First, it provides the first systematic comparison of the current juncture with the stagflationary period of the 1970s. The previous literature has mostly focused on a comparison of high inflation during that period with today's inflationary challenges and studied the role of monetary policy and commodity price shocks in driving inflation in the two periods. This study considers the stagflation of the 1970s and examines the role of fiscal policy and broader structural differences in explaining weak output growth and high inflation.

Second, in contrast to much of the earlier work, which has focused on the United States, this study presents a global perspective by examining the evidence of stagflation, and the challenges posed by it, for a broad set of countries.[5] The threat of stagflation is global since the current combination of high inflation and weak growth is highly synchronized across many countries.

Third, this paper explicitly links the EMDE debt buildup of the 1970s that culminated in the debt crises of the 1980s to the stagflation of that era and its eventual resolution in advanced economies. The 1970s witnessed the first global debt wave fueled by a prolonged period of accommodative monetary policies in major advanced economies. Since 2010, the global economy has been experiencing the largest, fastest, and most synchronized debt wave of the past five decades amid a protracted period of monetary policy accommodation. The study considers the lessons of the debt accumulation of the 1970s for the current debt wave.

[5] Bruno and Sachs (1985) emphasize the importance of commodity price shocks (sharp increases in the prices of oil and food) as the main driver of inflation in the 1970s. Blinder (1979) and Blinder and Kilian (2009) attribute the U.S. stagflation in the 1970s mostly to supply shocks. Barsky and Kilian (2002 and 2004) find a prominent role for the monetary policy response to supply shocks. DeLong (1997) also notes these factors but also political pressure on the U.S. Federal Reserve.

The rest of this paper is organized as follows. The next two sections examine the evolutions of inflation and growth over the past five decades and discusses prospects going forward. Section 4 documents the similarities and differences between the 1970s stagflation episode and the current one. Sections 5 and 6 examine the key lessons from the 1970s and their implications for the 2020s. Section 7 concludes with a discussion of policy options.

2. Evolution of inflation

Inflation in the 1960s and 1970s. Global consumer price inflation rose steadily in the 1970s, starting from a range of 1.7-4.4 percent a year through the 1960s and early 1970s (figure 1.A). In 1973, inflation surged to 10.3 percent, when the first oil price shock struck. Inflation then rose steeply through the remainder of the 1970s and stayed elevated until the global recession of 1982. As a result, global inflation during 1973-83 averaged 11.3 percent a year, more than three times as high as the average of 3.6 percent a year during 1962-72. The inflation pickup over the course of the 1970s was accompanied by a double-digit depreciation of the U.S. dollar (in nominal effective terms).

During this period, however, there were marked differences across countries. While inflation subsided sharply in Germany, Japan, and Switzerland around the global recession of 1975, it dipped only briefly in the United States, France, and Spain, and remained high in the Nordics and Canada. Synchronous policy tightening around the world, including in the United States, contributed to the global recession of 1982, with global inflation waning to 5.4 percent per year, on average, in the remainder of the 1980s.

Inflation between the 1970s and the pandemic. Prior to the pandemic, many studies focused on the remarkable decline in inflation over the past five decades. Global inflation fell from a peak of 16.9 percent in 1974 to 2.3 percent in 2019 (figure 1.A). This trend decline was broad-based, covering both advanced economies and EMDEs. Between 1974 and 2019, inflation in advanced economies declined from 15.3 percent in 1974 to 1.3 percent in 2019, while in EMDEs, it declined from 17.5 percent to 2.6 percent. These declines were driven by a sharper focus by monetary authorities on price stability as the primary objective of monetary policy and also by rapid globalization and the liberalization of product, labor, and financial markets (Ha, Ivanova, et al. 2019). In fact, inflation declined so much over the 1990s and 2000s, the period sometimes dubbed "The Great Moderation," that deflation had become a major concern in some advanced economies by the early 2000s. In 2019, before the COVID-19 pandemic struck, inflation was below target ranges in almost all inflation-targeting advanced economies. In about half of inflation-targeting EMDEs, inflation remained within target ranges in every year of the period 2012-2019.

Inflation since the outbreak of the pandemic. Since early 2020, global inflation has been

highly volatile (figure 1.B). In the early stages of the pandemic, between January and April 2020, global inflation declined by about 1 percentage point amid a collapse in demand and plunging oil prices. In May 2020, however, global inflation started to pick up with a rebound in oil and food prices and a recovery of activity following the easing of the lockdowns that had been introduced during the first wave of the pandemic. The surge in commodity prices resulting from Russia's invasion of Ukraine and supply disruptions due to renewed pandemic outbreaks and movement restrictions in China have further pushed up food and energy prices, and inflation more broadly (figure 1.C).

The most recent data, for April 2022, show inflation at multiyear highs: globally, at 7.8 percent, its highest level since 2008. Inflation in advanced economies is now at its highest level since 1982, up from near-zero during April-December 2020; inflation in EMDEs is at 9.4 percent, its highest level since 2008, up from a multidecade low in May 2020. As of April this year, inflation was above target in all advanced economies and almost 90 percent of inflation-targeting EMDEs (figure 1.D). Among EMDE regions, the increase in inflation this year has been most pronounced in Europe and Central Asia (ECA) as a result of rebounding demand in advanced-economy Europe, disruptions driven by Russia's invasion of Ukraine, and the commodity price surge. In contrast, in East Asia and the Pacific (EAP), where recurring lockdowns have been implemented, inflation has also risen but has remained within most central banks' target ranges (figure 1.E).

Drivers of recent inflation developments. To disentangle the quantitative importance of different forces driving global inflation, a factor-augmented VAR (FAVAR) model (Appendix 1). The model is applied to three global variables— inflation, output growth, and oil price growth—all expressed as month-on-month growth rates.[6] The exercise is repeated for advanced economies and EMDEs separately, and for headline CPI inflation, core CPI inflation, and PPI inflation. The PPI tends to have larger tradables content than the headline CPI, whereas the core CPI tends to have smaller tradables content than the headline CPI (figure 2.A; Ha, Kose, and Ohnsorge 2019b). The estimation results document how drivers of inflation have shifted since January 2020 and disturbances associated with demand, supply, and oil prices have affected different inflation measures. While demand shocks were the dominant force in pushing inflation down in the first half of 2020, oil price shocks and supply shocks have become more influential in pushing inflation up since early 2021, especially for core inflation and CPI in advanced economies.

January-May 2020. Four-fifths of the decline in global inflation over this period reflected the collapse in global demand as both consumption and investment collapsed amid

[6] Global inflation and output growth are proxied by the common global factors estimated using a dynamic factor model of cross-country inflation and industrial production growth, respectively (Appendix 1). The dynamic factor model includes monthly data for 31 advanced economies and 52 EMDEs for January 2001 to March 2022. The global oil price is based on the average of Dubai, West Texas Intermediate, and Brent oil prices, as reported in the World Bank's Pink Sheet of commodity prices.

lockdowns and uncertainty about policies and growth prospects (figure 2.B). Another one-fifth reflected the plunge in oil prices. For both advanced economies and EMDEs, disinflationary effects from collapsing demand and oil prices were partly offset by the inflationary effect of supply disruptions such as disruptions to firm operations and global shipping caused by pandemic restrictions to domestic economic activity and international travel (figures 2.C and 2.D).

May 2020-Mar 2022. The collapses in demand and oil prices as well as supply disruptions began to unwind from May 2020 as consumers, firms, and investors began to adjust their behavior and operations. From May, as international trade and global manufacturing activity rebounded, easing supply bottlenecks began to lower inflation but sharp rebounds in demand and oil prices put upward pressure on inflation as consumption shifted from in-person to online transactions. Since mid-2021, when inflation accelerated and became more broad-based, the global growth rebound, rising oil prices and supply shocks—including shipping bottlenecks, non-oil commodity price pressures and, in some countries, wage pressures—have all contributed to rising inflation. Since Russia's inflation of Ukraine, oil price surges have further driven up inflation.

Alternative inflation measures. The main drivers of inflation have been similar across different inflation measures. However, the measures differ in the relative roles of different types of shocks, reflecting their differing tradables contents. In particular, core inflation has been more susceptible to effects of supply shocks, with PPI inflation more susceptible to effects from oil price and global demand shocks (Appendix 1).

Inflation prospects in the near term. The recent rise in inflation has led to a reassessment of near-term inflation prospects. Global inflation is expected to peak in about mid-2022 and to decline to about 3 percent in mid-2023 (figure 1.F). This, however, would still be about 1 percentage point above its average in 2019. Russia's invasion of Ukraine has resulted in further increases in near-term inflation expectations because Russia and Ukraine are major exporters of many commodities (World Bank 2022a). The war-driven supply shortages and shipping disruptions have added to price increases in commodity markets, on top of the sharp price rises since mid-2020, and to global inflationary pressures.[7] Concerns about persistently above-target inflation have already prompted central banks in most advanced economies and many EMDEs to tighten monetary policy amid a sharp growth slowdown. Despite this tightening, as of May 2022, real policy rates (adjusted by actual inflation) remain deeply negative in the average advanced economy

[7] Even if core inflation and inflation expectations remained unaffected by surging energy and food prices, global headline inflation would rise significantly, at least temporarily since energy and food together account for 40 percent of the consumption basket in a typical country. Model-based estimates suggest that an increase in oil prices alone of 50 percent (approximately the increase over the course of 2021) could be associated with a statistically significant increase in inflation of about 4.4 percentage points after two years (Ha, Kose, et al. 2019).

(-5.2 percent) and in the average EMDE (-3.2 percent).

Risks to inflation projections. There are material risks that inflation could rise higher or remain elevated for longer than currently projected. If supply disruptions persist or commodity prices continue to climb—in the event of a protracted war in Ukraine, for example, or recurring pandemic outbreaks and movement restrictions in China—inflation could remain above central banks' target ranges in many countries. If inflation remains elevated, the risk will also grow that expectations of higher inflation become baked into wage and price setting behavior. Financial market-based inflation expectations have already risen with Russia's invasion of Ukraine and the supply disruptions arising from pandemic outbreaks and control measures in major EMDEs, and there are concerns that a more significant unanchoring of inflation expectations could occur that would force major advanced-economy central banks to tighten policy by more than currently anticipated, slowing growth and even tipping some economies into recession.

3. Evolution of growth

Growth in the 1960s and 1970s. After two decades of robust global growth in the 1950s and 1960s, the 1970s were a period of sharply slowing global growth. The decade was marked by a global recession in 1975 and two recessions in the United States (1969-70, 1973-75) with a third U.S. recession (1980) ushering in the subsequent decade. Overall, global growth in the 1970s averaged 4.1 percent per year, well below the 5.5 and 5.1 percent, respectively, of the 1960s and 1950s. The global supply shocks that drove up inflation, like the two oil price shocks of the 1970s, also drove down growth.

Growth in the pre-pandemic decade. On the eve of the pandemic, in 2019, global growth reached a decade low of 2.6 percent, about 1 percentage point below the 3.4 percent in 2011 (figure 3.A). At 3 percent a year on average over the decade, growth in the 2010s was considerably below average growth of 3.4 percent per year in the preceding decade. The pre-pandemic decade was beset by crises and other adverse shocks that buffeted a wide range of countries and contributed to weaker output and trade growth (Kose and Ohnsorge 2020; World Bank 2021a). A rebound from the 2007-09 global financial crisis was followed by the euro area crisis in 2010-12; financial market jitters in 2013 (the "taper tantrum") highlighted financial stability risks in some major EMDEs; a steep commodity price slide during 2011-16 undercut the main drivers of growth in a wide swath of EMDEs; a policy-guided slowdown in China towards more sustainable growth rates eroded export demand for many EMDEs; a prolonged period of sluggish global trade and FDI flows dampened activity; and trade tensions between major economies starting in 2017 increased policy uncertainty and weakened confidence.

Growth prospects: Near-term. After its pandemic-related collapse in 2020, global growth rebounded to 5.7 percent in 2021, supported by unprecedented fiscal and monetary policy

accommodation. It is now expected to slow to 2.9 percent in 2022 and 3.0 percent in 2023 because of the war in Ukraine, the fading of pent-up demand, and the withdrawal of policy support amid high inflation. Global growth is expected to remain at 3.0 percent in 2024 as output in advanced economies returns to its pre-pandemic trend. The recovery will lag in EMDEs, however, where output will remain about 5 percent below pre-pandemic trends even in 2024. These projections represent significant downgrades from forecasts six months ago. They are also subject to substantial uncertainty, with risks clearly tilted to the downside.

Growth prospects: Longer-term. Beyond the near-term, global growth is expected to slow further over the 2020s, reflecting a trend weakening of the fundamental drivers of growth (Dieppe 2021; Kose and Ohnsorge 2020; World Bank 2021b; figures 3.B and 3.C; Appendix 2). Working age population shares in advanced economies began declining in the mid-1980s; in EMDEs, this process started in about 2010 and is set to continue over the next decade. The elevated uncertainty about the effects of both the pandemic and Russia's invasion of Ukraine on global trade and investment networks is expected to cause investment growth to remain weak (World Bank 2019). A global productivity growth slowdown since the early 2010s is expected to continue as the effects of earlier improvements to education and health outcomes as well as factor reallocation wane. As a result, global potential growth—the growth rate of the global economy at full capacity utilization, absent cyclical shocks— in the 2020s is expected to be 0.6 percentage points a year lower than in the 2010s (World Bank 2021b).

Consensus forecasters have recognized the weakening of fundamental drivers of growth and have steadily downgraded their long -term (10 years ahead) growth forecasts since the early 2000s (figure 3.D). This has been the case for both advanced economies and EMDEs: long-term growth forecasts for advanced economies have been downgraded by 0.6 percentage point between 2012 and 2022; for EMDEs, they have been downgraded by 1.8 percentage point.

4. Echoes of the stagflation of the 1970s?

The rapid emergence of above-target inflation around the world has raised concerns that an era of low inflation is coming to an end. Forces supporting the global expansion of output in recent decades—which included technological advances, the shift of labor out of agriculture in many EMDEs, globalization, and rapid population growth—were strongly disinflationary. As these fade, alongside recent supply shocks, inflationary pressures could build, echoing the experience of the 1970s, when large supply shocks, accommodative policies, and a fading of structural forces that promoted growth and disinflation triggered prolonged stagflation. A key difference that mitigates the risk of such a reoccurrence is that improved monetary policy frameworks in advanced economies and many EMDEs

have strengthened central bank credibility and helped anchored long-term inflation expectations.

4.1. Similarities to the 1970s

The current juncture resembles the early 1970s in three key respects: supply shocks and elevated global inflation in the near-term, preceded by a protracted period of highly accommodative monetary policy in major economies, together with recent marked fiscal expansion; prospects for weakening growth over the longer term, which echo the unforeseen slowdown in potential growth of the 1970s; and vulnerabilities in EMDEs to the monetary policy tightening by advanced economies that will be needed to rein in inflation.

Supply shocks after prolonged monetary policy accommodation. Supply disruptions driven by the pandemic and the recent supply shock dealt to global energy and food prices by Russia's invasion of Ukraine resemble the oil shocks in 1973 and 1979-80 (figure 4.A). The 1970s witnessed the largest energy and food price shocks of the past fifty years. Price increases between April 2020 to March 2022 were the second largest for energy and third largest for food for any equivalent period since 1970 (figure 4.B).

Then and now, monetary policy generally was highly accommodative in the run-up to these shocks, with interest rates negative in real (inflation-adjusted) terms for several years (figures 4.C and 4.D). Global real interest rates averaged - 0.5 percent over both the 1970-1980 and the 2010-2021 periods. The experience of the 1970s was that the delay in raising monetary policy rates ultimately made the required increase much greater (figure 4.E). After several months of above-target inflation in major advanced economies, a steeper-than-anticipated policy tightening may now again be required to return inflation to target—and this might trigger a hard landing (Blanchard 2022; Summers 2022; Gagnon 2022). With EMDE debt at multidecade highs, the associated rise in global borrowing costs and exchange rate depreciations may trigger financial crises, as it did in the early 1980s.

Weaker growth. The global economy has been emerging from the pandemic-related global recession of 2020, just as it did during the stagflationary period after the global recession in 1975 (figure 4.F).[8] While the inflation run-up since the 2020 global recession triggered by the COVID-19 pandemic has been less steep than that after the 1975 recession, the projected growth slowdown is considerably steeper. Between 2021 and 2024, global growth is projected to slow by 2.7 percentage points, more than twice as much as between 1976

[8] The global recession of 1975 followed the first major oil price shock the world economy had ever experienced (Kose and Terrones 2015). Oil prices shot up fourfold following the OPEC's oil embargo that began in October 1973. Although the embargo ended in March 1974, the supply shock associated with the sharp rise in oil prices quickly translated into a substantial increase in inflation and a deep contraction in output in a number of countries.

and 1979. The slowdown is expected to be particularly pronounced for advanced economies, but it will also be significant for EMDEs. This slowdown mostly represents a return to potential growth after the post-recession rebound, which reflected the response to massive policy stimulus.

Over the 2020s as a whole, potential global growth is expected to slow 0.6 percentage point below the 2010s average. This structural weakening would resemble the prolonged growth slowdown during the stagflation of the 1970s. For comparison, annual average global growth slowed by 1.2 percentage point between the 1960s and 1970s and by another 1.1 percentage point during the 1980s (to 3 percent on average, Kose, Sugawara and Terrones 2021).[9] The current juncture also invites comparisons to the persistent overestimation of potential growth and underestimation of output gaps in the 1970s.[10]

Significant EMDE vulnerabilities. In the 1970s and early 1980s, as now, high debt, elevated inflation and weak fiscal positions made EMDEs vulnerable to tightening financial conditions. e stagflation of the 1970s coincided with the first global wave of debt accumulation of the modern era (figures 5.A and 5.B; Kose et al. 2020).[11] Low global real interest rates and the rapid development of syndicated loan markets encouraged a surge in EMDE debt, especially in Latin America and many low-income countries (LICs), especially in Sub-Saharan Africa. In Latin America, total external debt rose by 12 percentage points of GDP over the course of the decade while, in LICs, it rose by 18 percentage points of GDP. Much of this debt was in foreign currency and short-term, as capital flowed from oil exporters to EMDEs with large fiscal and current account deficits (figure 5.C). When major advanced-economy central banks—and especially the U.S. Federal Reserve—started to forcefully tighten monetary policy in the late 1970s to stem inflation, a series of debt crises erupted (figure 5.D).

By comparison, the 2010s featured the fourth (and current) wave of global debt accumulation involving the largest, fastest, and most broadbased increase in government debt by EMDEs in the past 50 years. A number of LICs are already either in or near debt distress. The sheer magnitude and speed of the debt buildup heightens the associated risks. Additional vulnerabilities have arisen from increased exposure to nontraditional

[9] This trend slowdown in global potential growth has also been reflected in a steady decline in the neutral real interest rate (Holston, Laubach, and Williams 2017). The gap between actual real interest rates and neutral real interest rates proxies the degree of monetary policy accommodation. Although real interest rates now are much more deeply negative (-3.4 percent in the 2020s) than in the 1970s (nil on average), the gap to the respective neutral rates (4.3 percent in the 1970s, 0.4 percent in the 2020s) is similar. Since the neutral interest rate is unobservable, its estimates are highly uncertain; depend on macroeconomic forces, policy regimes, and estimation approach; and have only a tenuous link to trend output growth (Brand, Bielecki, and Penalver 2018; Clark and Kozicki 2005; Hamilton et al. 2016; Summers and Rachel 2019).

[10] Some researchers discussed the roles of overoptimistic assessment of the output gap associated with the productivity slowdown of the late 1960s and early 1970s in driving inflation and monetary policy decisions (DeLong 1997, Orphanides 2003, and Blinder and Rudd 2013).

[11] There have been four waves of broad-based debt buildup in EMDEs since 1970: 1970-89; 1990-2001; 2002-09; 2010 onwards.

official creditors and to commercial debt (Kose et al. 2021). This, combined with the risk that inflation pressures will force steep monetary policy tightening among major advanced economies, raises the specter of a renewed series of financial crises in EMDEs, as in the 1980s.

4.2. Differences from the 1970s

There are some important cyclical and structural differences between the 1970s and the current situation.

Smaller shocks. At least thus far, the magnitude of commodity price jumps has been smaller than in the 1970s. In the wake of the two major oil crises, oil prices quadrupled (in U.S. dollar terms) in 1973-74 and doubled in 1979-80. As of May 2022, oil prices have roughly tripled from their lows of early 2020 and doubled since early 2021, but to a level that is still only about two-thirds of those in 1980. For now, global inflation in 2022 is still less broad-based than it was in the 1970s, and core inflation has remained relatively low in most countries, even if it has recently picked up.[12] This stands in contrast to 1979-80, when a steep global inflation acceleration was broad-based across virtually all sectors (figures 6.A and 6.B). High inflation in some sectors is expected to return to low levels once supply disruptions ease and commodity prices stabilize (Ilzetzki 2022). However, the rate of unemployment is lower now than it was at the end of the 1970s implying potentially even larger wage and price pressures (figures 6.C and 6.D).

More credible monetary policy frameworks. Monetary policy frameworks have become increasingly focused on price stability over time. In the 1970s, central banks often faced competing objectives—aiming for both high output and employment, as well as for price stability. Monetary policy in the 1970s, in particular in the United States, has been described as "go/stop" policy that oscillated between concerns about unemployment and inflation and, with the benefit of hindsight, ended up being accommodative (Blinder 1979; Goodfriend 2004). Many central banks in advanced economies, freed in 1971 from the constraints of the Bretton Woods system of fixed exchange rates, aimed to support economic activity with monetary expansion, without realizing that potential output growth had started to slow (DeLong 1997). Monetary policy was guided by a naïve view of the Phillips curve, which suggested tradeoffs between unemployment and inflation that could be exploited for policy purposes (Bernanke 2003).[13] Policy makers tended to

[12] The Unites States is an exception among advanced economies in its much broader-based inflation pressures.

[13] What became apparent over the 1970s was that the relationship between unemployment and inflation was unstable because changes in inflation expectations, so that a given level of unemployment could be accompanied by any number of inflation outcomes (Friedman 1968; Kuttner and Robinson 2010; Phelps 1968). As a result, central banks today estimate the Phillips curve using the concept of the non-accelerating inflation rate of unemployment, the NAIRU, and take into account inflation expectations (Tootell 1994;

attribute rising inflation to special factors, and underestimated the size of demand pressures and the persistence of inflation (Blinder 1979; Primiceri 2006).

The vast majority of EMDE central banks sought to maintain exchange rate pegs or tightly managed exchange rate regimes to anchor inflation during 1950-1980 (Ilzetzki, Reinhart, and Rogoff 2019). These central banks did not have operational independence but often dealt with challenges associated with high inflation, partly driven by chronic fiscal imbalances. In EMDEs, the financial sector was repressed as uncompetitive or government-owned banks kept nominal interest rates artificially low. International capital flows were also subject to controls (Frankel 2010).

In contrast, central banks in advanced economies and many EMDEs now have clear mandates for price stability, typically expressed as an explicit inflation target (figure 7.A). They have adopted transparent operating procedures, announcing and justifying their settings for the policy rate after regularly scheduled monetary policy decision meetings. Over the past three decades, many have established a credible track record of achieving their inflation targets (Bordo et al. 2007; Eichengreen 2022).

Better-anchored inflation expectations. As a result of improvements in policy frameworks and better anchored inflation expectations, inflation—in particular core inflation—has become much less sensitive to inflation surprises (figure 7.B). The correlation of core inflation with import prices or producer prices, which are more sensitive to commodity price shocks, has declined significantly over time, despite continued high correlation between headline CPI inflation and PPI and import price inflation. This weakened correlation is also consistent with better-anchored inflation expectations (Ha, Kose, and Ohnsorge 2019). Similarly, the response of inflation expectations to inflation surprises, another indicator of the strength of the anchoring of inflation expectations, has fallen sharply over the past two decades, especially in advanced economies.

More flexible economies. The 1970s were a time of considerable structural economic rigidities, many of which have since been changed. In the average OECD country, collective bargaining covered four-fifths of employees; and the use of income and price policies as an instrument of inflation control (purportedly to help maintain low unemployment) was widespread among advanced economies, with price and wage controls were put in place in the United States in response to the oil price shock of 1973 (figure 7.C).[14] In 1973, interest rate and credit controls were in place in all but three OECD

Coibion et al. 2018). They no longer consider themselves able to permanently change unemployment (that is, change the NAIRU) but instead focus on achieving inflation targets (Gordon 2011). In the United Kingdom, monetary policy was less reliant on the Phillips curve as a policy tool but generally skeptical of a major role for monetary policy as a driver of inflation (Nelson 2001, Nelson and Nikolov 2004).

[14] In the United States, in addition to rising energy and food prices, the relaxation of wage and price controls in 1973 also contributed to a jump in inflation in the early 1970s (Blinder 1982).

countries and all EMDEs with available data had interest rate controls and all but one maintained credit controls (Abiad, Detragiache, and Tressel 2010).

The intervening decades have seen sweeping liberalizations of labor, product, and financial markets. By 2020, only half of employees in OECD countries were covered by collective bargaining; and by 2018, product market regulations had eased such that the OECD's product market regulation index has fallen to two-thirds its level two decades previously (Égert and Wanner 2016; OECD 2019). By 2005, interest rate and credit controls had been entirely eliminated in all but five OECD countries; interest rate controls had been removed in about three-quarters of EMDEs and credit controls in almost one-half (Abiad, Detragiache, and Tressel 2010; Calice, Diaz-Kalan, and Masetti 2020). Today's greater economic flexibility, with less centralized wage setting and less financial repression, allow a faster supply and demand response in sectors where prices are rising particularly rapidly and reduce the likelihood of price-wage spirals becoming entrenched.

In addition, the energy intensity of GDP has fallen considerably since the 1970s (figure 7.D; World Bank 2022a; Igan et al. 2022). In advanced economies and EMDEs, energy efficiency has increased, with a steady decline in the amount of energy needed to generate a dollar of income. Oil-importing countries have taken numerous steps to reduce their vulnerability to energy shocks. Instead of oil, they have substituted other sources such as natural gas and renewables, including solar and wind.

Less fiscal accommodation. The 1960s and 1970s were marked by expansionary fiscal policy. In contrast, fiscal policy tightening is expected in coming years as governments withdraw the unprecedented fiscal support provided during the pandemic. In the two dozen advanced economies with available data, primary fiscal balances weakened by 1.5-6.5 percentage points of GDP and government spending rose by 5-25 percentage points of GDP over the course of the 1970s.[15] In contrast, today, fiscal policy is expected to tighten in advanced economies over the forecast horizon, as governments unwind fiscal support in 2020 that averaged 29 percent of GDP in advanced economies and 7 percent of GDP in EMDEs (World Bank 2022b). By 2023, two-thirds of advanced economies are expected to have unwound most of this stimulus and, by 2024, two-thirds of EMDEs are expected to have done so. This is likely to constitute a major brake on demand growth and help moderate price pressures.

[15] Fiscal policy volatility was substantial in the United States during 1960-80. Great Society spending in the early 1960s was compounded by Vietnam war spending in the mid-1960s, only partially unwound with the 1968 tax surcharge to rein in inflation, followed by social spending in the run-up to the 1972 presidential election and a tax cut in 1975 to spur a recovery, and then followed by fiscal consolidation amid concerns about inflation (Blinder 2004).

5. End of stagflation of the 1970s and lessons for today

Policy tightening in the late 1970s and early 1980s to contain high inflation played a major role in triggering a global recession in 1982 and financial crises in EMDEs. This experience illustrates the risk of inflation remaining elevated amid weak growth, forcing a strong monetary policy response, and triggering a global recession and financial crises among the EMDEs. A key lesson from the 1970s is that central banks need to act in a pre-emptive manner to avoid a loss of confidence in their commitment to maintaining low inflation—specified today in their inflation targets—and to prevent a de-anchoring of inflation expectations. Fiscal policy also needs to do its part, not least since monetary policy will struggle to be credible if fiscal positions are unsustainable.

5.1. Aftermath of high inflation in the 1970s

Recessions in advanced economies. Eventually, in the late 1970s and early 1980s, monetary policy tightening—guided by prioritization of the aim of restoring price stability—reduced inflation in advanced economies to a median of 3 percent in 1986 from its peak of 15 percent in 1974, and established central bank credibility, although often at the cost of deep recessions with high unemployment.[16] In the United States, for example, short-term interest rates almost doubled between early 1979 and mid-1981, with the federal funds rate reaching a peak of 19.1 percent. In the wake of these interest rate increases, U.S. output contracted by more than 2 percent between early 1981 and mid-1982 and unemployment reached a peak of 10.8 percent in late 1982. The sharp increase in policy rates in the United States coincided with a synchronized decline in global activity and played a major role in triggering the 1982 global recession (figures 8.A and 8.B; Kose and Terrones 2015). In advanced-economy Europe, some central banks had prioritized inflation control early, and had responded earlier to rising inflation. As a result, in these countries, peak inflation was lower than in the United States, although the inflation declines were also accompanied by tighter monetary policy and recessions in the early 1980s.[17]

Financial crises in EMDEs. While inflation in advanced economies generally declined after the 1982 global recession, it remained high in EMDEs throughout the 1980s and was accompanied by financial crises (figure 8.C). A number of Latin American countries and LICs were particularly vulnerable to rising borrowing costs because they had had

[16] In addition to the United States, many advanced economies tightened monetary policy during this period, including Austria, Canada, Germany, and the United Kingdom.

[17] Central banks in Germany, Austria, and Switzerland, in particular, operated more transparent and discretionary monetary policies, based partly on their historical experiences of high inflation, compared with other advanced economies (Laubach and Posen 1997). The central banks in these countries kept money supply growth, their main monetary policy tool at the time, lower than in the United States and other major European countries. This resulted in lower inflation in these countries in the late 1970s—on average 2- 5 percent in 1976-80—than in the United States (9 percent), the United Kingdom (14 percent), Italy (16 percent), and France (11 percent). Over the same period, output growth in these countries was about 3 percent, comparable to that in the United States and other major European countries.

accumulated large debts during the 1970s (mainly funded from the windfall reaped by the oil-exporting countries from high world oil prices). The sharp increase in global interest rates and the collapse of commodity prices in the early 1980s made servicing this debt very difficult (Arteta et al. 2015). Amid a contraction in global trade during the 1982 global recession, Mexico's default in August of that year marked the beginning of the Latin American debt crisis and the region's "lost decade." In LICs, especially in Sub-Saharan Africa, levels of debt were much lower in nominal terms than in Latin America, although they became very high relative to GDP over the same period. Many of these countries also experienced financial stress and faced sovereign debt crises in the 1980s.

5.2. Implications for the 2020s

In the near-term, inflation is likely to remain elevated as recent demand and supply shocks continue to affect wage and price setting. But there are reasons to expect that these pressures will prove temporary. Unlike the situation in the 1970s, central banks have well-established inflation targets, strengthened operational autonomy and, in many cases, substantial credibility built up over several decades. Inflation expectations are therefore more likely to remain well anchored, especially if central banks signal their resolve to contain price pressures (Armantier et al. 2022; Bordo and Orphanides 2013). As central banks tighten monetary policy and pandemic-related fiscal stimulus is unwound, demand pressures will moderate; as the supply disruptions caused by Russia's invasion of Ukraine are priced in, commodity prices will stabilize, albeit at high levels; and as global production lines and logistics adjust, supply bottlenecks will ease (Ilzetzki 2022; Reifenschneider and Wilcox 2022; World Bank 2022a).

However, the experience of the 1970s is a reminder that there is still a considerable risk that inflation remains high or continues to rise. First, there could be further supply shocks which could cause repeated inflation overshoots that may eventually deanchor inflation expectations. Second, central banks could fail to reach their inflation targets often or long enough that the public loses confidence in their commitment or ability to maintain price stability. While wage growth thus far has generally been moderate outside the United States, higher inflation expectations could eventually raise it and become entrenched in institutional arrangements such as automatic indexation and cost-of-living adjustments (Boissay et al. 2022).

5.3. Structural forces of disinflation

In addition to these short-term risks to inflation, the structural forces that have depressed inflation over recent decades may fade. Demographic changes, technological advances, globalization, and structural changes were instrumental in keeping inflation low over the past three decades (Ha, Kose, and Ohnsorge 2022). Should these forces recede, increases in short-term inflation may become more persistent, and thus threaten the anchoring of long-term inflation expectations (Gersbach 2021; Rogoff 2003, 2014).

While all these structural factors have been credited with contributing to the decline in inflation over the past three decades, the magnitudes of their effects remain poorly understood. These forces could also interact with cyclical shocks that could generate unpredictable swings in inflation.

Demographic changes. Rapid labor force growth, due to population growth and increased participation of women, helped dampen increases in wages and input costs (Goodhart and Pradhan 2020). There is possibility that the disinflationary benefits reaped from this process are now at an inflection point as the share of the working-age population stabilizes even in EMDEs (World Bank 2018).

Technological advances. Automation, the increasing adaptability of computers, robotics, and artificial intelligence have improved production processes in many sectors. These factors have lowered demand for routine production and clerical workers and lowered wage and price pressures (Autor, Dorn, and Hanson 2015). In some advanced economies, disinflation has also been attributed to price transparency and competitive pressures introduced by the growing digitalization of services (Goolsbee and Klenow 2018; Dong, Fudurich, and Suchanek 2017). It is possible that the biggest gains from such technological advanced have now been exhausted and future progress will be slower.

Globalization. Over the past three decades, the entry of China and Eastern Europe into the global trading system has greatly reduced the prices of many manufactured goods. Over the past decade, however, the maturing of global value chains appears to have contributed to slowing trade growth (World Bank 2020b). New tariffs and import restrictions, rising protectionist sentiment and growing geopolitical risks may eventually slow or even reverse the pace of globalization and its disinflationary impact.

Sectoral shifts. In EMDEs, the large-scale shift of resources from agriculture to higher productivity employment in manufacturing offered productivity gains (Dieppe 2021). The momentum for such shifts has already slowed over the past decade and may slow further over the next decade. As this process slows, its disinflationary impacts may recede.

Policy frameworks. Over the past four decades, many advanced economies and EMDEs implemented macroeconomic stabilization programs and structural reforms, improved fiscal frameworks, and gave their central banks clear mandates to control inflation. Mounting public and private debt in EMDEs or populist sentiment could weaken commitment to disciplined fiscal and monetary policy frameworks (Ha and Kindberg-Hanlon 2021; Kose et al. 2019).

6. Challenges for EMDEs

In response to intensifying inflationary risks, major advanced-economy central banks have already begun to tighten policy. Buttressed by decades of building inflation-fighting

credibility, well-calibrated interest rate changes and adjustments to long-term asset holdings should engineer a soft landing, in which a reduction in inflation is achieved without a recession. However, even in such a benign disinflationary scenario, EMDEs may face significant challenges.

Weaker anchoring of inflation expectations. The sensitivity of long-term inflation expectations to inflation surprises—the lack of anchoring of inflation expectations—is greater in EMDEs than in advanced economies although, in both country groups, it has declined over the past several decades (figures 9.A and 9.B).[18] In the median advanced economy, the sensitivity of inflation expectations to inflation surprises has declined to essentially zero and inflation expectations are pinned close to 2 percent. However, in EMDEs, inflation expectations have remained more sensitive to inflation surprises (figure 9.C).

Since the beginning of the pandemic, there have been marked increases in inflation and medium-term inflation expectations in many EMDEs in Europe and Central Asia, Latin America and the Caribbean, and South Asia, while expectations remained stable or even declined in EMDEs in East Asia and Pacific and Middle East and North Africa (figure 9.D). The risk remains that the energy and food price increases triggered by Russia's invasion of Ukraine, or the supply disruptions triggered by the renewed pandemic outbreaks and pandemic control measures in China, will lead to further increases in long-term inflation expectations among EMDEs.

Concerned about weak anchoring and rising inflation expectations, most inflation-targeting EMDEs began to tighten monetary policy much earlier than advanced economies, a few of them already in late 2020. To the extent that recent commodity price rises lead to broader price increases and work their way into core inflation, EMDE central banks will likely need to continue tightening policy to contain inflation expectations. This tightening of policy is taking place well before their economic recoveries from the pandemic are complete and will slow the return to full employment.

Financial vulnerabilities. Should inflation turn out to be more persistent or higher than currently anticipated, advanced-economy central banks may tighten monetary policy faster, or over a longer period, than currently expected. In the past, unexpectedly rapid policy tightening has tended to put downward pressure on asset prices and led to capital outflows and currency depreciation pressures, with especially adverse consequences for EMDEs. Coupled with high debt and sizable fiscal and current account deficits of many EMDEs, there is a danger that financial stresses will emerge in these economies and

[18] Following Gürkaynak, Levin, and Swanson (2010) and Beechey, Johannsen, and Levin (2011), Kose et al. (2019) assess the anchoring of inflation expectations by measuring the sensitivity of five-year-ahead inflation expectations to inflation surprises–defined as the difference between realized inflation and inflation expectations in the previous period. They report that for a 1 percentage point positive inflation surprise, in a typical EMDE, inflation expectations were revised up by about 0.2 percentage point six months later.

further hold back their recoveries from the pandemic (figure 8.D; Hoek, Kamin, and Yoldas 2020, 2021). These risks are particularly acute among those EMDEs with large current account deficits and a heavy reliance on foreign capital inflows, as well as EMDEs with high levels of short-term or foreign-currency denominated government or private debt.

Increasingly influential global inflation cycle. In the 1970s, global inflationary pressures also led to a significant increase in EMDE inflation, including in those economies that had experienced low and stable inflation in the late 1960s and early 1970s (Cline 1981). During the 1970s stagflation, about two-thirds of EMDEs experienced a synchronized increase in inflation. Since then, inflation has become even more globally synchronized. The contribution of global factors to domestic inflation variation has doubled over the recent two decades (based on the median contribution across a large group of 99 countries) and now accounts for 22 percent of inflation variation (Ha, Kose, and Ohnsorge 2019b). Partly reflecting the increased influence of the global inflation cycle, inflation rates rose in almost all EMDEs in 2021 (from the previous year), and three-quarters of them are experiencing even higher inflation this year. Central banks in about two-fifths of EMDEs—in particular those in inflation-targeting countries—raised policy rates in 2021. Many more EMDEs have started tightening monetary policy in 2022. For EMDE central banks wishing to bring down domestic inflation, persistently high global inflation could require them to tighten monetary policy more forcefully than otherwise.

7. Policy options for EMDEs

A protracted period of weak growth likely lies ahead for the 2020s as the fundamental drivers of growth continue to weaken. In addition, a prolonged period of high inflation may be in store, unless central banks act promptly and decisively to stem persistent price pressures. The implication is that EMDE policy makers are facing the first significant global monetary policy tightening cycle after more than a decade of highly accommodative external financial conditions and in the midst of a major energy and food price shock. Amid deteriorating growth prospects and until inflation is reined in again, they may need to adjust to more expensive borrowing terms.

EMDE commodity exporters and importers may face somewhat different policy challenges. Commodity importers may need to contain inflation pressures without unduly dampening growth while at the same time containing fiscal and external pressures resulting from high commodity prices. Commodity exporters may need to be more aggressive in containing inflationary pressures in the face of rapidly expanding resource sectors.

Low-income countries face additional challenges because of the impact of double-digit food price inflation on food insecurity and poverty (World Bank 2022b). Broader policy efforts

aimed at protecting the poorest, strengthening fiscal and monetary policy frameworks, and improving debt management are required in these economies.

Notwithstanding differences in some of the specifics of these policy challenges, EMDE policies will require careful calibration, credible formulation, and clear communication (Ha, Kose, and Ohnsorge 2022; Orphanides and Williams 2013). This approach can go a long way in making these economies more resilient to sudden shifts in global financial markets.

Monetary policy. Calibrating policy levers to get ahead of inflation without stifling the recovery will be key. Many EMDEs already began tightening monetary policy in 2021, to contain increases in inflation. Communicating monetary policy decisions clearly, leveraging credible monetary frameworks, and safeguarding central bank independence will be critical for EMDEs to manage the cycle. To reinforce the anchor of low inflation expectations, policy makers need to communicate clearly not only with financial markets but also with households and firms so that inflationary pressures do not translate into destabilizing increases in wages and production costs (Coibion et al. 2022; D'Acunto and Weber 2022).

Financial policies. Policy makers need to rebuild foreign exchange reserve buffers and realign prudential policy to prepare for potential financial stress. Such policies could also help dampen demand pressures. During the pandemic, at least three-fourths of EMDEs implemented regulatory forbearance measures to prevent a credit crunch. Many governments supported lending to firms to address liquidity constraints through loan guarantees and payment moratoria (World Bank 2022c). In light of these earlier interventions and rising risks, banking system exposures to exchange rate risk and rollover risk need to be monitored carefully and, if necessary, contained through macro- and micro-prudential policies. Credit quality and nonperforming loans need to be reported transparently such that prompt corrective action can be taken. Banks' capital and liquidity buffers need to be sufficiently sound to be able to absorb shocks. If deployed appropriately, foreign currency reserves can help stem temporary exchange rate pressures.

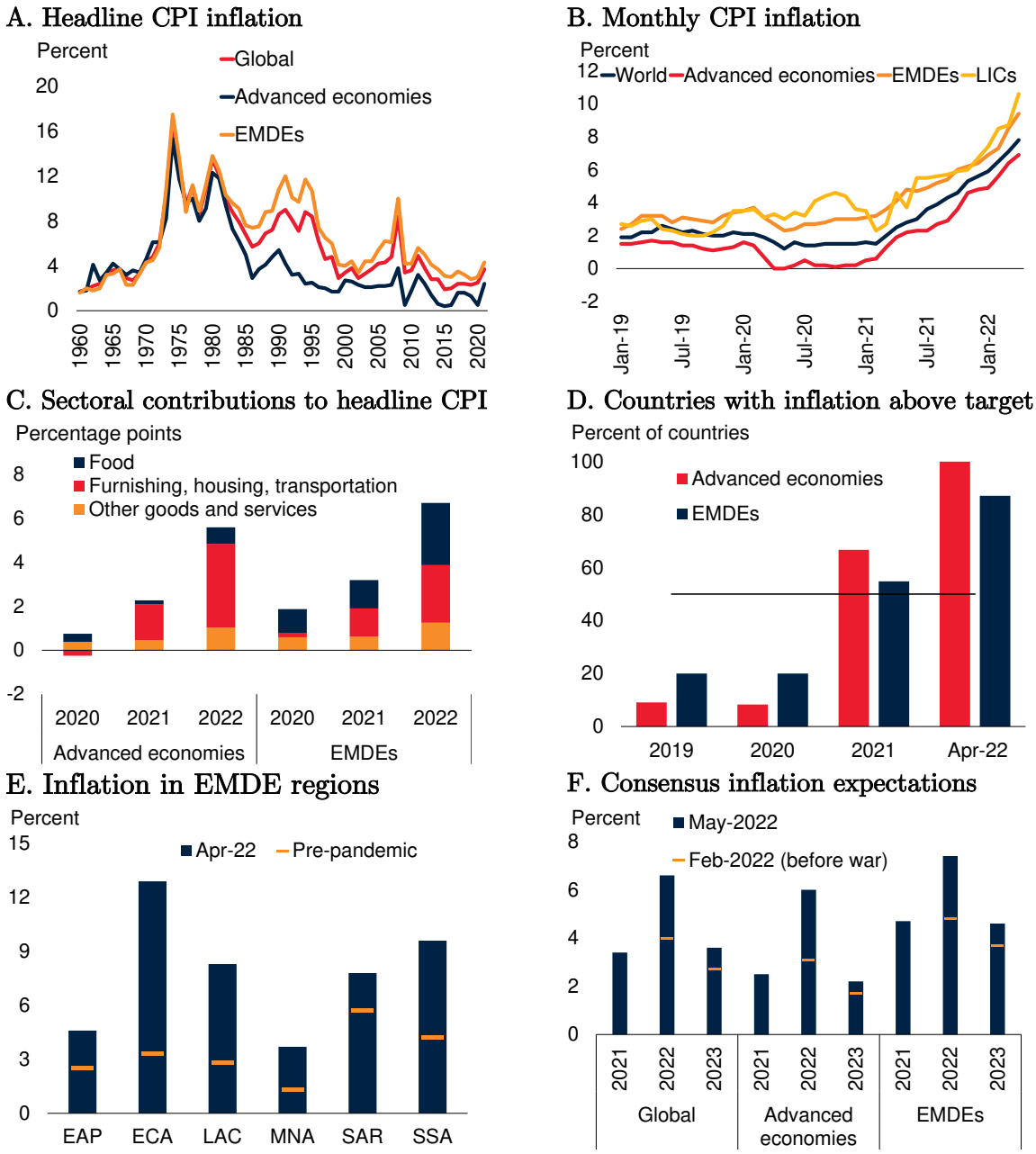
Fiscal policy. The pace and magnitude of withdrawal of fiscal support must be finely calibrated and closely aligned with credible medium-term fiscal plans. Fiscal balances deteriorated sharply during the pandemic, and these deteriorations will not have fully returned to pre-pandemic levels by 2022. EMDE fiscal deficits are still 1.1 percentage points of GDP wider than in 2019 and government debt is 10 percentage points of GDP higher. In part to contain the fiscal deteriorations, EMDEs already tightened fiscal policy in 2021, unwinding about one-half of the 2020 fiscal impulse. Policy makers need to address investor concerns about long-run debt sustainability by strengthening fiscal frameworks, enhancing debt transparency, upgrading debt management functions, and improving revenue collection and spending efficiency. Inflation expectations are unlikely to be well anchored if there are concerns about long-term fiscal sustainability because of

fears that monetary policy is constrained, especially in cases where high interest rates imply unstable public debt dynamics.

Structural policies. Export restrictions and disrupted global food markets due to the war in Ukraine are expected to contribute to rising global food inflation. The use of trade policy interventions and price controls to insulate domestic markets from food price shocks could compound the volatility of international prices and lead to even higher domestic prices (Laborde, Lakatos, and Martin 2019). To help alleviate the consequences of food price volatility on the poor, EMDE policy makers need to strengthen social safety nets and enhance the resilience of food production and distribution systems, while refraining from price control measures. Price controls tend to distort markets, have adverse consequences for growth and poverty reduction, and often prove difficult to roll back after price pressures ease (Guenette 2020). If price controls or untargeted subsidies are unavoidable, their longer-term damage can be contained if they are introduced with automatic sunset clauses. Moreover, in the medium-term, policy measures that increase productivity and tackle supply chain disruptions can support higher growth and help reduce price pressures (Baqaee and Farhi 2022; Dieppe 2020).

These policy interventions are easier said than implemented, especially when fiscal space is limited and financial vulnerabilities are prominent. However, sticking to the basic principles of policy making—carefully calibrating and clearly communicating cyclical policies within credible policy frameworks—can pay large dividends in making EMDEs more resilient as they navigate stagflationary pressures.

Figure 1. Inflation



Sources: Consensus Economics; Haver Analytics; International Monetary Fund; World Bank.

Note: CPI = consumer price index. EMDEs = emerging market and developing economies.

A. Based on a sample of 155 countries (30 advanced economies and 125 EMDEs). The values show year-on-year headline CPI inflation. Last observation is 2021.

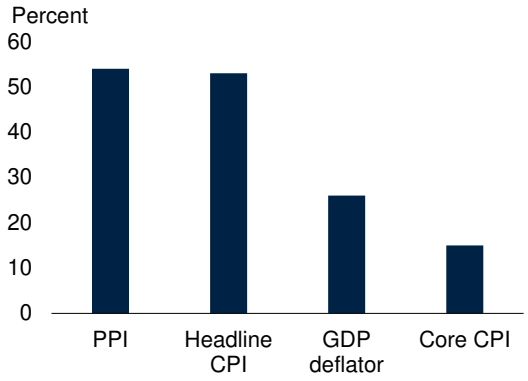
B.E. Year-on-year inflation. Lines show group median inflation for 81 countries, of which 31 are advanced economies and 50 are EMDEs. Low-income country(LIC) inflation is based on 8 LICs. Last observation is April 2022.

C. Median headline CPI inflation (annual averages) in 12 sectors across 147 countries. Sectors are categorized following the International Financial Statistics. "Food" indicates food, beverages, tobacco, and narcotics sectors. "Furnishing" indicates furnishings, household equipment, and routine household maintenance sectors. "Housing" indicates housing, water, electricity, gas, and other fuels. "Other goods and services" include clothing, health, communication, recreation, education, restaurants, and

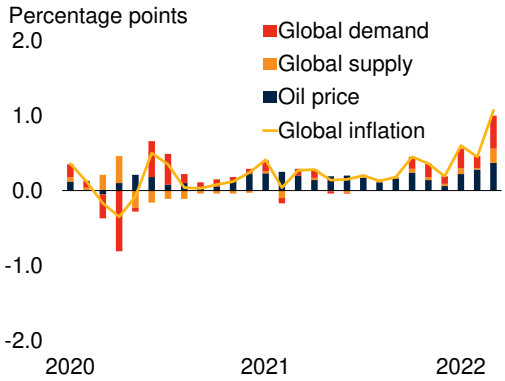
miscellaneous sectors. 2022 is based on average inflation between January and April 2022.
D. Bars show the share of inflation-targeting economies (in percent) with average inflation during the course of the year (or month) above the target range.
E. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, SAR = South Asia, SSA = Sub-Saharan Africa. "Pre-pandemic" level is based on average inflation in 2019.
F. Figure shows forecasts from Consensus Economics for median headline CPI inflation for 2022-23 based on February 2022 and May 2022 surveys of 32 advanced economies and 50 EMDEs.

Figure 2. Drivers of inflation in 2020-22

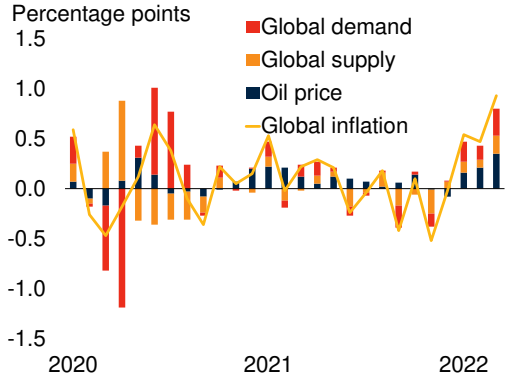
A. Share of tradable components



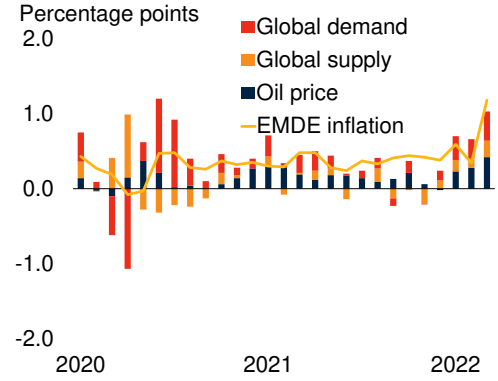
B. Drivers of global headline CPI inflation in 2020-22



C. Drivers of advanced economy CPI inflation in 2020-22

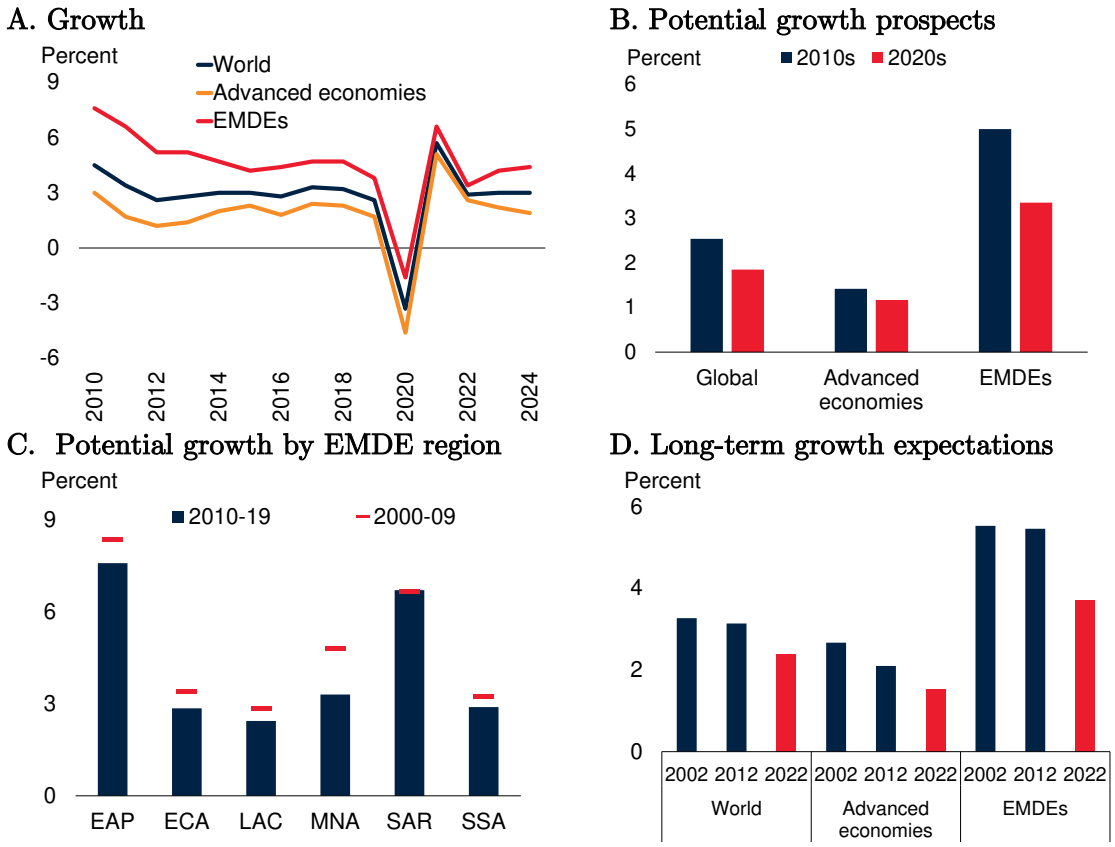


D. Drivers of EMDE CPI inflation in 2020-22



Sources: Ha, Kose, and Ohnsorge (2021a); U.S. Bureau of Labor Statistics; World Bank.
Note: CPI = consumer price index; EMDEs = emerging market and developing economies.
A. Share of tradable goods and services in different inflation measures in the United States. PPI =producer price index.
B.-D. Contributions to month-on-month inflation in headline CPI for 83 countries, of which 31 are advanced economies and 52 are EMDEs, based on FAVAR models over the period of 2001M1-2022M3. Unexplained residual is omitted from the graph.

Figure 3. Growth



Sources: Consensus Economics; Haver Analytics; World Bank.

Note: EMDEs = emerging market and developing economies.

A. 2022-24 growth rates are based on forecasts. GDP-weighted averages (at 2010-19 average prices and exchange rates).

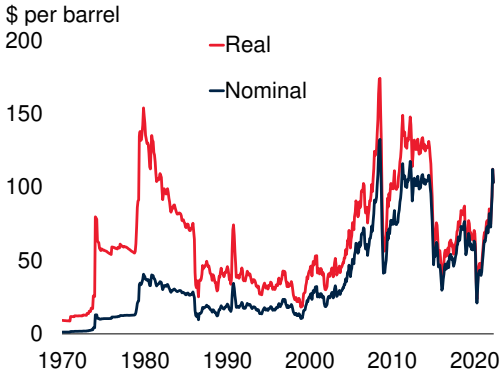
B.C. GDP-weighted average (at 2010 prices and exchange rates) for 82 countries, including 52 EMDEs. Potential growth estimates based on a production function approach as described in Kilic Celik, Kose, and Ohnsorge (2020) and World Bank (2021b). 2020s forecasts in red bars assume that investment grows as expected by consensus forecasts, working-age population and life expectancy evolve as envisaged by the UN Population Projections, and secondary and tertiary school enrollment and completion rates decline by 2.5 percentage points.

C. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, SAR = South Asia, SSA = Sub-Saharan Africa.

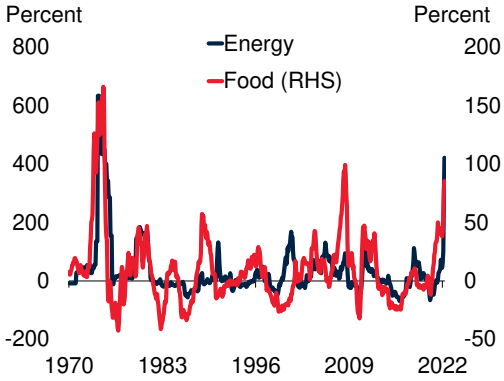
D. Results from the latest Consensus Economics surveys in each year are presented. Sample includes 84 countries (33 advanced economies and 51 EMDEs). The horizontal axis shows the years when Consensus Economics forecasts are surveyed.

Figure 4. Developments in the 1970s and 2020s: Similarities

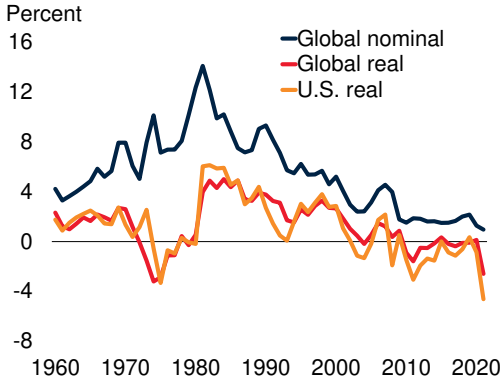
A. Oil price



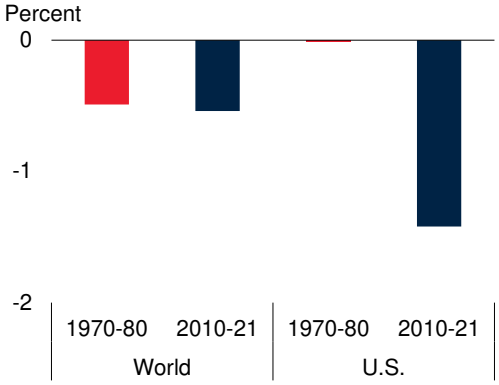
B. Change in food and energy prices



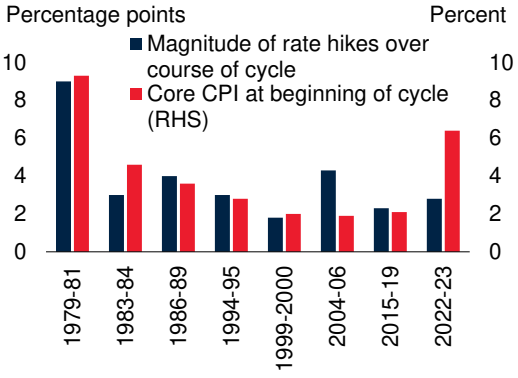
C. Interest rates



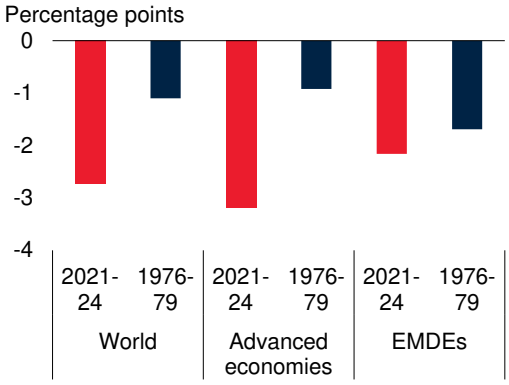
D. Real interest rates



E. Magnitude of rate hikes and core CPI over previous U.S. Federal Reserve tightening cycles



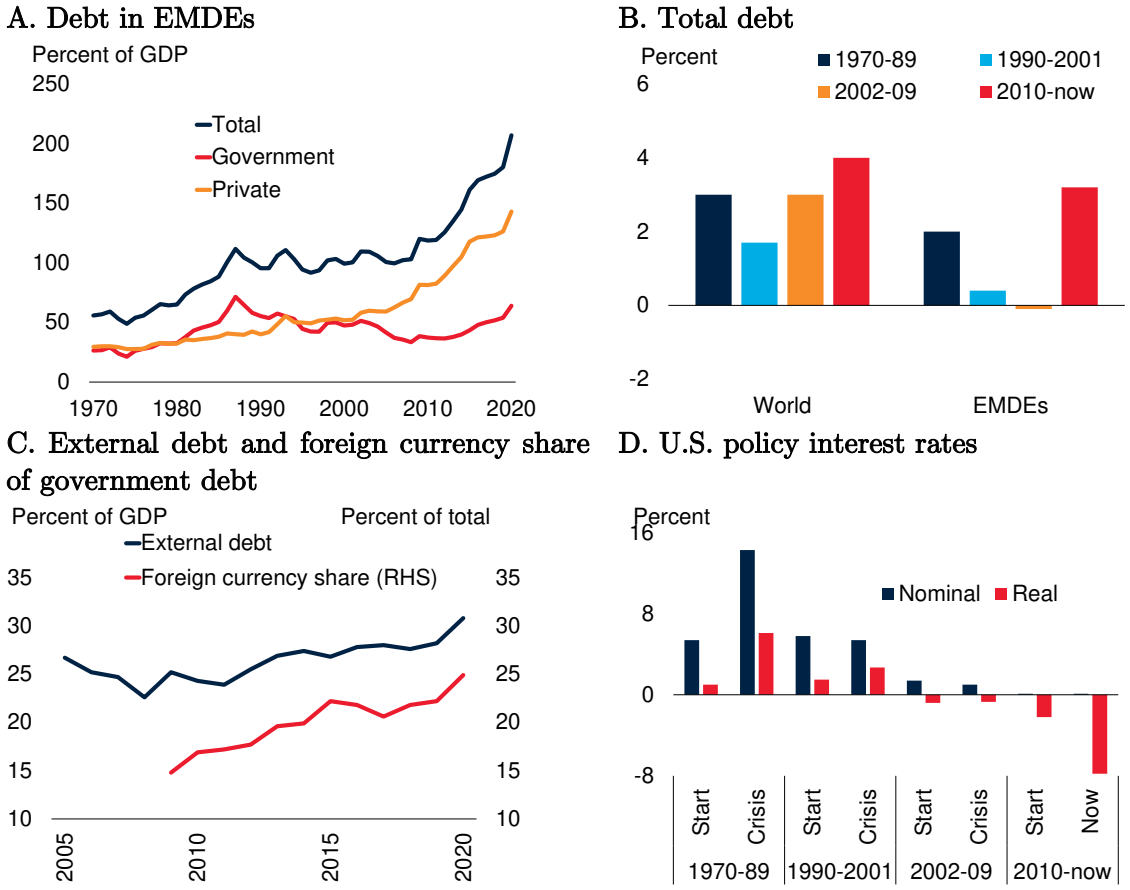
F. Slowdowns in growth after global recessions



Sources: Federal Reserve Economic Data; Haver Analytics; World Bank.
Note: CPI = consumer price index.; EMDEs = emerging market and developing economies.
A. Nominal and real crude oil prices (averages of Dubai, Brent, and WTI prices). Real oil prices are deflated by U.S. CPI index (March 2022 = 100).
B. Percent change in monthly energy and food price indices over a 24-month period. Because of data limitations, prior to 1979, the energy price change is proxied using the oil price change.

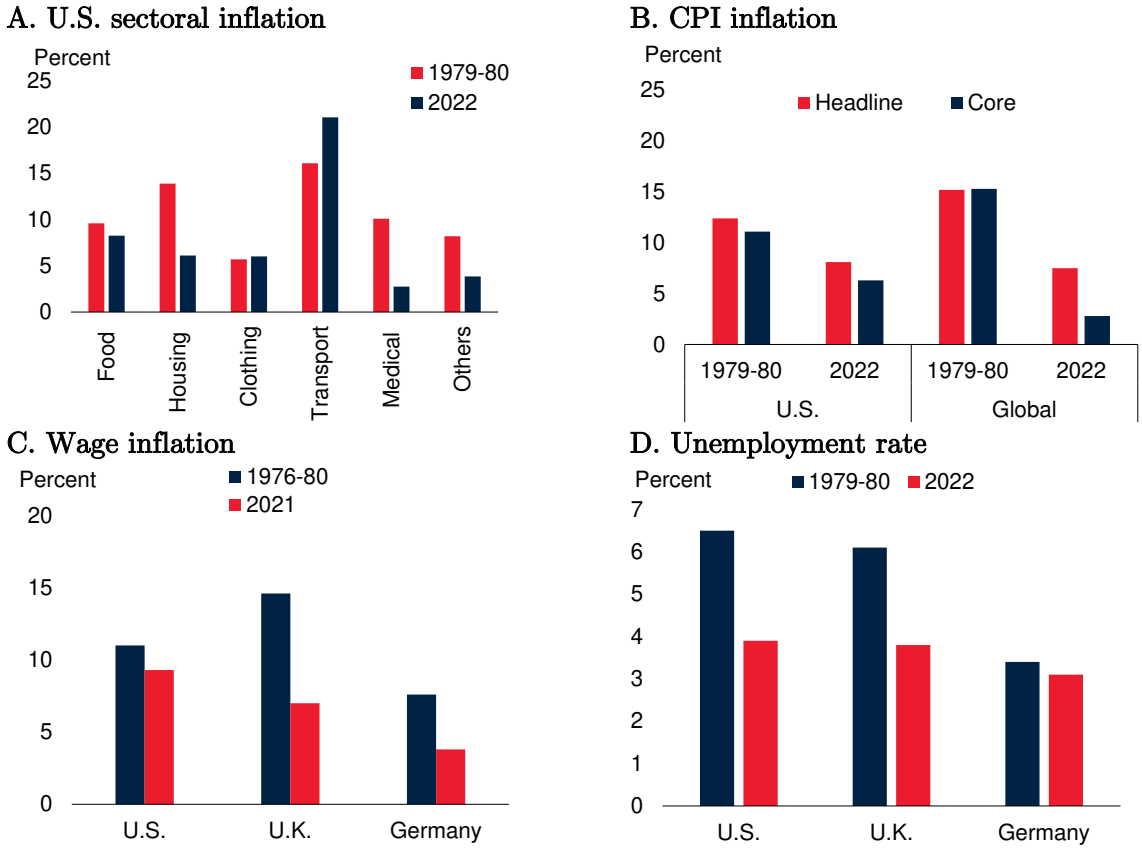
C.D. Figure shows nominal and real (CPI-adjusted) short-term interest rates (Treasury bill rates or money market rates, with the maturity of three months or less). Global interest rates are weighted by GDP in U.S. dollars. Sample includes 113 countries, though the sample size varies by year.
E. Blue bars show the extent of policy rate increases during previous tightening cycles: 1979-81, 1983-84, 1986-89, 1994-95, 1999-2000, 2004-06, 2015-19. Value for 2023 is an estimate based on market expectations for the level of the Fed Funds rate in mid-2023. Core CPI for 2022-23 shows latest data associated with tightening cycle.
F. Figure shows changes in global growth (in percentage points) between 2021-24 and 1976-79; covers three years following a rebound from a global recession.

Figure 5. 1970s and 2020s EMDE vulnerabilities



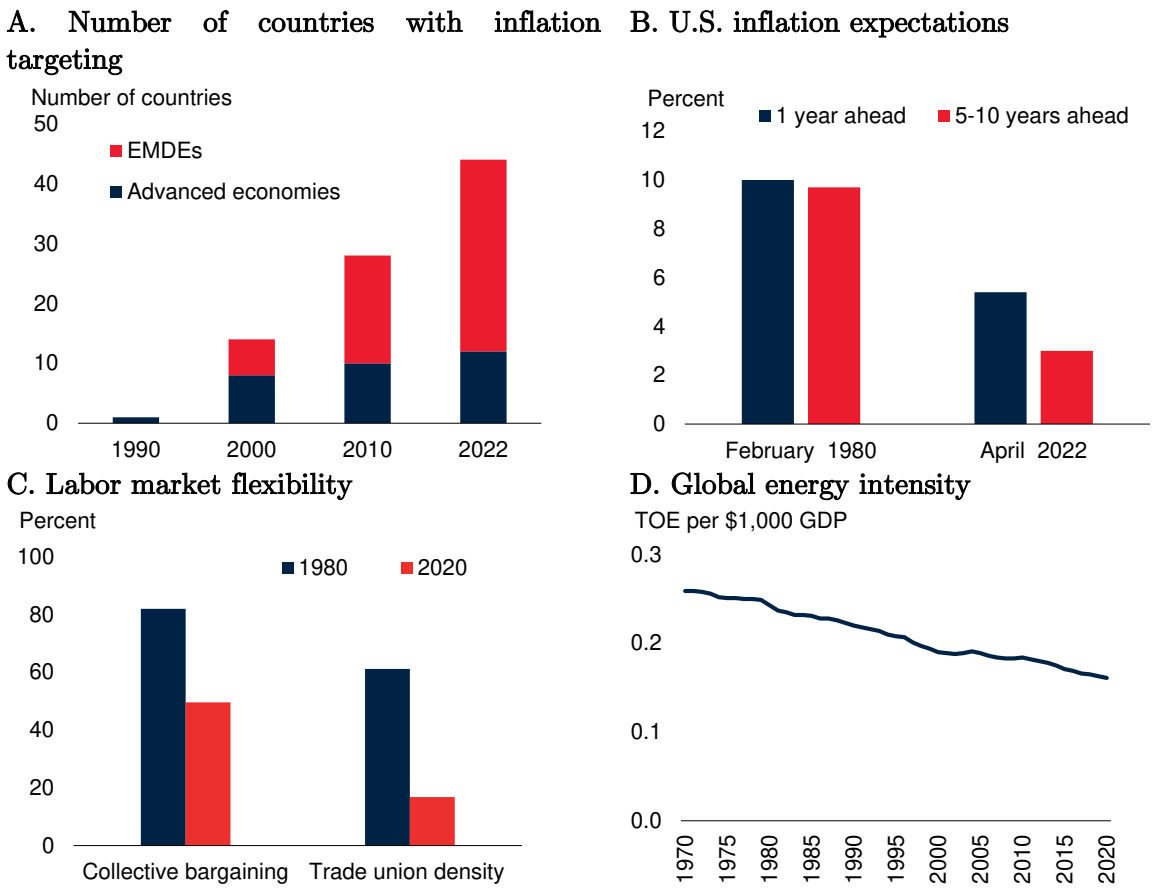
Sources: Haver Analytics; International Monetary Fund; Kose et al. (2020); Kose, Sugawara, and Terrones (2021); World Bank.
Note: EMDEs = emerging market and developing economies.
A.B. GDP-weighted averages based on a sample of up to 153 EMDEs.
C. External debt (percent of GDP) is based on GDP-weighted average of up to 137 EMDEs. Foreign currency share of government debt is an average of up to 36 EMDEs.
D. Based on quarterly data. Start of a wave defined as the first three years of the wave. Crisis defined as the year before, and year of, widespread crises. First wave: 1970-72 and 1981-82; second wave: 1990-92 and 1996-97; third wave: 2002-04 and 2008-09; and fourth wave: 2010-12. The latest data (data for "now" in the fourth wave) are as of 2022Q1. Real interest rates are deflated by consumer price index.

Figure 6. Developments in the 1970s and 2020s: Cyclical differences



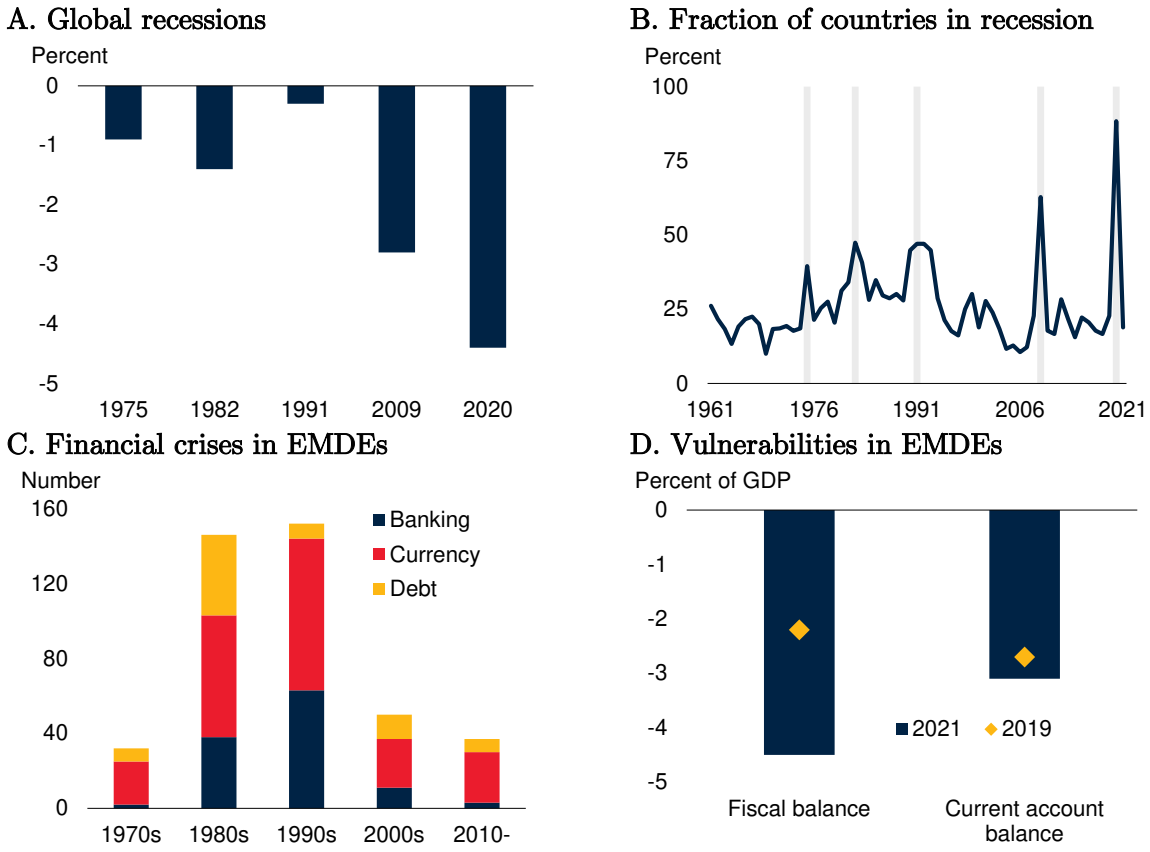
Sources: Haver Analytics; International Monetary Fund; OECD; World Bank.
Note: CPI: consumer price index.
A. Sectoral CPI inflation (monthly averages of year-on-year inflation) in the United States. 2022 is based on the averages of January to April 2022. "Others" includes communication, recreation, education, restaurants, and miscellaneous sectors.
B. Annual averages of headline and core CPI inflation in the United States and global (average across 66 countries). 2022 is based on the averages of January to April 2022.
C.D. Annual averages of wage growth (C) or unemployment rate (D). 2022 is based on the averages of January to April 2022.

Figure 7. Developments in the 1970s and 2020s: Structural differences



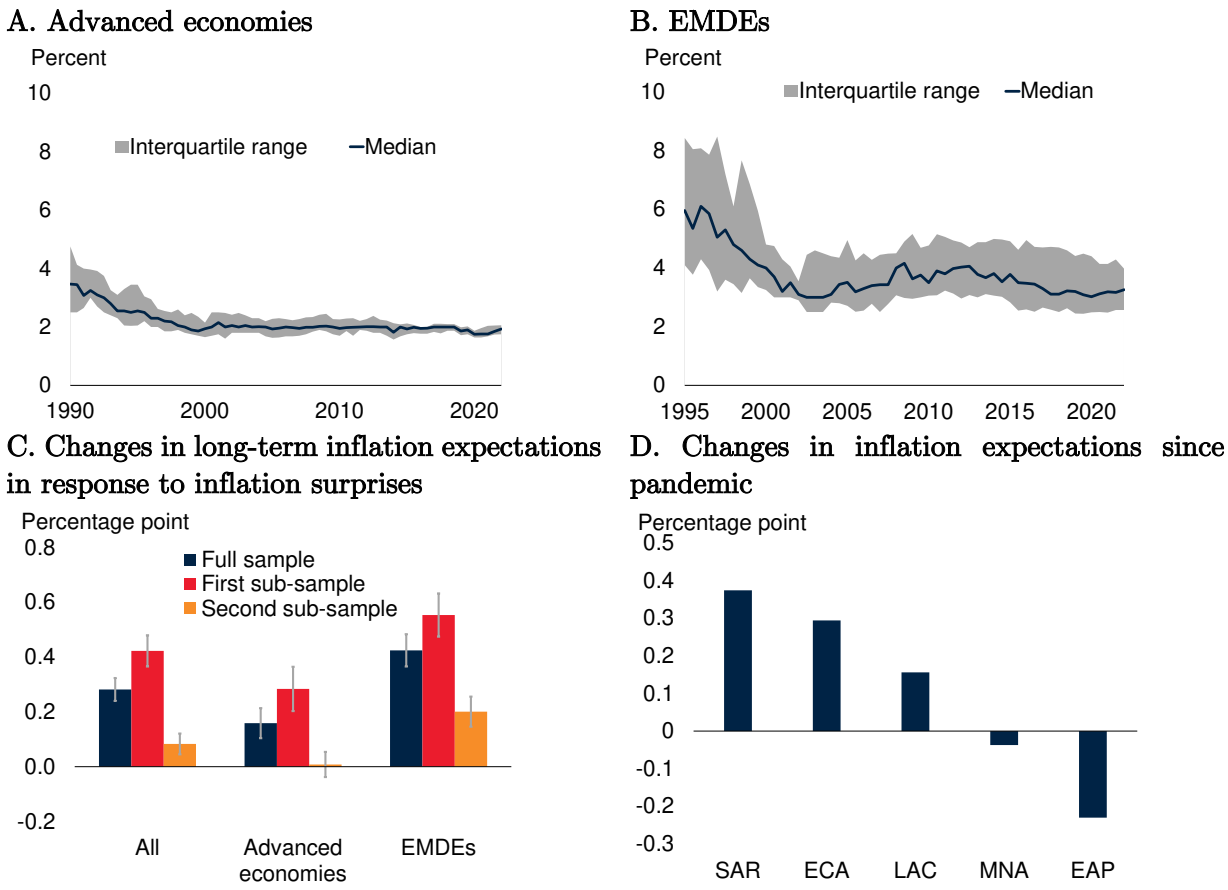
Sources: BP Statistical Review; Haver Analytics; OECD; U.S. Energy Information Administration; World Bank.
Note: TOE=Tonnes of oil equivalent.
A. Based on the clarification of IMF *Annual Report on Exchange Arrangements and Exchange Restrictions* and country-specific sources.
B. U.S. consumer inflation expectations based on April 2022 University of Michigan survey.
C. Collective bargaining rates indicate percent of employees with bargaining powers. Trade union density rates indicate the number of union members as a percent of total employees. Aggregation is based on median across a balanced set of 25 economies.
D. Energy includes coal, natural gas, and oil. TOE stands for tonnes (metric tons) of oil equivalent. Aggregates calculated using GDP weights at average 2010-19 prices and market exchange rates.

Figure 8. End of stagflation of the 1970s and vulnerabilities in EMDEs



Sources: Kose, Sugawara, and Terrones (2020); Haver Analytics; International Monetary Fund; Laeven and Valencia (2020); World Bank.
Note: EMDEs = emerging market and developing economies.
A. Figure shows global per capita GDP growth in the years of global recessions since 1960.
B. Share of countries in recession, defined as a contraction in per capita GDP.
C. Total number of banking, currency, and sovereign debt crises in EMDEs over respective periods.
D. Medians based on a sample of up to 155 EMDEs.

Figure 9. Long-term inflation expectations



Sources: Consensus Economics; Kose et al. (2019); World Bank.
Note: EMDEs = emerging market and developing economies. Inflation expectations are five-year-ahead expectations of annual inflation.
A.B.D. Based on a sample of 24 advanced economies for 1990H1-2022H1 (A) and 20 EMDEs for 1995H1-2022H1 (B).
C. Inflation surprises are defined as the difference between realized inflation and short-term inflation expectations in the previous period (that is, six months prior). Sensitivity is estimated using a panel regression of the change in five-year-ahead inflation expectations on inflation shocks. Bars denote medians and vertical lines denote 90 percent confidence intervals of the regression coefficients. The regression is based on a sample of 24 advanced economies and 23 EMDEs. Full sample refers to 1990-2018, divided into first (1990-2004) and second (2005-2018) subsamples.
D. Bars show changes in the inflation expectations since the beginning of the COVID-19 pandemic, by five EMDE regions. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia.

Appendix 1. Methodology: Decomposing inflation

This appendix briefly presents a novel factor-augmented vector autoregression (FAVAR) model. The empirical framework is based on recent studies that employ standard sign-restricted VAR models to explore the drivers of global inflation (Charnavoki and Dolado 2014; Ha, Kose, et al. 2019; Ha, Kose, and Ohnsorge 2021a), or more generally, the Philips-curve framework (Forbes 2019). However, it deviates from these approaches in three ways to accommodate the circumstances of the 2020 pandemic.

First, the model employs higher-frequency (monthly) data rather than quarterly or annual data, to minimize the concerns over the endogeneity among variables. The use of monthly data is particularly important when the pace of recessions and recoveries differs. That said, monthly data are available only for a smaller set of countries for services activity. Therefore, the exercise with monthly data relies on industrial production series, which rebounded faster than services from the global recession of 2020. Second, on top of the standard sign restrictions, an additional set of narrative restrictions is imposed for the periods of large oil price fluctuations. The sign restrictions are not sufficient to identify the structural shocks, in particular in the presence of multiple large shocks. Third, the model allows for time-varying volatility in the global variables.

A1. 1. Model specification

The model consists of three global variables: global inflation, global output growth, and oil price growth. Global output growth and global inflation are proxied by global industrial production growth and global inflation factors that are estimated separately using the following dynamic factor models:

$$\pi_t^i = \beta_{global}^{\pi,i} f_t^{\pi,global} + e_t^{\pi,i}$$

$$Y_t^i = \beta_{global}^{Y,i} f_t^{Y,global} + e_t^{Y,\mathrm{i}}$$

where π_t^i and Y_t^i are inflation and output growth in country i in month t, respectively, while $f_t^{\pi,global}$ and $f_t^{Y,global}$ are the global factors for inflation and output growth in month t, respectively.

In its structural form, the FAVAR model is represented by:

$$B_0 Z_t = \alpha + \sum_{i=1}^{L} B_i Z_{t-i} + \varepsilon_t$$

where ε_t is a vector of orthogonal structural innovations, and Z_t consists of global inflation, global output growth, and oil price growth. The vector ε_t consists of a shock to the global supply of goods and services ("*global supply shock*"), a shock to the global demand for

goods and services ("*global demand shock*"), and a shock to oil prices ("*oil price shock*").

While the traditional VAR model assumes that the variance-covariance matrix of residuals are constant over time, this assumption could be problematic in this analysis, given the exceptionally large macroeconomic volatility induced by the COVID-19 pandemic (Lenza and Primiceri 2020; Primiceri and Tambalotti 2020). To resolve the issue, the model assumes stochastic volatility of structural shocks—the residuals are independently but not identically distributed across time. Their variance-covariance is allowed to be period-specific, hence rendering volatility stochastic and introducing heteroskedasticity (Carriero et al. 2019).

A1.2. Identification of shocks

Sign restrictions. The paper follows the methodology in Charnavoki and Dolado (2014) and Ha, Kose, and Ohnsorge (2021a) in using sign restrictions to identify the global shocks. Postulating that B_0^{-1} in our econometric model has a recursive structure such that the reduced form errors can be decomposed according to $u_t = B_0^{-1}\varepsilon_t$, the three sign restrictions can be written as follows:

$$\begin{bmatrix} u_t^{Y,global} \\ u_t^{OilPrice} \\ u_t^{\pi,global} \end{bmatrix} = \begin{bmatrix} + & - & + \\ + & + & + \\ + & + & - \end{bmatrix} \begin{bmatrix} \varepsilon_t^{GlobalDemand} \\ \varepsilon_t^{OilPrice} \\ \varepsilon_t^{GlobalSupply} \end{bmatrix}$$

- A positive *global demand shock* is assumed to increase global output growth, global inflation, and oil price growth.
- A positive *global non-oil supply shock* (hereafter "*global supply shock*") is assumed to raise global output and oil price growth but reduce global inflation.
- A positive *oil price shock* is defined as raising oil prices and global inflation but depressing global output growth.

Narrative restrictions. Since oil price shocks are the main drivers of variations in global inflation, the identification of oil price shocks deserves further robustness checks. In particular, similar to Antolín-Díaz and Rubio-Ramírez (2018), these identified oil price shocks (or historical decompositions of the shocks) can further be constrained to ensure that they agree with the established narrative account of historical episodes. The narrative sign restrictions are imposed by considering the subset of successful draws in Bayesian estimation that result in negative oil price shocks (or negative historical contributions to oil prices) during key historical episodes since 2000 identified in Baffes et al. (2015) and Wheeler et al. (2020):

- Structural oil price shocks are negative in January 2015 and March 2020.

- Historical contributions of oil price shocks to oil prices are negative in January 2015 and March 2020.
- Historical contributions of oil price shocks to oil prices are more sizeable (in absolute values) than other global shocks in January 2015.

A1.3. Estimation

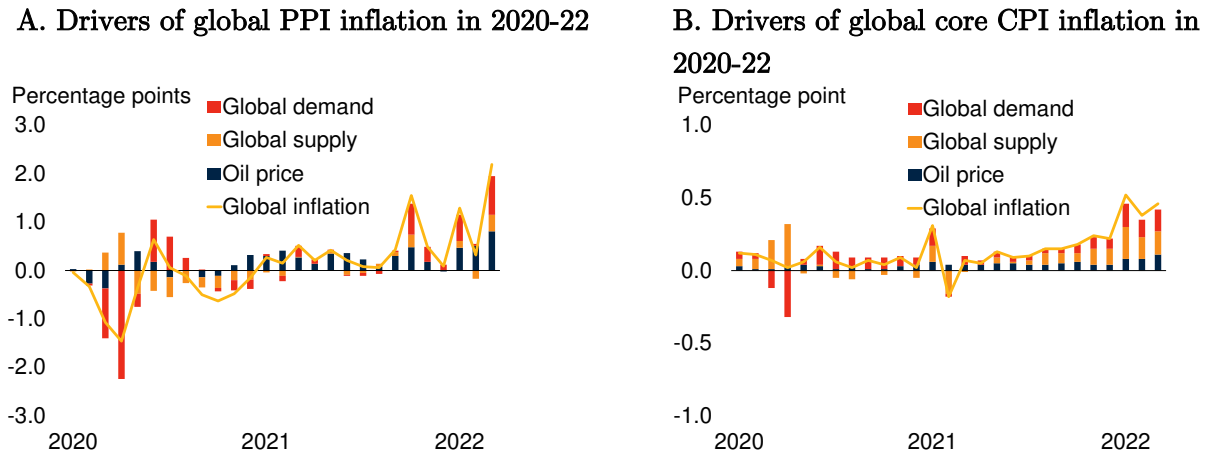
The model is estimated by using monthly data with four lags, as is standard in the literature. The Bayesian estimation first searches for 2,000 successful draws from 1,000 iterations with 1,000 burn-ins; the results reported are based on the median of these 1,000 successful draws, along with 16-84 percent confidence intervals. The estimation process is standard Gibbs sampling except that the volatility of residuals is endogenously determined.

To reflect a sudden change in the volatility in variables around global recessions and oil price shocks, stochastic volatility is assumed to have random inertia—this introduces an extension of the standard stochastic volatility model by turning it into an endogenous variable integrated to the Bayesian estimation process. In the model, the inertia of stochastic volatility is endogenously estimated, allowing for variable-specific inertia (Cogley and Sargent 2005).

A1.4. Database

The sample for the monthly estimation includes data for up to 31 advanced economies and 52 EMDEs for 2001 M1-2022 M3. Global output growth is the global common factor of month-on-month, seasonally adjusted industrial production growth. Global inflation is defined as the global common factor of month-on-month headline CPI inflation, producer price (PPI) inflation, or core inflation (figure A1.1.A and A1.1.B). The estimation is repeated using core inflation and producer price index inflation, similarly defined. Oil price growth is the month-on-month growth rate of nominal oil prices (average of Dubai, West Texas Intermediate, and Brent).

Figure A1.1. Drivers of inflation in 2020-22: Alternative inflation measures



Source: Ha, Kose, and Ohnsorge (2021a).
Note: Contributions to month-on-month inflation in producer price index (PPI, A) and core CPI (B) for 83 countries, of which 31 are advanced economies and 52 are EMDEs, based on FAVAR models over the period of 2001M1 - 2022M3. Unexplained residual is omitted from the graph.

Appendix 2. Methodology: Estimating potential growth

Potential growth is estimated using the production function approach employed by Kilic Celik, Kose, and Ohnsorge (2020) and World Bank (2018). It assumes that potential output can be captured by a Cobb-Douglas production function:

$$Y_t = A_t K_t^{\alpha-1} L_t^{\alpha}$$

where Y_t is potential output, A_t is potential total factor productivity (TFP), K_t is the potential capital stock, and L_t is potential employment.

TFP data are calculated as the Solow residual of output, employment (extended using data from Haver Analytics) and capital (extended using investment data from Haver Analytics and the perpetual inventory method). Labor and capital shares are the within-country averages of those reported in Penn World Tables. Two of the three components of potential output—potential TFP and potential employment—are proxied by the fitted values from panel regression estimates. The third component, the contribution of capital to potential growth, is assumed to be the same as the contribution of capital to actual growth.

This approach yields an unbalanced panel data set for 34 advanced economies and 63 EMDEs for 1988-2030. Capital stock data from Penn World Table 9.1 are used until the latest available year in the data set (2017 for most countries in the sample). For 2017-19, investment data are compiled from national statistics offices and Haver Analytics, while the capital stock is estimated from investment data by the perpetual inventory method using historical average depreciation rates.[19]

A2.1. Estimating potential total factor productivity

Potential TFP growth is defined as the fitted value of a panel fixed effects regression for 35 advanced economies and 83 EMDEs for 1983-2017 of Hodrick Prescott-filtered trend of actual TFP growth (the Solow residual) on determinants of productivity. These include GDP per capita relative to advanced economies, education (secondary school completion rate), the working-age share of the population, and the five-year moving average real investment growth (as in Abiad, Leigh, and Mody 2007; Bijsterbosch and Kolasa 2010; Feyrer 2007).[20] To allow for nonlinearities in the productivity dividends from education, schooling is interacted with a dummy for schooling in the bottom two-thirds across the

[19] Implicitly, this approach does not account for the possibility that inefficient investment is written off during downturns but depreciates only gradually. Hence, it may overstate the capital stock during downturns.

[20] The results are robust to using GDP per capita instead of GDP per capita in percent of advanced-economy GDP per capita. GDP per capita relative to a frontier (advanced economies) is used here to proxy the catch-up effect highlighted in the literature on frontier analysis (Growiec et al. 2015).

sample. A dummy for commodity exporters between the period 2003-07 captures the impact of credit boom in commodity exporters.

$$\Delta tfp_{i,t} = \beta_0 + \beta_1 GDP\ per\ capita_{i,t} + \beta_2\ wap_{i,t} + \beta_3\ education_{i,t} + \beta_4\ education_{i,t} * \Delta edu + \beta_5\ \Delta ceb_{i,t} + \beta_6\ \Delta inv_{i,t} + \varepsilon_{i,t}$$

where Δtfp is the logarithmic first difference of trend TFP, *GDP per capita* is GDP per capita in percent of advanced economies per capita GDP, *wap* is the working-age share of the population, education is the percent share of the population who completed secondary school, Δinv is the five-year moving average real investment growth, Δedu is a dummy variable taking the value of 1 if the secondary completion rate is in the bottom two-thirds of the distribution, and Δceb is a dummy variable taking the value 1 if the country is a commodity exporter for the period 2003-07.

The data were compiled using UN Population Statistics (for population growth, the working-age share of the population), Barro and Lee (for secondary school completion), the World Development Indicators (for GDP per capita relative to the advanced economies, and life expectancy), and Haver Analytics (for investment). The results are broadly in line with the existing literature (World Bank 2018).

A2.2. Estimating labor force participation rates

Potential employment is defined as the product of the working-age population and the fitted value of age- and gender-specific regressions of labor force participation rates ($X_{a,g,t}$) on their structural determinants ($lfpr_{a,g,t}$) and controlling for cohort effects, fixed effects, and the state of the business cycle, defined as the deviation of the logarithm of real GDP from the Hodrick-Prescott-filtered trend. The vector $X_{a,g,t}$ includes gender-specific education outcomes (secondary and tertiary completion and enrollment rates), age-specific fertility rates and life expectancy. The vector $C_{a,g,t}$ includes all the control variables.

$$lfpr_{a,g,t} = \alpha_{a,g} + \beta_{a,g}\ X_{a,g,t} + \delta_{a,g}\ X_{a,g,t} * \Delta emde + \gamma_{a,g}\ C_{a,g,t} + \varepsilon_{a,g,t}$$

Data on the working-age population come from the UN *Population Statistics Database*. Data for age- and gender-specific labor force participation rates are available from *Key Indicators of the Labor Market* (KILM) of the ILO *Population Statistics Database* for 1990-2019 for up to 36 advanced economies and 146 EMDEs.[21] Completion rates of secondary and tertiary education are from Barro and Lee (2013); age-specific fertility rate and life expectancy are from the UN's World Population Projections database; gender-specific secondary and tertiary school enrollment rates are from the *World Development*

[21] This is an unbalanced sample because some of the exogenous variables are not available for the full period for all countries. However, the regression results are robust to restricting the sample to the balanced panel with fully available data.

Indicators.[22] The results are broadly in line with findings in the existing literature (World Bank 2018).

[22] UN data for life expectancy are for five-year periods so life expectancy for historical years is used from the World Developing Indicators database and then spliced with UN World Population Statistics and Prospects data for the projection years or if the data are not available in the World Development Indicators database.

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