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Abstract

The world economy has experienced four global recessions over the past seven decades: in 1975, 1982, 1991, and 2009. During each of these episodes, annual real per capita global GDP contracted, and this contraction was accompanied by weakening of other key indicators of global economic activity. The global recessions were highly synchronized internationally, with severe economic and financial disruptions in many countries around the world. The 2009 global recession, set off by the global financial crisis, was by far the deepest and most synchronized of the four recessions. As the epicenter of the crisis, advanced economies felt the brunt of the recession. The subsequent expansion has been the weakest in the post-war period in advanced economies as many of them have struggled to overcome the legacies of the crisis. In contrast, most emerging market and developing economies weathered the 2009 global recession relatively well and delivered a stronger recovery than after previous global recessions.

JEL Classification: E32, F44, N10, O47

Keywords: global economy, global expansion, global recovery, synchronization of cycles, financial markets, Real activity

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Global Recessions

M. Ayhan Kose, Naotaka Sugawara and Marco E. Terrones*

Abstract: The world economy has experienced four global recessions over the past seven decades: in 1975, 1982, 1991, and 2009. During each of these episodes, annual real per capita global GDP contracted, and this contraction was accompanied by weakening of other key indicators of global economic activity. The global recessions were highly synchronized internationally, with severe economic and financial disruptions in many countries around the world. The 2009 global recession, set off by the global financial crisis, was by far the deepest and most synchronized of the four recessions. As the epicenter of the crisis, advanced economies felt the brunt of the recession. The subsequent expansion has been the weakest in the post-war period in advanced economies as many of them have struggled to overcome the legacies of the crisis. In contrast, most emerging market and developing economies weathered the 2009 global recession relatively well and delivered a stronger recovery than after previous global recessions.

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1. Introduction

“Global recession” has been a recurrent topic of debate over the past decade, reflecting the breadth and severity of the 2007-09 global financial crisis, the halting nature of the recovery, and recently, fears that the global economy was on the edge of another downturn. In 2009, the interest was understandably focused on the severity of the global recession and its devastating consequences. Attention shifted to the signs of a flourishing global recovery in 2010-11, but hopes that this would be sustained were soon curtailed by the possibility of another global recession due to the euro area debt crisis. Financial pressures in the euro area eased in late 2012, but in 2015-16 fears of a global recession reemerged partly because of financial market turbulence in China. Since mid-2018, concerns about a global recession have returned as the world economy experienced a synchronized slowdown largely driven by extraordinary weakness in trade and manufacturing amid elevated trade tensions and heightened policy uncertainties (Figure 1).

Despite the interest in global recessions, the term does not have a widely accepted definition. It is difficult to map the most practical definition of national recessions—at least two consecutive quarters of decline in national output—to a global context, not only because reliable quarterly data for global output are unavailable without a significant lag, but also because the global economy rarely registers a contraction: 2009 was the only year in the post-war period to register a decline in annual global output.

A better understanding of global recessions requires an appreciation of the growing importance of emerging market and developing economies (EMDEs) and of cross-border trade and financial linkages. First, the increasing role of EMDEs means that it is no longer sufficient to monitor cyclical fluctuations in advanced economies, the United States in particular, to understand the global business cycle. Advanced economies on average accounted for about 80 percent of global output and 75 percent of global growth over the period 1950-1990 (Figure 2). However, by the 2010s, the average share of the advanced economies in world output had declined to around 60 percent and their contribution to world output growth had fallen to about 40 percent (in market exchange rates). As a result, business cycles in advanced economies have become a much less reliable proxy indicator for the global business cycle. This implies that a better understanding of the global business cycle requires going beyond the usual set of advanced economies to a much broader group that also includes EMDEs.

Second, cross-border trade and financial linkages have become stronger over the past seven decades. In the 1950s, global trade openness—measured by the sum of exports and imports of goods and services in percent of global GDP—was on average less than 20 percent (Figure 3). By the 2010s, it had increased to more than 55 percent. Global financial openness, defined as the sum of foreign assets and liabilities in percent of GDP, also increased, from around 50 percent in the 1970s to almost 400 percent in the latest decade. These stronger linkages have increased the feedback, in both directions, between business cycles in advanced economies and those in EMDEs. They also ultimately raise the odds of more pronounced, and more synchronous, movements in the global business cycle.

Against this background, this paper examines the main features of global recessions and the ensuing recoveries and expansions. Specifically, it addresses three questions. First, what happens during global recessions and recoveries? Second, how do global recessions and recoveries vary across different groups of countries, particularly advanced economies, EMDEs, and low-income countries (LICs)? Third, what happens during global expansions and how the current global expansion compares with previous ones.

The paper builds on an extensive literature on various aspects of global and national business cycles.¹ A branch of this research documents the growing importance of global business cycles in explaining national cycles (e.g., Kose, Otrok, and Whiteman 2003, 2008; and Mumtaz, Simonelli, and Surico 2011). A second branch focuses on the roles played by trade and financial linkages in the cross-border transmission of business cycles.² A third branch studies the turning points of the global business cycle and its phases.³

Our study is closely related to Kose and Terrones (2015; KT going forward) which presented the first detailed account of global recessions. KT mostly focused on global recessions and recoveries using annual data for 163 countries over 1960-2012. They presented a detailed review of the relevant literature, analyzed how financial crises lead to recessions, and examined the interactions between global and national cycles. KT's work builds on Rogoff, Robinson, and Bayoumi (2002), which briefly examined whether the 2001 worldwide downturn was a global recession. Rogoff, Robinson, and Bayoumi (2002) focused on movements in per capita GDP growth to identify episodes that could be labeled as global recessions. They emphasized the importance of statistical and judgmental approaches to identify the turning points of the global business cycle.

This paper extends the literature in four dimensions. First, it covers a longer time span of annual series (1950-2019) and a larger set of economies (180). Second, it is the first study that presents an analysis of the phases of the global business cycle with quarterly output series of 106 countries over the period 1960:1-2019:3. Third, it expands on the set of macroeconomic and financial variables that KT analyzed to present a broader perspective on the evolution of the global business cycle. Specifically, it analyzes the behavior of confidence, uncertainty, and measures of global financial conditions that have recently attracted increasing attention in research and policy circles. Fourth, it presents a detailed analysis of global expansions and puts the current global expansion in context by comparing it with previous such episodes.

This study, like KT, employs global real GDP per capita to track movements in the global business cycle. This variable is a primary indicator of global well-being that takes into account variations in population growth rates over time and across countries.

¹ Most of the earlier studies in the literature focused on the dependence of EMDEs on advanced economies (e.g., Currie and Vines 1988; Chui et al. 2002). Zarnowitz (1992) reviews earlier research program on business cycle fluctuations across countries. In addition, there are studies that try to forecast global growth, for example, Cuba-Borda, Mechanick, and Raffo (2018); Ferrara and Marcelli (2019); Golinelli and Parigi (2014); and Rossiter (2010).

² For details on these studies, see Kose and Yi (2006); di Giovanni and Levchenko (2010); di Giovanni, Levchenko, and Mejean (2018); and Diebold and Yilmaz (2015).

³ For details on this work, see Kose and Terrones (2015); Camacho and Martinez-Martin (2015); and Martínez-García, Grossman, and Mack (2015).

Turning points of the global business cycle are identified by means of two methods widely used in the analysis of national business cycles: a statistical method and a judgmental method. The former defines a global recession as taking place when there is a decline in annual global real GDP per capita. The judgmental method, similar to the method used for the United States by the Business Cycle Dating Committee of the National Bureau of Economic Research (NBER), considers whether there is strong evidence for a broad-based decline in multiple key indicators of global economic activity in a given year. This paper focuses on six main global activity indicators: real GDP per capita, industrial production, trade, capital flows, oil consumption, and employment. These two methods together provide an intuitively appealing characterization of the turning points of the global business cycle and translate into a concrete definition of a global recession.

For the purposes of this study, and following KT, a *global recession* is defined as a contraction in global real GDP per capita accompanied by a broad decline in various other measures of global activity. The definition of a global recovery also closely follows the standard definition used in the context of national business cycles. The *recovery phase* is the period after the trough and defined here as the one- or three-year period following the trough of the cycle. The recovery is thus the earlier part of the *expansion phase*, which refers to the whole period between two recessions.

Main findings of this paper are as follows.

Global recessions. In the seventy years since 1950, the world economy has experienced four global recessions: in 1975, 1982, 1991, and 2009. In each of these episodes, there was a contraction in annual real per capita global GDP and broad-based weakness in other key indicators of global economic activity. These episodes were highly synchronized internationally, involving severe economic and financial disruptions in many countries around the world. The 2009 global recession was by far the deepest and most synchronized episode among the four.

Global recoveries. A global recovery usually involves a broad-based rebound in macroeconomic and financial activity. Among the four episodes, the strongest recovery occurred after the 1975 recession. Thanks to large, prompt, and globally coordinated policy support, the recovery following the 2009 recession was the second strongest episode.

Impact across country groups and regions. The impact of global recessions varied across different groups of countries. Average per capita growth declined more in advanced economies than EMDEs during global recessions. LICs on average suffered larger declines in per capita growth than the average EMDE. The East Asia and Pacific (EAP) and South Asia (SAR) regions even continued expanding during global recessions. However, the other four EMDE regions, particularly those with more reliance on exports of industrial commodities, experienced per capita output declines.

Relatively good performance of EMDEs through the latest global recession. As the epicenter of the financial crisis, advanced economies felt the brunt of the 2009 global recession. In contrast, EMDE output growth remained positive during the recession, and EMDEs delivered a stronger recovery post-2009 than after any of the three previous

episodes. LICs were able to continue growing during the most recent global recession whereas their per capita growth had plummeted in the previous episodes.

Global expansions. The duration of the global expansions varied, with a minimum of six years (following the 1975 recession) and a maximum of 17 years (following the 1991 recession). The latest global expansion registered average per capita growth comparable with that of previous episodes. The post-2009 expansion was the weakest of the four in advanced economies, as many of them struggled to overcome the legacies of the global financial crisis. Among the EMDEs, the recovery of per capita output growth has been exceptionally robust, despite a gradual slowdown after 2012.

Policies. Monetary and fiscal policies often became expansionary going into global recessions, and they typically supported the ensuing global recoveries. Following the 2009 global recession, monetary policy remained highly accommodative for most of the 2010s, with advanced economy central banks introducing a wide range of unconventional measures to ease credit. However, after the initial implementation of large, coordinated, fiscal stimulus programs during 2008-09, advanced economies withdrew fiscal support, out of concerns for the growth of public debt, and government expenditures fell after 2010. By contrast, EMDEs have generally employed expansionary fiscal and monetary policies during the current expansion, while adjusting the settings of their monetary policy instruments in response to cyclical conditions.

The remainder of this paper is organized as follows. Section 2 introduces the database and methodology. This is followed by a discussion of the identification of the turning points of the global business cycle and a summary of the main events associated with each global recession. Section 4 documents the main features of global recessions, recoveries and expansions. The last section concludes with a discussion of results and future research directions.

2. Identification of turning points of the global business cycle

2.1. Database

Multiple data sources are employed to construct world GDP growth at annual and quarterly frequencies over a long period. The annual GDP series covers 180 countries—36 advanced economies and 144 EMDEs—over the period 1950-2019, though the country sample size varies by year.⁴ The quarterly series covers 106 countries over the period 1960:1-2019:3.⁵ Appendix 1 presents the list of countries used to compute global growth. In addition to data on GDP growth, a wide range of measures of global economic and financial activity are employed.⁶ Indicators of economic activity include trade, industrial

⁴ Data for 2019 are estimates. Annual growth forecasts for 2020 are included in the database. All estimates and forecasts are from the World Bank's *Global Economic Prospects* report published in January 2020, which covers 180 countries (World Bank 2020).

⁵ The quarterly data collected begin in 1950:1, but data availability is quite limited during the 1950s, so data prior to 1960 were excluded.

⁶ For these series, estimates are also used for 2019. Whenever data series at higher frequencies (e.g., monthly or quarterly) are available, they are used to compute 2019 series.

production, unemployment, and oil consumption. Financial variables include capital flows, credit, equity and house prices, inflation, short-term nominal and real interest rates, and an index of broad financial conditions. In light of their roles in determining activity, some additional series, such as indicators of uncertainty and confidence, are also examined. Appendix 2 includes a summary of all variables in the database with their definitions, coverage, and sources.

The main measure of the global business cycle is the growth rate of world real GDP per capita.⁷ Real GDP per capita is considered as a primary measure of average economic well-being since it takes into account differences in population growth. The difference between per capita GDP growth rates in advanced economies and EMDEs is generally smaller than the difference between their aggregate GDP growth rates.⁸

The growth rate of world real GDP is a weighted average of national real GDP growth rates. Two types of weights are employed: market exchange rate weights and purchasing-power-parity (PPP) weights. The baseline results refer to market exchange rate weights, which are calculated as national GDP measured in domestic currencies, converted into U.S. dollar terms using market exchange rates, as a share of world GDP in U.S. dollar terms. Global trade and transactions in financial markets are conducted at market exchange rates, and the baseline specification uses this weighting scheme.

PPP exchange rates are calculated as the rates at which the currency of one country would have to be converted into another to equalize the values of a common and broadly defined basket of goods and services. PPP exchange rates differ from market exchange rates particularly because goods and services that are not traded internationally tend to be cheaper in lower-income countries than in higher-income countries. As a result, the value of output in lower-income countries tends to be relatively greater using PPP than using market exchange rates (Callen 2007). Thus, PPP weights, which are calculated as national GDP valued at PPP as a share of world GDP, tend to be higher for lower-income countries than market exchange rate weights. As growth in lower-income countries tends to be greater than that in higher-income countries, global GDP growth is often higher with PPP weights than with market weights.⁹

For measuring living standards and aggregating welfare, PPP weights are more appropriate since they capture the amount of consumption affordable to households for comparable consumption baskets. While PPP weights capture the fact that some goods are cheaper in lower income countries, market rates capture how much an economy could

⁷ Hamilton (2019) develops a monthly indicator of global activity, based on industrial production of countries in the Organisation for Economic Co-operation and Development (OECD) plus Brazil, China, India, Indonesia, the Russian Federation, and South Africa.

⁸ Over the period 1950-2019, average GDP growth rate was 3.3 percent for advanced economies and 4.7 percent for EMDEs. Population growth in EMDEs (1.8 percent) was also higher than in advanced economies (0.8 percent) over 1950-2019. Per capita output growth was then, on average, 2.4 percent in advanced economies and 2.8 percent in EMDEs.

⁹ For example, the average annual growth rate of world GDP over the period 1950-2019 was 3.7 percent or 4.0 percent, using market weights and PPP weights, respectively. Average annual global GDP growth over the past 20 years was 2.9 percent with market weights and 3.7 percent with PPP weights. In per capita terms, average annual GDP growth was 1.7 percent with market weights and 2.5 percent with PPP weights.

“buy” in global markets. Hence, market exchange rate-based weights are used here to provide the baseline measure of economic size (Cooper 2014; Frankel 2014).

2.2. Methodology

Two approaches are employed to identify the turning points of the global business cycle: a statistical method and a judgmental method. The methods are complementary but employ different information sets. Both follow the “classical” definition of a business cycle (Burns and Mitchell 1946), under which business cycle expansions are marked by increases in many measures of economic activity, and contractions by broad declines in activity. Both are widely used in the context of national business cycles, and often arrive at similar turning points.

Statistical Method. The statistical dating method used here was introduced by Harding and Pagan (2002).¹⁰ The method is convenient since the turning points identified are robust to the inclusion of newly available data. The method makes it possible to identify global recessions, defined as taking place when the annual growth rate of per capita global real GDP is negative. However, per capita real GDP growth alone may not be sufficient as an indicator of the cyclical evolution of economic activity. For this reason, the Business Cycle Dating Committees of the U.S. NBER and the Europe-based CEPR (Centre for Economic Policy Research) employ broad sets of economic indicators and apply a “judgmental method” to identify the turning points of national or regional cycles.

Judgmental Method. This method involves analyzing a broad set of macroeconomic indicators and reaching a judgment on whether the evidence points to expansion or recession. The NBER uses this method to determine the dates of cyclical turning points, expansions, and recessions in the U.S. economy, and the CEPR does so for the euro area. The NBER examines, for example, movements in real GDP, industrial production, retail sales, employment, and disposable income; it states that “[the] Committee does not have a fixed definition of economic activity.” Because different indicators can exhibit conflicting signals about the direction of activity, the judgmental method may not be straightforward to apply in real time. The CEPR’s task may be considered even more complex than that of the NBER since it has to determine cyclical conditions in the multi-country context of the euro area.

The judgmental method is applied at the global level through analysis of a selected set of indicators of global activity—movements in real GDP per capita, industrial production, trade, capital flows, oil consumption, and unemployment. Some of the variables used by the NBER and CEPR are not available for a large enough number of countries over a sufficiently long period. However, the measures employed here capture the essentials of the information supplied by the country-specific variables used by these institutions. Moreover, they provide a reasonably comprehensive perspective on the evolution of the

¹⁰ This method extends the algorithm developed by Bry and Boschan (1971), to identify the turning points in the log of per capita GDP (see details in Appendix 3). It is widely used to identify the turning points of business and financial cycles (Claessens, Kose, and Terrones 2009, 2011, and 2012; Pagan and Sossounov 2003; Harding and Pagan 2016; Herman, Igan, and Solé 2017; Meller and Metiu 2017; Grjebine, Szczerbowicz, and Tripier 2018). Other methodologies consider how a variable fluctuates around its trend but the estimation of trend is sensitive to sample period.

global business cycle. In addition to the standard activity measures, such as GDP, industrial production, and unemployment, other variables capture the changes in global commerce and finance (trade and capital flows), and global energy consumption (oil consumption).

Using these two methods, a *global recession* is defined as an annual contraction in world real per capita GDP accompanied by a broad decline in various other measures of global economic activity. A global recession begins just after the world economy reaches a peak of activity and ends when it reaches its trough. The *recovery* is defined as the early part of the expansion phase.¹¹ The recovery phase is often considered as the first year following the trough of the business cycle, but to obtain a broader understanding, developments in the first three years following a global recession are also examined here. The global expansion phase is the period between the end of one recession and the beginning of the next one.

3. Global Recessions and Recoveries: Dates and Events

3.1. Turning Points of the Global Business Cycle

Global Recessions. The baseline statistical method identifies four declines (troughs) in annual real global per capita GDP, using market exchange rate weights, since 1950—in 1975, 1982, 1991, and 2009 (Figure 4). The use of PPP weights rather than market exchange rate weights does not affect the dates of the troughs. However, with market exchange rate weights, which are tilted toward advanced economies, global per capita GDP growth is lower especially during global recessions when many advanced economies experience synchronized contractions in activity (Figure 5). With both sets of weights, the dates of peaks in the global business cycle are found to be 1974, 1981, 1990, and 2008, with the annual data showing each global recession lasting just one year.¹²

Some employ a definition of global recession that relies on a simple threshold (The Economist 2001, 2008). The findings here suggest that it is misleading to employ a simple growth threshold (such as below 2.5 percent annual growth in global GDP) to identify global recessions. For example, if one assumes that a global recession takes place whenever world real GDP growth with market (PPP) weights is less than 2.5 percent, there are 17 (11) global recessions over the period 1950-2019 (Figure 5). If per capita growth rates with market (PPP) weights are used and the threshold is 1 percent, then 14 (11) global recessions are identified over the same period. The annual growth of world real GDP needs

¹¹ In the context of national cycles, a number of studies examine the dynamics of recoveries (see Eckstein and Sinai 1986; Balke and Wynne 1995; Mussa 2009; Stock and Watson 2012; Bec, Bouabdallah, and Ferrara 2015; Graetz and Michaels 2017). Some studies focus on business cycles of sub-national entities, such as U.S. states (Owyang, Piger, and Wall 2005; Francis, Jackson, and Owyang 2018). Hausmann, Rodríguez, and Wagner (2006) define the recovery as the time it takes for output to rebound from its trough to its peak level before the recession, while Cerra, Panizza, and Saxena (2013) assume that the recovery as the year of positive growth immediately after a sequence of years with negative growth. Others associate the recovery with growth achieved after a certain time period, such as four or six quarters, following the trough (Sichel 1994; Calderón and Fuentes 2014).

¹² This finding echoes the results from the literature on national recessions. For example, Claessens, Kose, and Terrones (2012) report that the average duration of roughly 250 recessions in advanced economies and EMDEs since 1960 is about one year.

to fall below 1.1 percent to register a contraction in per capita GDP given the population growth in 2019, but, of course, population growth is time variant with substantial changes from one decade to another.¹³

The judgmental method is applied at the global level by looking at movements in several indicators of global activity—real GDP per capita, industrial production, trade, capital flows, oil consumption, and employment. This method also results in the same four dates as the years of global recessions: most of these indicators point to an obvious contraction in global economic activity in these years, after a peak in the preceding year. The behavior of the indicators during the global recessions is discussed below.

The turning points of the global business cycle identified using the quarterly data are consistent with those from the annual data series. The statistical approach identifies four global recessions in the quarterly series since 1960: 1974:1-1975:1, 1981:4-1982:4, 1990:4-1991:1, and 2008:3-2009:1 (Figure 6; Table 1). With the quarterly data, the average duration of global recessions was slightly less than one year. In addition to these four recession episodes, global per capita output contracted in 1970:4 (-0.7 percent), 1980:2 (-4.8 percent), 1981:2 (-0.3 percent), 1998:1 (-0.2 percent), and 2001:3 (-0.5 percent).¹⁴ These contractions lasted for only a quarter without translating into global recessions. However, some of these short-lived global contractions were associated with recessions in major economies that took place ahead of global recessions (1982) or coincided with global downturns (1998 and 2001), as discussed below.¹⁵

Global downturns. In addition to the four global recessions, the global economy experienced low growth in 1958, 1998, 2001, and 2012: in these four years, the global economy registered its lowest growth rates of the past seven decades, except for the years of global recession and the two years before and after each of them.¹⁶ World output per capita grew by slightly less than 1 percent a year, on average, over these four downturns (Table 2). These downturns fall short of qualifying as global recessions because world real GDP per capita did not contract and there was no broad-based weakness in multiple indicators of global activity.

In **1958**, global growth was weak because of low growth or outright recessions in several major economies, including the United States and some European economies (Federal

¹³ Global population growth has slowed by 0.7 percentage point since the 1950s to 1.2 percent a year over 2010-19.

¹⁴ Global quarterly per capita growth is measured as the difference between quarter-on-quarter annualized growth of seasonally-adjusted real GDP, aggregated with market weights, and annual population growth (Appendix 2).

¹⁵ The United States experienced a recession in 1969:4-1970:4 with per capita GDP contracting by more than 5 percent in 1970:4. This also coincided with a recession in Japan (with per capita growth dropped to negative 2.7 percent). Per capita output in the United States contracted by around 9 percent in 1980:2 while a number of advanced economies also experienced contractions, including Japan (with a contraction in per capita output by around 4 percent) and the United Kingdom (with a decline by around 8 percent). Over 1960-2019, world per capita output growth was close to but above zero in several quarters. These were due to contractions in some major economies, for example in 1960:4 (contraction in the United States with expansions in other major economies); 1963:1 (contractions in France, Germany, and the Netherlands); 1987:1 (Germany); and 1989:2 (Japan).

¹⁶ The statistical method identifies the local minimum in each episode. There were years in which global growth was lower than in the years of global downturns, but those years were always within two years before or after these recession and downturn episodes (e.g., 1980).

Reserve Board 1958; United Nations 1959).¹⁷ In the United States, monetary policy was tightened to control inflation (Eckstein and Sinai 1986; Romer and Romer 2012). In some European countries, also, domestic demand weakened as policy measures to contain inflationary pressures were implemented. However, growth remained resilient in other parts of the world.

In **1997-98**, economic activity in many EMDEs, particularly those in Asia, weakened sharply. In fact, the global economy experienced a contraction in per capita GDP in 1998:1 as the East Asian financial crisis took a heavy toll on emerging market economies in the region. However, the world economy did not experience a recession in 1998 because growth in advanced economies held up.

In **2001**, many advanced economies experienced mild slowdowns or recessions: global per capita output declined in 2001:3, when per capita growth turned negative in a number of advanced economies, including the United States (-2.7 percent, annualized) and Japan (-4.2 percent, annualized). However, growth in some major EMDEs, such as China and India, remained robust, helping the global economy escape a recession.

The **2012** global downturn was mainly driven by the euro area debt crisis.¹⁸ Although world per capita output did not contract in any of the quarters of 2012, growth was very low (0.4 percent in 2012:2). The global economy was supported by growth in the United States and some major EMDEs.

During these four global downturns, the behavior of other global indicators was mixed, again implying that these episodes do not qualify as global recessions. For example, industrial production, trade, and consumption did not suggest a broad-based weakness in the global economy in 1998. In 2001, although industrial production fell and the rate of global unemployment picked up slightly—and although equity prices and business confidence declined sharply and policy uncertainty increased significantly following the 9/11 terrorist attacks—both global trade flows and oil consumption continued increasing. During the 2012 global downturn, some activity indicators did not show much weakness, but capital flows slowed, equity prices collapsed, and inflation declined.

In 2019, the performance of the global economy looked somewhat similar to the previous global downturns. The current estimates suggest that global output growth in 2019 was lower than that in 1998 and 2012 but still higher than that in 1958 and 2001 (Appendix 4). However, when measured in per capita terms, estimated growth in 2019 was higher than that in any of the four global downturns. Although global labor markets were tight, global trade was quite weak in 2019. Since the available data for the full year are mostly

¹⁷ In 1958, per capita GDP contracted in the United States (by 2.4 percent), Canada (by 1 percent), and several European countries (e.g., Belgium, by 1.2 percent; the Netherlands, by 2.4 percent; Switzerland, by 3.5 percent; the United Kingdom, by 0.1 percent). However, per capita growth was strong in other parts of the world, including Australia (4.6 percent), Germany (3.7 percent), Italy (4.1 percent), and Japan (5.3 percent).

¹⁸ Some euro area countries experienced financial crisis (Greece in 2012 and Cyprus in 2011-13) and some others (Ireland and Portugal) went through periods of fiscal distress (Laeven and Valencia 2018; Medas et al. 2018). A number of other euro area countries also registered relatively low economic growth during this period. The euro area recorded its lowest output growth (-0.9 percent) since 2009. Indeed, CEPR identifies the period 2011:3 to 2013:1 as a recession in the area.

estimates at the time of writing this paper, it is not possible to conclude whether the year 2019 constituted a global downturn.

The U.S. economy during global recessions and downturns. Although the four global recessions coincided with recessions in the United States, not every U.S. recession was associated with a global recession. In fact, the United States experienced six additional recessions during 1950-2019, including recessions in 1958 and 2001 that coincided with global downturns. But it grew strongly during the 1998 global downturn and, to a lesser extent, during the 2012 global downturn.¹⁹

3.2. Events Surrounding the Global Recessions

The four global recessions identified above were all characterized by severe economic and financial disruptions in many countries around the world. But each recession had its own unique features.²⁰ In particular, the shocks that contributed to the global recessions were different. The 1975 global recession was driven mainly by a global supply shock—the oil price shock of 1973-74. The 1982 episode followed a series of shocks, including the oil price shock of 1979; the subsequent rise in global inflation; monetary policy responses to that increase in inflation, especially the marked monetary tightening by the U.S. Federal Reserve; and the Latin American debt crisis.

However, there are also similarities across the global recessions, including in their origins. A number of countries experienced financial crises during the four global recessions.²¹ In the 1991 global recession, a wide range of national shocks were transmitted across borders, including financial disruptions and exchange rate crises in some advanced economies, especially in Europe, and a major shift in political and economic systems in many Eastern European countries. The 2009 episode originated mainly from problems in the U.S. financial sector that started to become evident in 2007. These problems rapidly propagated to other advanced economies and some EMDEs through trade and financial linkages.

The global recession of 1975 followed the shock to world oil prices from the Arab oil embargo initiated in October 1973. Although the embargo ended in March 1974, the supply shock and associated sharp rise in oil prices triggered a substantial increase in inflation and a significant weakening of growth in a number of countries. Monetary and fiscal policy easing, especially by some major advanced economies, helped spur a rebound of growth in 1976. However, the Group of Seven countries except for Germany and

¹⁹ Average per capita GDP growth in the United States during the global recessions and global downturns identified above was -2.1 percent and 0.6 percent a year, respectively. While U.S. per capita output contracted in the 1958 global downturn (by 2.4 percent) and was virtually stable in 2001, it expanded in 1998 and 2012 (by 3.2 percent in the former case and 1.4 percent in the latter).

²⁰ The events surrounding these episodes are discussed in detail by Knoop (2004), Allen (2009), Reinhart and Rogoff (2009), Kose and Terrones (2015), and Kose et al. (2020). Barsky and Kilian (2004), Hamilton (2013), and Baffes et al. (2015) present surveys of the history of oil shocks and the associated economic downturns.

²¹ Financial crises—including banking, currency, and sovereign debt crises—took place in 15, 62, 67, and 38 countries during the 1975, 1982, 1991, and 2009 global recessions (including the two years before and after the recession years) (see Laeven and Valencia 2018). Most of the financial crises in the 1975 global recession were currency crises in EMDEs, while Chile and Spain experienced systemic banking crises in 1976 and in 1977, respectively.

Japan—Canada, France, Italy, the United Kingdom, and the United States—experienced persistent and high inflation, and the 1975 global recession was the beginning of a half-decade of stagflation, with low output growth and high inflation (Knoop 2004).²²

The global recession of 1982 was triggered by several developments, including the second oil shock of 1979; a tightening of monetary policies in the United States and other advanced economies; and the Latin American debt crisis (Kose et al. 2020). Oil prices rose sharply in 1979, partly owing to disruptions caused by the Iranian revolution, and this helped push inflation to new highs in several advanced economies. Partly in response, monetary policies were tightened significantly in several major advanced economies, including Germany, Italy, Japan, the United Kingdom, and the United States, causing sharp declines in activity and significant increases in unemployment rates in many cases in 1982-83. The increase in global interest rates and a collapse in commodity prices that stemmed from the weakening of global growth made it difficult for many Latin American countries to service their debts, resulting in debt crises in the region. The advanced economies were generally able to begin their recoveries relatively quickly, although unemployment in some cases remained relatively high. But the debt crisis contributed to long-lasting growth slowdowns in many EMDEs, especially in Latin America and the Caribbean (LAC) and Sub-Saharan Africa (SSA).

The 1991 global recession also resulted from the confluence of a wide range of factors (Perry and Schultze 1993). The 1990-91 Gulf War was associated with heightened geopolitical uncertainty and another sharp increase in oil prices. In the United States, widespread weakness of lending institutions, evident since the mid-1980s, weighed on the housing market, especially during the credit crunch of 1990-91 (Bernanke and Lown 1991; Hall 1993). Scandinavian countries had severe banking crises in the early 1990s, following the liberalization of financial sectors and rapid expansion in credit markets in the 1980s. In Europe, problems with the European Monetary System's exchange rate mechanism (ERM) in 1992 were accompanied by sharp declines in activity in many member countries. In Japan, the bursting of an asset price bubble resulted in a recession and a prolonged period of low growth and near-zero inflation. In Central and Eastern Europe and the former USSR, the transition to market economies was accompanied by high inflation and output contractions.

The 2009 global recession followed the worst financial crisis since the Great Depression. The crisis started in mid-2007 in major advanced economies, and followed a period of loosening regulation and supervision of financial markets and institutions, asset price and credit booms in a number of countries, and the rapid expansion of high-risk lending, particularly in U.S. mortgage markets. The collapse of Lehman Brothers, in September 2008, triggered a full-blown financial and macroeconomic crisis. Although the initial trigger for the crisis was the U.S. mortgage markets, the high degree of interconnectedness between the U.S. and other financial markets caused the crisis to spread to other advanced economies and some EMDEs. Banking crises erupted in many European countries in 2008,

²² By 1980, immediately after the second oil shock, inflation had risen to levels higher than those seen after the first oil shock in all G7 countries except Japan and the United Kingdom, while inflation in Germany remained relatively moderate.

causing financial crises in the euro area in 2011-13. These events caused sharp asset price declines and severe credit crunches, a collapse in global trade, and highly synchronized recessions in a record number of countries around the world. However, as discussed below, with the exception of some of those in the Europe and Central Asia (ECA) region, EMDEs weathered the 2009 global recession relatively well.

3.3. Synchronization of national recessions

Global recessions are highly synchronized events internationally. The fraction of countries in recession increased during the four global recessions (Figure 7). The GDP-weighted fraction of countries in recession was about 50 percent in the first three global recessions, but rose to slightly more than 80 percent in the latest episode. The unweighted fraction of countries in recession reached local peaks during the global recession years. For example, it was about 60 percent during the 2009 episode.²³ In all four global recessions, the fraction of countries in recession started picking up ahead of the recession year.

The number of countries in recession was often relatively low two to three years prior to each global recession. The 2006-07 period stands out for the historically low number of countries in recession. However, this was followed by a sharp reversal of fortune. In 2009, almost all advanced economies (35 out of 36) and roughly half of EMDEs were in a recession. The degree of international synchronicity in the last global recession was the highest in the past 70 years, possibly reflecting the unusual depth of the global financial crisis and much stronger international trade and financial linkages than in earlier episodes.

4. Main Features of Global Recessions, Recoveries and Expansions

4.1. Global Recessions

The behavior of the main macroeconomic and financial variables displays a number of regularities during the four global recessions. The 2009 global recession, which saw by far the largest declines in many indicators of activity, otherwise followed a pattern broadly similar to the previous episodes. The impact of global recessions often varied across different groups of countries and regions.

Sharp contraction in real activity. In the four global recessions, per capita global output (market exchange rate weighted) declined on average by 1.3 percent, which is 3.5 percentage points below the average annual growth rate of 2.2 percent during the 1950-2019 non-recession years (Table 3). With PPP weights, the decline in per capita output during global recessions was, on average, 0.8 percent, while growth during expansion years was 2.5 percent.

²³ Imbs (2010), using monthly industrial production data, concludes that the degree of cross-country business cycle correlation during the latest recession was the highest over the past three decades. Other research also indicates that shocks originating in credit markets have been influential in driving global activity during global recessions, including the 2009 episode (Helbling et al. 2011; Eickmeir and Ng 2015; Bacchetta and van Wincoop 2016; Perri and Quadriani 2018).

Among the four global recessions, the 2009 episode was by far the deepest. It involved the only annual contraction in real global GDP since 1950.²⁴ The least severe episode in terms of per capita output growth was the 1991 recession. The average annual growth of output over the four global recession episodes was 0.3 percent, about 3.6 percentage points lower than average world growth during expansion years (3.9 percent).

World per capita output, industrial production, trade, and oil consumption often started to slow down two years before the global recessions (Figure 8.A). Moreover, investment, industrial production, and trade typically declined much more than output during the global recessions. While private consumption generally held up relatively well, its growth was much weaker than in non-recession years. Oil consumption declined in every global recession except for the 1991 episode.²⁵

Depressed financial markets and business confidence. Asset prices and credit on average began decelerating about two years ahead of each global recession (Figure 8.B). The average annual rate of credit growth during the global recessions was about two-fifths of the annual average observed in non-recession years, while both house and equity prices fell, with the decline in the former on average three times larger than the latter. Financial conditions often tightened before the global recessions but then quickly loosened as monetary policy became accommodative. Inflation typically fell during global recessions, which gave further license for central banks to reduce interest rates (Figure 8.C).

The behavior of real interest rates varied widely across the episodes. For example, real rates declined in the 1991 and 2009 episodes, but went up during the 1975 and 1982 recession. Business confidence fell in all global recession episodes. Economic policy uncertainty increased during the two episodes—1991 and 2009—for which data are available (Caldara et al. 2019; Baker and Bloom 2013).

Differences across country groups. The impact of global recessions has varied across different groups of countries and regions (Table 4). In advanced economies, average per capita growth fell to -1.1 percent during the global recession years, from 2.7 percent during non-recession years. In EMDEs, the decline was to 0.2 percent from 3 percent (LICs on average suffered larger declines in per capita growth than other EMDEs). Thus, the drop in growth was 1 percentage point greater for the advanced economies than for the EMDEs. In addition, both trade and industrial production registered much larger contractions in advanced economies than EMDEs.

Some EMDE regions have been able to weather global recessions better than others. For example, the EAP and SAR regions continued expanding during the past four global recessions whereas the other four regions all on average experienced declines in per capita

²⁴ On the basis of the quarterly data, average annual per capita output growth in the four global recessions was -2.4 percent (Table 1). The deepest recession is again seen to be that of 2009 and the least severe that of 1991: average annual growth rates in the four recessions were -1.9 percent (1974:1-1975:1), -0.9 percent (1981:4-1982:4), -0.5 percent (1990:4-1991:1), and -5.4 percent (2008:3-2009:1). Per capita growth was negative in each quarter of the four recessions, except in 1974:2 when growth picked up to 0.8 percent for one quarter only.

²⁵ Oil consumption declined in only nine years of the past seventy (i.e., 1974-75, 1980-83, 1993, and 2008-09). These episodes coincided with the global recessions or were within two years before or after them.

output (though aggregate output continued growing, on average, in LAC and SSA). One explanation for this outcome is that while EAP and SAR mostly comprise relatively fast-growing commodity importers (including the large economies of China in EAP and India in SAR), the other four regions consist more of commodity exporters that have been severely affected by the collapses in demand for commodities associated with global recessions.

The 2009 recession. The unusually sharp declines in a wide range of economic indicators, especially growth in both aggregate and per capita global output, highlight the severity of the 2009 global recession. The global impact was amplified by the growing importance of international linkages through trade and financial flows. While the globalization of national manufacturing chains was a major force driving the growth of world trade in the two decades prior to the global recession, it appears to have been instrumental in driving the sharp contraction of cross-border trade during 2009.²⁶ The 2009 episode also saw the largest increase in the index of global policy uncertainty, and the second sharpest decline in business confidence (the largest decline took place during the 1975 global recession).

Global capital flows registered their sharpest fall during the 2009 global recession. After overshadowing the growth of global trade flows over the previous two decades, global capital flows had reached unprecedented levels in 2007. But they rapidly dried up in the last quarter of 2008, as the global financial crisis spread from advanced economies to EMDEs. Variations among countries in the decline of capital flows appear to have been related to the degrees of trade and financial openness, the nature of financial linkages (e.g., reliance on bank flows), and domestic macroeconomic conditions.²⁷

As the epicenter of the financial crisis, advanced economies felt its brunt the most (Figure 8.D; Table 4). Almost all of them experienced much larger declines in output than in the previous global recessions, and on average their per capita output growth declined to -4 percent in 2009, more than 6 percentage points below their average growth rate during non-recession years. Contractions in trade, industrial production, and employment were also much sharper in these economies than in EMDEs.

In contrast, EMDE output growth remained positive, although it did slow sharply, from 8.2 percent in 2007 to 5.7 percent in 2008 and 1.8 percent in 2009. EMDEs delivered their strongest recovery following the 2009 episode, as discussed below (Kose, Otrok, and Prasad 2012). LICs were also able to continue growing during the 2009 global recession whereas their growth fell to negative rates in per capita terms in the previous episodes.

²⁶ The contraction in international trade also appears to have been driven partly by other factors, including a sharp fall in trade credit, the increased role of durable consumer goods (with relatively high income elasticity of demand) in trade, accumulated inventories by importing firms, and the strong cross-border spillovers associated with demand shocks. The collapse of trade (relative to output) during the 2009 global recession is much larger than that predicted by standard business cycle models. For potential explanations, see Eaton et al. 2016; Alessandria, Kaboski, and Midrigan (2010); Amiti and Weinstein (2011); Bems, Johnson, and Yi (2010); Chor and Manova (2012); Freund (2009); and Levchenko, Lewis, and Tesar (2010).

²⁷ For discussions of movements in capital flows, see Milesi-Ferretti and Tille (2011), Claessens (2017), Lane and Milesi-Ferretti (2018), Koepke (2019), and Kose and Ohnsorge (2019).

In the 2009 episode, there were some stark differences across EMDE regions (Figure 8.D; Table 5). ECA took the largest hit partly because the withdrawal of Western European banks caused a severe credit crunch, and the region's per capita output declined by more than 5 percent in 2009. Per capita output in LAC and the Middle East and North Africa (MNA) also contracted as commodity prices and exports collapsed. In EAP and SAR, expansions continued, partly reflecting heavy use of monetary and fiscal stimulus in the largest economies to support activity (World Bank 2009, 2010a, 2010b). Unlike the previous global recessions, when SSA experienced declines in per capita output, the region was able to avoid recession in 2009 partly because it had limited exposure to global financial markets but stronger linkages, especially through trade, with the large emerging market economies of EAP, which continued growing (Fosu 2013).

4.2. Global Recoveries

A global recovery typically involves broad-based rebounds in multiple measures of economic activity and financial markets. The strength of recoveries differs across countries and country groups. For instance, there is evidence that recoveries from the four global recessions tend to be weaker in countries with fixed exchange rate regimes than in countries with more flexible regimes (Terrones 2019). Following the 2009 global recession, advanced economies experienced the weakest recovery among the four episodes while EMDEs enjoyed their strongest.

Broad rebound in activity. Most indicators of global activity started expanding in the first year of each recovery (Figure 9.A). The average growth rate of global output in the first year (or the first three years) of recoveries was close to the average growth rate in a typical year of the full sample period (Table 6). The growth rates of consumption, investment, and international trade picked up in the first year of each recovery while oil consumption tended to increase. The global recovery from the 1975 recession was the strongest in terms of average output growth in the first three years of the recovery, as well as in terms of growth in the first year. The recovery after the 1991 global recession was the weakest.

Recoveries in financial markets. Global financial markets have tended to rally as recoveries have strengthened over time (Figure 9.B). In the recoveries from both the 1991 and 2009 recessions, for which these estimates are available, broad financial conditions loosened further in the first year of the recovery but then gradually tightened. Although global equity prices on average have picked up quickly, in the first year of recoveries, house prices have tended to remain depressed for two to three years. Credit growth has also generally taken longer to attain the rates observed during non-recession periods. Housing markets were depressed mostly during the recoveries following the three most recent global recessions. Equity markets remained weak during the recovery from the 1975 recession, partly reflecting the stagflation in several major advanced economies.

The 2009 episode, which saw the lowest rate of inflation during a recession, was followed in 2010 by a further dip of inflation to near zero. It thereafter rose quite modestly, to stabilize at a rate in the low single digits. Because of the depressed inflation post-2009, accommodative monetary policies kept nominal interest rates low, and real interest rates

remained somewhat below zero (Figure 9.C). Nominal rates declined during and after previous recessions too, but there was a less consistent pattern to real rates. For example, although real interest rates remained negative after the 1975 and 2009 episodes, they went up following the recession of 1982. Business confidence quickly recovered to the pre-recession levels except after the 1991 recession because of the financial turbulence in Europe.

Differences across country groups. The four global recoveries featured many commonalities, but they also displayed important differences across country groups and EMDE regions (Figure 9.D; Table 7). First, advanced economies on average delivered better per capita GDP growth outcomes (in the first three years) during the first three recoveries than did EMDEs. They also experienced faster trade growth during these episodes. Second, per capita GDP growth in LICs was much weaker than in the broader group of EMDEs, as well as the advanced economies, during the global recoveries. Third, while EAP and SAR experienced robust recoveries, other regions suffered significant contractions during some recovery episodes mostly because of region-specific factors (Table 8). For example, LAC and SSA saw slumps in per capita output during the 1983-85 recovery because of the debt crises engulfing these regions, and ECA experienced a serious recession during the 1992-94 global recovery driven by challenges of transition.

Recovery following the 2009 recession. The trajectory of per capita global output in the most recent recovery was slightly weaker than that of the period following the 1975 global recession (Figure 9.A). After the latest recession, there were stronger rebounds in industrial production and trade in the first three years than in the previous three recoveries. The pattern of global unemployment during the latest global recovery follows that of the previous episodes but the average rate of unemployment remained elevated in 2010-12.

Financial markets experienced a subdued recovery after 2009 (Figures 9.B and 9.C). Credit registered its weakest growth among the four episodes while both housing and equity markets struggled in the first three years. The latest recovery was characterized by the lowest inflation and nominal interest rates. Capital flows, however, picked up quite strongly in the first year of the recovery, and then stabilized at a lower level than the average over the 2003-07 period.

The global recovery from the 2009 recession was significantly different from the previous three episodes, particularly in its uneven nature—especially in the differences in performance between advanced economies and EMDEs (Figure 9.D; Table 7). Advanced economies were the engines of previous global recoveries, but EMDEs accounted for the lion’s share of global growth after the 2009 global recession: the average contribution of advanced economies to global growth during the previous three global recoveries (i.e., over 1976-78, 1983-85, and 1992-94) was 75 percent, but it dropped to 35 percent in 2010-12.

For the advanced economies, the most recent recovery, in 2010-12, was the weakest in terms of both output and output per capita. This reflects in part the legacies of the global financial crisis, particularly the deterioration in credit and housing markets, as well as

labor markets. The balance sheets of households and financial sectors were severely damaged, resulting in a sharp contraction of investment, especially construction. Some countries in the euro area also struggled to finance their public debt and experienced severe sovereign debt crises in 2011-13, including Cyprus and Greece. Compared to the previous episodes, growth rates of consumption and investment were much weaker in advanced economies. Reflecting anemic income growth in these economies, unemployment declined only slowly during the recovery, especially in the euro area.

In contrast, EMDEs, as a group, enjoyed their strongest recovery following the 2009 global recession. Despite an unfavorable external environment, both industrial production and trade rebounded strongly, supported by a sharp increase in credit growth (Table 7). EMDEs weathered the global recession relatively well thanks to the large, prompt, and globally coordinated policy support, as discussed below. The strong performance of EMDEs during the early years of the recovery also reflects previous structural improvements such as better-regulated financial systems and stronger macroeconomic policy frameworks that allowed them to pursue more credible and effective countercyclical policies (Kose and Prasad 2010).

While it was a relatively robust recovery for EMDEs generally, its strength differed among the regions, with growth stronger in EAP, SAR, and LAC than in ECA and MNA. For example, the ECA region suffered a financial shock qualitatively similar to that in many advanced economies, its growth was slower than the other regions in the first year of the recovery.²⁸ Among the four global recoveries examined, the most recent was the first in which LICs were able to deliver positive per capita GDP growth, partly because of a sharp increase in their exports.

Policy responses during recessions and recoveries. In response to the prospect of large output and employment losses in the wake of the financial turbulence of 2008, a number of advanced economies and EMDEs employed wide-ranging expansionary fiscal policy measures during 2008–09 (Kose and Ohnsorge 2019). These coordinated measures were instrumental in supporting global demand at the height of the global financial crisis and in limiting the decline in activity. However, as public debt and financing requirements rose significantly, market pressures and—perhaps more important—political constraints led advanced economies to withdraw fiscal support in 2010.²⁹

The change in fiscal policy stance led to an unprecedented outcome, with quite different paths for government expenditures in advanced economies from past recoveries, when policy was expansionary for longer, with continued increases in real primary government

²⁸ The incidence of sudden stops in capital inflows tipping countries into financial distress was about half of that prior to 2008, and centered in economies where pre-crisis credit booms were funded by large capital inflows and where banks had narrow deposit bases, such as some economies in ECA (Feyen et al. 2014). Data taken from Forbes and Warnock (2012) indicate that more than 80 percent of countries in the sample experienced sudden stops in 2009, while the share was around 46 percent, on average, in 1982 and 1991. In addition, many sudden stops episodes were observed during the global downturns of 1998 and 2001. Eichengreen and Gupta (2016) also document the high incidence of sudden stops during the 2009 global recession.

²⁹ In advanced economies, government expenditures started increasing gradually since 2015 as public investment picked up in major economies. A number of countries have implemented tax reforms to stimulate activity over the past decade (IMF 2019; OECD 2019).

expenditures (Figure 10). In contrast, in EMDEs, the recovery was accompanied by expansionary fiscal policy (Kose et. al 2017). EMDE governments employed fiscal packages that included infrastructure investment, tax cuts, and social protection programs.

Monetary policies in advanced economies remained exceptionally accommodative during the latest recovery—more so than in earlier episodes (Arteta et al. 2015; Ha, Kose, and Ohnsorge 2019). Monetary policy played a key role in restoring financial sector health, limiting the economic downturn, and supporting the recovery. During the early stages of the global financial crisis, central banks in the major advanced economies sharply reduced interest rates, expanded their liquidity facilities, and started large-scale purchases of longer-term assets. The combination of near-zero policy interest rates and the record expansion of central bank balance sheets was unprecedented. Policy rates remained at, or close to, the zero lower bound, and below zero in some cases, and central bank balance sheets were expanded further. In addition, central banks began or intensified the use of forward guidance about the direction of monetary policy to help manage expectations and lower longer-term interest rates. EMDE central banks too lowered policy interest rates, which was made easier by their success in taming inflation before the crisis, and some EMDEs intervened in foreign exchange markets to support their currencies, having accumulated ample foreign reserves before the crisis.

4.3. Global Expansions

The global expansion phase refers to the period between two global recessions. The world economy has experienced four expansions since the 1975 recession: 1976–81, 1983–90, 1992–2008, and the current expansion, which started in 2010.

Different durations. Global expansions since 1975 have varied in duration, between 6 years (following the 1975 recession) and 17 years (following the 1991 recession). The longest global expansion, 1992–2008, coincided with the information technology revolution, the integration of China and many other emerging market economies into the global economy, a sharp increase in commodity prices, and rapid growth in international trade and financial flows. Although this benign period of macroeconomic stability acquired the label of “The Great Moderation”, it did witness global downturns in 1998 and 2001, during which the world economy came close to outright recession. The latest global expansion, which turned ten years old in 2019, has seen a global downturn episode in 2012, but also the longest U.S. expansion in history.

Changes in amplitude over time. The world economy on average registered 3.3 percent annual output growth in the four global expansions (Figure 11.A; Table 9). The strongest expansion was the one that followed the 1982 recession. Reflecting the support of accommodative policies, recoveries in confidence, pent up demand, and ample spare capacity, the growth of activity in the first year after each global recession has tended to be faster than average growth over the expansion phase.

The post-2009 global expansion. The current global expansion has registered average annual per capita GDP growth similar to those of previous episodes. However, it is

distinguished by the lowest average growth in industrial production of all four expansions (when their initial years are excluded). The current expansion has also seen the weakest growth in global trade. Since 2011, average annual global trade growth has been 3.9 percent, well below the 5.2 percent average of previous global expansions. This weakening of trade growth has reflected a combination of factors, including weak demand growth in advanced economies, shifts in the composition of global demand, the maturation of global supply chains, and increased trade tensions between major economies, particularly involving the United States.

The current expansion has also seen the lowest growth in capital flows. Sluggish investment growth has been reflected in a decline in global capital flows since 2011 (Table 9). Capital flows to EMDEs have been sluggish, with repeated spikes in borrowing costs since mid-2013. Following an initial rebound after the recession, global capital flows have declined.

Weak expansion in advanced economies. The expansions following the 1991 and 2009 global recessions were the weakest of the four episodes in advanced economies. Despite the marked difference in the severity of these two recessions, their underlying causes and the evolution of activity during the following expansions share remarkable similarities for advanced economies (Figure 11.B; Table 10). Both recessions were associated with disruptions in credit and housing markets in the major advanced economies. In particular, the global expansion following the 1991 recession was adversely affected by the ripple effects of collapses in credit and asset markets in the United States and Japan. Similarly, the deep 2009 global recession was associated with substantial problems in credit and housing markets in the United States and a number of other advanced economies, including France, Denmark, Iceland, Ireland, Spain, the United Kingdom, and the Baltic countries.

The expansions following the 1991 and 2009 global recessions were also both slowed by particular challenges in Europe. Both the latest expansion and the one following the 1991 global recession were hampered by problems in the European Monetary System—the ERM crisis in 1992 and crises in the euro area in 2011-13. There were downturns in many European countries in the wake of the ERM crisis, which involved significant increases in interest rates in several countries and which took a severe toll on confidence. The euro area debt crisis in 2012-13 also weakened growth in several of its members. Growth in the euro area has remained generally sluggish throughout the expansion, with the highest annual output growth of 2.4 percent in 2017, leaving unemployment still high in a number of countries.

Reversal of fortunes for EMDEs. The latest global expansion was the strongest one for EMDEs in terms of per capita output growth. However, after enjoying the strongest recovery immediately following the 2009 global recession, EMDEs have since experienced a protracted slowdown following the drop in commodity prices in 2012 (Figure 11.B; Tables 10 and 11). EMDE GDP growth slowed from 7.4 percent in 2010 to a trough of 3.8 percent in 2015 (Didier et. al. 2015). The growth slowdown during 2011-15 was synchronous (affecting more than three-fifths of EMDEs) and protracted, with the steepest slowdowns in LAC and the mildest in SAR. In LICs, GDP growth slowed from

6.2 percent in 2012 to a trough of 5 percent in 2016. In 2017, many EMDEs saw a mild cyclical recovery, led by growth in exports and investment as global manufacturing and trade picked up, but EMDE growth has since weakened again.

Weakening global economic growth has coincided with country-specific challenges in some large EMDEs. In China, for example, with the unwinding of policy stimulus, efforts have also been made to guide the economy away from investment- and export-driven growth toward more balanced growth that relies more on consumer spending. The resultant slowdown in China, from growth of 8.9 percent on average during the previous global expansions to 6.6 percent in 2018, has weighed on growth in its trading partners and in commodity exporters (World Bank 2016; Huidrom et al. 2019). In some other major EMDEs, episodes of policy uncertainty, social tensions, geopolitical events, and civil wars have caused sharp losses in confidence.

Repeated short-term growth disappointments. The latest global recovery has also seen repeated downgrades in short-term global growth forecasts (Figure 12). Over 2010-19, on average, current-year growth projections in consensus forecasts have been downgraded from a year earlier in around 52 percent of countries. Downgrades affected growth forecasts for both advanced economies (49 percent of countries) and EMDEs (54 percent of countries), but with forecasts for EMDEs revised down by a wider margin. For EMDEs, since 2009, growth has been revised down by an average of 0.2 percentage points for the current year forecast, relative to the one made a year earlier.

Diminishing long-term growth projections. The 2009 global recession marked a turning point in long-term (ten-years ahead) global growth projections (Kose, Ohnsorge, and Sugawara 2020). Long-term forecasts for global GDP growth increased from 3 percent in 1998 to 3.3 percent in 2008. Since then, they have steadily declined, to 2.5 percent in 2019. Growth forecasts for advanced economies began to be downgraded after the 1991 global recession. After a brief period of upgrades in the late 1990s, they resumed their gradual decline in the early 2000s. In contrast, EMDEs enjoyed improving growth prospects up to the 2009 global recession. Since then, long-term forecasts have materially deteriorated for both groups of countries.

Prior to the 2009 global recession, growth prospects were supported by a rapid expansion of investment, trade, and financial flows. However, during the most recent global expansion, cyclical factors, such as the anemic recovery in advanced economies, a sharp collapse in commodity prices, and weak investment growth, have been compounded by structural weaknesses, including slower productivity growth, and a slowdown in the growth of working-age populations.

These structural factors have been eroding global potential growth—the growth rate that the global economy would sustain at full capacity utilization and full employment. In 2013-17, global potential growth is estimated to have been roughly 1 percentage point a year lower than a decade earlier, as a result of weaker productivity growth, sluggish expansion of investment, and a broadening slowdown in working-age population growth. Annual potential growth estimates for advanced economies were reduced to 1.4 percent on average in 2013-17, from 2.2 percent a decade earlier. Potential output growth in

EMDEs is also estimated to have slowed, from 5.9 percent a year in the mid-2000s to 4.8 percent a year in 2013-17, reflecting the effects of weak investment, adverse demographic trends, and slower productivity growth.

In light of the protracted weakness of economic growth, together with chronically low inflation (persistently below target in most cases), despite unprecedented monetary policy accommodation maintained over several years and historically low long-term interest rates, some observers have argued that advanced economies have been facing “secular stagnation”, owing to structural weakness in aggregate demand (Teulings and Baldwin 2014; Summers 2015; Rachel and Summers 2019).³⁰ Many factors may have contributed to such demand weakness, including increased saving originating partly from demographic factors and reduced investment spending stemming partly from the reduced costs of capital goods, which have increasingly embodied information technology. Financial crises may also have contributed through higher risk aversion, increased costs of financial intermediation, and increased debt overhangs. Recent research concludes that, in light of the Japanese experience after its banking crisis in the early 1990s, some major euro area economies might suffer a long period of stagnation because of structural headwinds associated with demographic trends and persistent weakness in productivity growth (Hoshi and Kashyap 2015).

5. Conclusion

The year 2019 was the tenth anniversary of the last global recession. Yet 2019 also marked an intensifying speculation about whether another such episode was looming. During 2019, global growth forecasts were repeatedly downgraded as a broad-based slowdown enveloped both advanced economies and EMDEs. Trade tensions between major economies led to unprecedented policy uncertainty and took a heavy toll on global industrial production and trade.

In light of the resurgence of interest on the topic, this paper analyzes the main features of global recessions and the ensuing global recoveries and expansions.

What happens during global recessions and recoveries? Both statistical and judgmental methods identify four global recessions since 1950: in 1975, 1982, 1991, and 2009. During these four years, there was a contraction in annual real per capita global GDP and broad-based weakness in the main indicators of global activity. Quarterly data yield similar recession dates, and confirm that the duration of a typical global recession is about one year—which is also the average duration of national recessions. Global recessions are highly synchronized events, with severe economic and financial disruptions occurring simultaneously in many countries around the world. Although the four global recessions

³⁰ Hansen (1939) argues that the Great Depression could lead to a prolonged period of stagnation and high unemployment because of the decline in the birth rate and excessive savings that constrain aggregate demand. For a theoretical formulation of secular stagnation, see Eggertsson, Mehrotra, and Robbins (2019). Hamilton et al. (2016) argue that the secular stagnation hypothesis confuses a delayed recovery with chronically weak aggregate demand. By examining global real interest rates over eight centuries, Schmelzing (2020) concludes that the current decline in sovereign real rates is a path to converge to the historical trend, rather than a sign of secular stagnation. Others consider the case for secular stagnation to be weak (Rogoff 2013; Taylor 2014).

coincided with recessions in the United States, not every U.S. recession coincided with a global recession: in fact, the United States experienced six additional recessions during 1950-2019.

The world economy suffered a sizable contraction in per capita output during the four global recessions since 1950: the average decline in per capita output (market exchange rate weighted) was about 1.3 percent, 3.5 percentage points lower than the average annual growth rate (2.2 percent) in the non-recession years during 1950-2019. Financial conditions tended to tighten, business confidence declined, and policy uncertainty increased during the global recessions. The 2009 global recession was by far the deepest and most internationally synchronized among the four: it saw the only outright annual contraction in global output and the largest declines in global trade, capital flows, and industrial production.

In addition to the four global recessions, the global economy experienced relatively slow growth in 1958, 1998, 2001, and 2012. During these episodes, which we refer to as “global downturns”, the global economy registered its lowest growth rates of the past seven decades, except for the years of and around the four global recessions. However, these episodes fall short of qualifying as recessions both because world real GDP per capita did not contract and several activity indicators remained robust.

Global recoveries have generally been characterized by a broad-based rebound in economic activity and normalization of financial conditions. The average growth rate of global output in the first year (or over the first three years) of recoveries has been close to the longer-term average. Financial conditions often remained loose in the first year of the recovery but then gradually tightened. Among the four episodes, the recovery from the 1975 recession saw the steepest acceleration in growth in its first year. Thanks to large, prompt, and globally coordinated policy support, the recovery following the 2009 recession was the second strongest episode.

How do global recessions and recoveries vary across different groups of countries? First, per capita output growth declined more in advanced economies than in EMDEs during global recessions, with some EMDE regions consistently faring better than others. The EAP and SAR regions continued expanding in each of the past four global recessions whereas the other four regions all experienced declines in average per capita output. Second, LICs on average suffered larger declines in growth than the broader group of EMDEs. Third, in all four global recessions, both trade and industrial production registered much larger contractions in advanced economies than in EMDEs.

The magnitude of the 2009 global recession varied across the country groups. As the epicenter of the financial crisis, advanced economies felt the initial brunt of the recession but also suffered the weakest recovery in terms of output and output per capita compared with previous episodes. In contrast, EMDE output growth remained positive during the 2009 recession, and EMDEs’ subsequent recovery was the strongest of the four global recessions examined. LICs also were able to continue growing during the 2009 global recession, whereas their growth plummeted in the previous episodes.

What happens during global expansions and how does the current global expansion compare with previous ones? The duration of global expansions has varied from six years (following the 1975 recession) to 17 years (following the 1991 recession). The latest global expansion turned 10 years old in 2019. It includes a global downturn in 2012 but also the longest U.S. expansion in history. The latest expansion has registered average per capita growth comparable with previous episodes but it has also seen the weakest growth in global trade and capital flows.

The current expansion has been the weakest in advanced economies as many of them have struggled to overcome the legacies of the global financial crisis and structural weaknesses in demand. In contrast, it has been the strongest one for EMDEs in terms of per capita output growth. However, EMDEs also experienced a slowdown in growth during the expansion as a result of both external and domestic factors.

Monetary and fiscal policies often become expansionary leading into global recessions, and typically continue supporting the ensuing global recoveries. In advanced economies, monetary policies remained highly accommodative for almost the whole post-2009 decade, with central banks introducing a wide range of unconventional measures to ease credit conditions. However, after the implementation of large, coordinated, fiscal stimulus programs during 2008-09, fiscal support was withdrawn shortly into the recovery. By contrast, EMDEs have generally employed expansionary fiscal and monetary policies during most of the expansion, apart from some adjustments of monetary policy in response to cyclical conditions and financial stability concerns.

Short- and long-term global growth forecasts have both been repeatedly downgraded during the latest global expansion. During 2010-19, on average, current-year global growth forecasts have been downgraded from a year earlier in around 52 percent of countries. The long-term forecasts for global GDP growth have also steadily declined, from 3.3 percent in 2008 to 2.5 percent in 2019. These downgrades reflect not just persistently mediocre growth outturns in many countries but also protracted weakness in the fundamental drivers of growth, including productivity and investment.

Although there has been significant progress in our understanding of the global business cycle and its phases since the 2009 global recession, there remain a number of research avenues to explore. First, there is clear need to better understand the sources of the subdued growth performance that has been the hallmark of the current global expansion. Second, future work needs to focus on the cross-border spillovers and their interactions with domestic real and financial cycles. Third, global spillovers from national macro-financial linkages require further scrutiny in light of the strong connections among financial entities in different countries.

References

- Alessandria, G., J. P. Kaboski, and V. Midrigan. 2010. "The Great Trade Collapse of 2008–09: An Inventory Adjustment?" *IMF Economic Review* 58(2): 254-294.
- Allen, R. E. 2009. *Financial Crises and Recession in the Global Economy*. Third Edition. Northampton: Edward Elgar.
- Amiti, M., and D. E. Weinstein. 2011. "Exports and Financial Shocks." *Quarterly Journal of Economics* 126(4): 1841-1877.
- Arteta, C., M. A. Kose, F. Ohnsorge, and M. Stocker. 2015. "The Coming U.S. Interest Rate Tightening Cycle: Smooth Sailing or Stormy Waters?" Policy Research Note 15/02, World Bank, Washington, DC.
- Bacchetta, P., and E. van Wincoop. 2016. "The Great Recession: A Self-Fulfilling Global Panic." *American Economic Journal: Macroeconomics* 8(4): 177-194.
- Baffes, J., M. A. Kose, F. Ohnsorge, and M. Stocker. 2015. "The Great Plunge in Oil Prices: Causes, Consequences, and Policy Responses." Policy Research Note 15/01, World Bank, Washington, DC.
- Baker, S. R., and N. Bloom. 2013. "Does Uncertainty Reduce Growth? Using Disasters as Natural Experiments." NBER Working Paper 19475, National Bureau of Economic Research, Cambridge.
- Balke, N. S., and M. A. Wynne. 1995. "Recessions and Recoveries in Real Business Cycle Models." *Economic Inquiry* 33(4): 640-663.
- Barsky, R. B., and L. Kilian. 2004. "Oil and the Macroeconomy since the 1970s." *Journal of Economic Perspectives* 18(4): 115-134.
- Bec, F., O. Bouabdallah, and L. Ferrara. 2015. "Comparing the Shape of Recoveries: France, the UK and the US." *Economic Modelling* 44: 327-334.
- Bems, R., R. C. Johnson, and K.-M. Yi. 2010. "Demand Spillovers and the Collapse of Trade in the Global Recession." *IMF Economic Review* 58(2): 295-326.
- Bernanke, B. S., and C. S. Lown. 1991. "The Credit Crunch." *Brookings Papers on Economic Activity* 1991(2): 205-247.
- Bry, G., and C. Boschan. 1971. *Cyclical Analysis of Time Series: Selected Procedures and Computer Programs*. New York: National Bureau of Economic Research.
- Burns, A. F., and W. C. Mitchell. 1946. *Measuring Business Cycles*. New York: National Bureau of Economic Research.
- Caldara, D., M. Iacoviello, P. Molligo, A. Prestipino, and A. Raffo. 2019. "Does Trade Policy Uncertainty Affect Global Economic Activity?" FEDS Notes, September 4, Board of Governors of the Federal Reserve System, Washington, DC.
- Calderón, C., and J. R. Fuentes. 2014. "Have Business Cycles Changed over the Last Two Decades? An Empirical Investigation." *Journal of Development Economics* 109: 98-123.
- Callen, T. 2007. "PPP versus the Market: Which Weight Matters?" *Finance & Development* 44(1): 50-51.
- Camacho, M., and J. Martinez-Martin. 2015. "Monitoring the World Business Cycle." *Economic Modelling* 51: 617-625.

- Cerra, V., U. Panizza, and S. C. Saxena. 2013. "International Evidence on Recovery from Recessions." *Contemporary Economic Policy* 31(2): 424-439.
- Chor, D., and K. Manova. 2012. "Off the Cliff and Back? Credit Conditions and International Trade during the Global Financial Crisis." *Journal of International Economics* 87(1): 117-133.
- Chui, M., P. Levine, S. M. Murshed, and J. Pearlman. 2002. "North-South Models of Growth and Trade." *Journal of Economic Surveys* 16(2): 123-165.
- Claessens, S. 2017. "Global Banking: Recent Developments and Insights from Research." *Review of Finance* 21(4): 1513-1555.
- Claessens, S., M. A. Kose, and M. E. Terrones. 2009. "What Happens During Recessions, Crunches, and Busts?" *Economic Policy* 24(60): 653-700.
- Claessens, S., M. A. Kose, and M. E. Terrones. 2011. "Financial Cycles: What? How? When?" In *NBER International Seminar on Macroeconomics 2010*, edited by R. Clarida and F. Giavazzi, 303-343. Chicago: University of Chicago Press.
- Claessens, S., M. A. Kose, and M. E. Terrones. 2012. "How do Business and Financial Cycles Interact?" *Journal of International Economics* 87(1): 178-190.
- Cooper, R. N. 2014. "Will China's Economy Surpass the United States' in 2014?" Caixin Online, June 5.
- Cuba-Borda, P., A. Mechanick, and A. Raffo. 2018. "Monitoring the World Economy: A Global Conditions Index." IFDP Notes, June, Board of Governors of the Federal Reserve System, Washington, DC.
- Currie, D., and D. Vines, eds. 1988. *Macroeconomic Interactions between North and South*. New York: Cambridge University Press.
- Davis, S. J. 2016. "An Index of Global Economic Policy Uncertainty." NBER Working Paper 22740, National Bureau of Economic Research, Cambridge.
- di Giovanni, J., and A. A. Levchenko. 2010. "Putting the Parts Together: Trade, Vertical Linkages, and Business Cycle Comovement." *American Economic Journal: Macroeconomics* 2(2): 95-104.
- di Giovanni, J., A. A. Levchenko, and I. Mejean. 2018. "The Micro Origins of International Business-Cycle Comovement." *American Economic Review* 108(1): 82-108.
- Didier, T., M. A. Kose, F. Ohnsorge, and L. S. Ye. 2015. "Slowdown in Emerging Markets: Rough Patch or Prolonged Weakness?" Policy Research Note 15/04, World Bank, Washington, DC.
- Diebold, F. X., and K. Yilmaz. 2015. *Financial and Macroeconomic Connectedness: A Network Approach to Measurement and Monitoring*. New York: Oxford University Press.
- Eaton, J., S. Kortum, B. Neiman, and J. Romalis. 2016. "Trade and the Global Recession." *American Economic Review* 106(11): 3401-3438.
- Eckstein, O., and A. Sinai. 1986. "The Mechanisms of the Business Cycle in the Postwar Era." In *The American Business Cycle: Continuity and Change*, edited by R. J. Gordon, 39-122. Chicago: University of Chicago Press.
- Economist, The. 2001. "Going Downhill." September 27.
- Economist, The. 2008. "The Global Slumpometer." November 6.
- Eggertsson, G. B., N. R. Mehrotra, and J. A. Robbins. 2019. "A Model of Secular Stagnation: Theory and Quantitative Evaluation." *American Economic Journal: Macroeconomics* 11(1): 1-48.

- Eichengreen, B., and P. Gupta. 2016. "Managing Sudden Stops." In *Monetary Policy and Global Spillovers: Mechanisms, Effects and Policy Measures*, edited by E. G. Mendoza, E. Pastén, and D. Saravia, 9-47. Santiago: Central Bank of Chile.
- Eickmeier, S., and T. Ng. 2015. "How do US Credit Supply Shocks Propagate Internationally? A GVAR Approach." *European Economic Review* 74: 128-145.
- Federal Reserve Board. 1958. "Federal Reserve Bulletin." October, Board of Governors of the Federal Reserve System, Washington, DC.
- Feenstra, R. C., R. Inklaar, and M. P. Timmer. 2015. "The Next Generation of the Penn World Table." *American Economic Review* 105(10): 3150-3182.
- Ferrara, L., and C. Marsilli. 2019. "Nowcasting Global Economic Growth: A Factor-Augmented Mixed-Frequency Approach." *World Economy* 42(3): 846-875.
- Feyen, E., R. Letelier, I. Love, S. M. Maimbo, and R. Rocha. 2014. "The Impact of Funding Models and Foreign Bank Ownership on Bank Credit Growth." Policy Research Working Paper 6783, World Bank, Washington, DC.
- Forbes, K. J., and F. E. Warnock. 2012. "Capital Flow Waves: Surges, Stops, Flight, and Retrenchment." *Journal of International Economics* 88(2): 235-251.
- Fosu, A. K. 2013. "Impact of the Global Financial and Economic Crisis on Development: Whither Africa?" *Journal of International Development* 25(8): 1085-1104.
- Francis, N., L. E. Jackson, and M. T. Owyang. 2018. "Countercyclical Policy and the Speed of Recovery after Recessions." *Journal of Money, Credit and Banking* 50(4): 675-704.
- Frankel, J. 2014. "China is Not Yet Number One." VoxEU.org, May 9.
- Freund, C. 2009. "The Trade Response to Global Downturns: Historical Evidence." Policy Research Working Paper 5015, World Bank, Washington, DC.
- Golinelli, R., and G. Parigi. 2014. "Tracking World Trade and GDP in Real Time." *International Journal of Forecasting* 30(4): 847-862.
- Graetz, G., and G. Michaels. 2017. "Is Modern Technology Responsible for Jobless Recoveries?" *American Economic Review* 107(5): 168-173.
- Grjebine, T., U. Szczerbowicz, and F. Tripier. 2018. "Corporate Debt Structure and Economic Recoveries." *European Economic Review* 101: 77-100.
- Ha, J., M. A. Kose, and F. Ohnsorge, eds. 2019. *Inflation in Emerging and Developing Economies: Evolution, Drivers, and Policies*. Washington, DC: World Bank.
- Hall, R. E. 1993. "Macro Theory and the Recession of 1990-1991." *American Economic Review* 83(2): 275-279.
- Hamilton, J. D. 2013. "Historical Oil Shocks." In *Routledge Handbook of Major Events in Economic History*, edited by R. E. Parker and R. Whaples, 239-265. London: Routledge.
- Hamilton, J. D. 2019. "Measuring Global Economic Activity." *Journal of Applied Econometrics*, forthcoming.
- Hamilton, J. D., E. S. Harris, J. Hatzius, and K. D. West. 2016. "The Equilibrium Real Funds Rate: Past, Present, and Future." *IMF Economic Review* 64(4): 660-707.
- Hansen, A. H. 1939. "Economic Progress and Declining Population Growth." *American Economic Review* 29(1): 1-15.

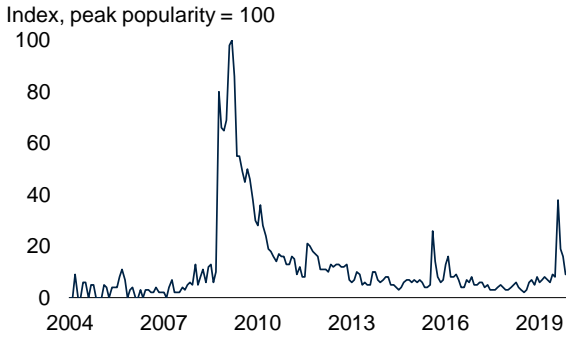
- Harding, D., and A. Pagan. 2002. “Dissecting the Cycle: A Methodological Investigation.” *Journal of Monetary Economics* 49(2): 365-381.
- Harding, D., and A. Pagan. 2016. *The Econometric Analysis of Recurrent Events in Macroeconomics and Finance*. Princeton: Princeton University Press.
- Hatzius, J., and S. J. Stehn. 2018. “The Case for a Financial Conditions Index.” Global Economic Paper, July 16, Goldman Sachs, New York.
- Hausmann, R., F. Rodríguez, and R. Wagner. 2006. “Growth Collapses.” CID Working Paper 136, Center for International Development, Harvard University, Cambridge.
- Helbling, T., R. Huidrom, M. A. Kose, and C. Otrok. 2011. “Do Credit Shocks Matter? A Global Perspective.” *European Economic Review* 55(3): 340-353.
- Herman, A., D. Igan, and J. Solé. 2017. “The Macroeconomic Relevance of Bank and Nonbank Credit: An Exploration of U.S. Data.” *Journal of Financial Stability* 32: 124-141.
- Hoshi, T., and A. K. Kashyap. 2015. “Will the U.S. and Europe Avoid a Lost Decade? Lessons from Japan’s Postcrisis Experience.” *IMF Economic Review* 63(1): 110-163.
- Huidrom, R., M. A. Kose, H. Matsuoka, and F. L. Ohnsorge. 2019. “How Important are Spillovers from Major Emerging Markets?” *International Finance*, forthcoming.
- Imbs, J. 2010. “The First Global Recession in Decades.” *IMF Economic Review* 58(2): 327-354.
- IMF (International Monetary Fund). 2019. *Fiscal Monitor: Curbing Corruption*. April. Washington, DC: International Monetary Fund.
- Knoop, T. A. 2004. *Recessions and Depressions: Understanding Business Cycles*. Westport: Praeger.
- Koepke, R. 2019. “What Drives Capital Flows to Emerging Markets? A Survey of the Empirical Literature.” *Journal of Economic Surveys* 33(2): 516-540.
- Kose, M. A., S. Kurlat, F. Ohnsorge, and N. Sugawara. 2017. “A Cross-Country Database of Fiscal Space.” Policy Research Working Paper 8157, World Bank, Washington, DC.
- Kose, M. A., P. Nagle, F. Ohnsorge, and N. Sugawara. 2020. *Global Waves of Debt: Causes and Consequences*. Washington, DC: World Bank.
- Kose, M. A., and F. Ohnsorge, eds. 2019. *A Decade After the Global Recession: Lessons and Challenges for Emerging and Developing Economies*. Washington, DC: World Bank.
- Kose, M. A., F. Ohnsorge, and N. Sugawara. 2020. “Global Growth Next Decade: Optimistic Expectations, Disappointing Outcomes.” Policy Research Working Paper, World Bank, Washington, DC.
- Kose, M. A., C. Otrok, and E. Prasad. 2012. “Global Business Cycles: Convergence or Decoupling?” *International Economic Review* 53(2): 511-538.
- Kose, M. A., C. Otrok, and C. H. Whiteman. 2003. “International Business Cycles: World, Region, and Country-Specific Factors.” *American Economic Review* 93(4): 1216-1239.
- Kose, M. A., C. Otrok, and C. H. Whiteman. 2008. “Understanding the Evolution of World Business Cycles.” *Journal of International Economics* 75(1): 110-130.
- Kose, M. A., and E. S. Prasad. 2010. *Emerging Markets: Resilience and Growth amid Global Turmoil*. Washington, DC: Brookings Institution Press.

- Kose, M. A., and M. E. Terrones. 2015. *Collapse and Revival: Understanding Global Recessions and Recoveries*. Washington, DC: International Monetary Fund.
- Kose, M. A., and K.-M. Yi. 2006. “Can the Standard International Business Cycle Model Explain the Relation between Trade and Comovement?” *Journal of International Economics* 68(2): 267-295.
- Laeven, L., and F. Valencia. 2018. “Systemic Banking Crises Revisited.” IMF Working Paper 18/206, International Monetary Fund, Washington, DC.
- Lane, P. R., and G. M. Milesi-Ferretti. 2018. “The External Wealth of Nations Revisited: International Financial Integration in the Aftermath of the Global Financial Crisis.” *IMF Economic Review* 66(1): 189-222.
- Levchenko, A. A., L. T. Lewis, and L. L. Tesar. 2010. “The Collapse of International Trade during the 2008–09 Crisis: In Search of the Smoking Gun.” *IMF Economic Review* 58(2): 214-253.
- Martínez-García, E., V. Grossman, and A. Mack. 2015. “A Contribution to the Chronology of Turning Points in Global Economic Activity (1980-2012).” *Journal of Macroeconomics* 46: 170-185.
- Mauro, P., R. Romeu, A. Binder, and A. Zaman. 2015. “A Modern History of Fiscal Prudence and Profligacy.” *Journal of Monetary Economics* 76: 55-70.
- Medas, P., T. Poghosyan, Y. Xu, J. Farah-Yacoub, and K. Gerling. 2018. “Fiscal Crises.” *Journal of International Money and Finance* 88: 191-207.
- Meller, B., and N. Metiu. 2017. “The Synchronization of Credit Cycles.” *Journal of Banking and Finance* 82: 98-111.
- Milesi-Ferretti, G.-M., and C. Tille. 2011. “The Great Retrenchment: International Capital Flows during the Global Financial Crisis.” *Economic Policy* 26(66): 285-342.
- Mumtaz, H., S. Simonelli, and P. Surico. 2011. “International Comovements, Business Cycle and Inflation: A Historical Perspective.” *Review of Economic Dynamics* 14(1): 176-198.
- Mussa, M. 2009. “World Recession and Recovery: A V or an L?” Paper presented at the fifteenth semiannual meeting on Global Economic Prospects, Peterson Institute of International Economics, April 7, Washington, DC.
- OECD (Organisation for Economic Co-operation and Development). 2019. *Tax Policy Reforms 2019: OECD and Selected Partner Economies*. Paris: OECD Publishing
- Owyang, M. T., J. Piger, and H. J. Wall. 2005. “Business Cycle Phases in U.S. States.” *Review of Economics and Statistics* 87(4): 604-616.
- Pagan, A., and K. A. Sossounov. 2003. “A Simple Framework for Analysing Bull and Bear Markets.” *Journal of Applied Econometrics* 18(1): 23-46.
- Perri, F., and V. Quadrini. 2018. “International Recessions.” *American Economic Review* 108(4-5): 935-984.
- Perry, G., and C. L. Schultze. 1993. “Was This Recession Different? Are They All Different?” *Brookings Papers on Economic Activity* 1993(1): 145-211.
- Rachel, Ł., and L. H. Summers. 2019. “On Falling Neutral Real Rates, Fiscal Policy, and the Risk of Secular Stagnation.” BPEA conference draft, Brookings Institution, March 7-8, Washington, DC.

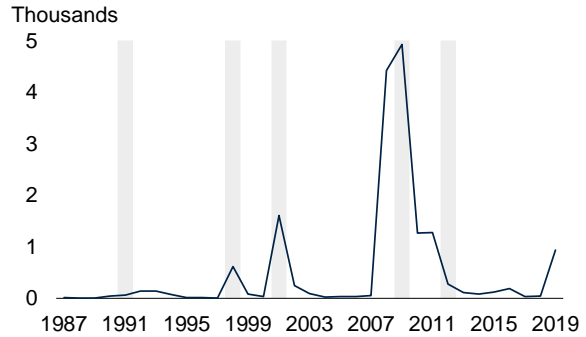
- Reinhart, C. M., and K. S. Rogoff. 2009. *This Time is Different: Eight Centuries of Financial Folly*. Princeton: Princeton University Press.
- Rogoff, K. 2013. “What’s the Problem with Advanced Economies?” *Project Syndicate*, December 4.
- Rogoff, K., D. Robinson, and T. Bayoumi. 2002. “Was It a Global Recession?” Box in *World Economic Outlook: Recessions and Recoveries*, by the International Monetary Fund, April, International Monetary Fund, Washington, DC.
- Romer, C. D., and D. H. Romer. 2012. “A Rehabilitation of Monetary Policy in the 1950’s.” *American Economic Review* 92(2): 121-127.
- Rossiter, J. 2010. “Nowcasting the Global Economy.” Bank of Canada Discussion Paper 2010-12, Bank of Canada, Ottawa.
- Schmelzing, P. 2020. “Eight Centuries of Global Real Interest Rates, R-G, and the ‘Suprasecular’ Decline, 1311–2018.” Staff Working Paper 845, Bank of England, London.
- Sichel, D. E. 1994. “Inventories and the Three Phases of the Business Cycle.” *Journal of Business & Economic Statistics* 12(3): 269-277.
- Stock, J. H., and M. W. Watson. 2012. “Disentangling the Channels of the 2007-09 Recession.” *Brookings Papers on Economic Activity* 2012(Spring): 81-135.
- Summers, L. H. 2015. “Have We Entered an Age of Secular Stagnation? IMF Fourteenth Annual Research Conference in Honor of Stanley Fischer, Washington, DC.” *IMF Economic Review* 63(1): 277-280.
- Taylor, J. B. 2014. “The Economic Hokum of ‘Secular Stagnation.’” *Wall Street Journal*, January 1.
- Terrones, M. E. 2019. “Do Fixers Perform Worse than Non-fixers during Global Recessions and Recoveries?” MPRA Paper 97524, University Library of Munich, Germany.
- Teulings, C., and R. Baldwin, eds. 2014. *Secular Stagnation: Facts, Causes and Cures*. London: CEPR Press.
- United Nations. 1959. *World Economic Survey 1958*. New York: United Nations.
- World Bank. 2009. *East Asia and Pacific Economic Update: Transforming the Rebound into Recovery*. November. Washington, DC: World Bank.
- World Bank. 2010a. *Middle East and North Africa Economic Update: Recovering from the Crisis*. April. Washington, DC: World Bank.
- World Bank. 2010b. *South Asia Economic Update: Moving Up, Looking East*. June. Washington, DC: World Bank.
- World Bank. 2016. *Global Economic Prospects: Spillovers amid Weak Growth*. January. Washington, DC: World Bank.
- World Bank. 2020. *Global Economic Prospects: Slow Growth, Policy Challenges*. January. Washington, DC: World Bank.
- Zarnowitz, V. 1992. *Business Cycles: Theory, History, Indicators, and Forecasting*. Chicago: University of Chicago Press.

Figure 1. Frequency of “global recession” in web search and news

A. Web search on “global recession”



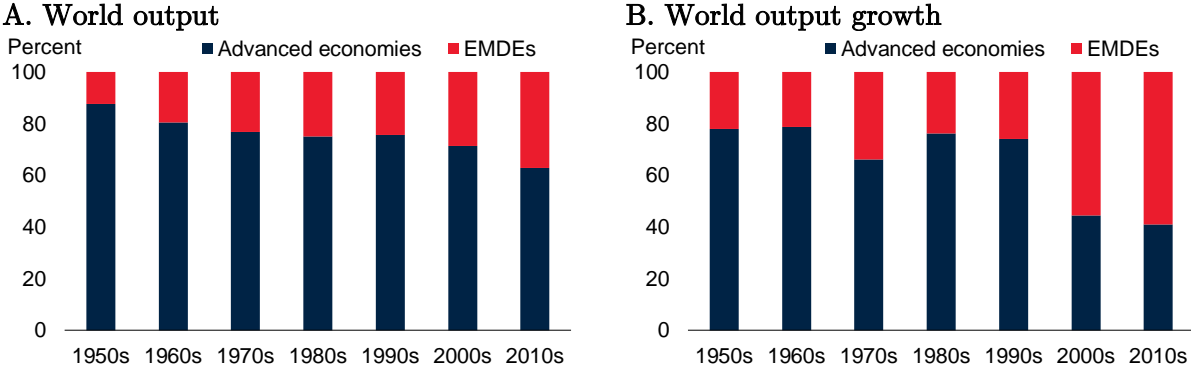
B. News articles with “global recession”



Sources: Factiva, Google, World Bank.

Note: Panel A shows monthly index numbers that represent search interest for the term “global recession” relative to the highest point (i.e., peak popularity for the term, equal to 100). The information is obtained via Google Trends on January 22, 2020, with the following features: worldwide coverage, all categories, and web search. Last observation is December 2019. Panel B shows total numbers of articles (in English) in Reuters News that carry the term “global recession” during each year. A total of 17,084 articles are found in Factiva over 1987-2019 and reported as annual data. Shaded areas indicate global recessions in 1991 and 2009, and global downturns in 1998, 2001, and 2012. The information is as of January 22, 2020.

Figure 2. Contributions of country groups to world output and growth

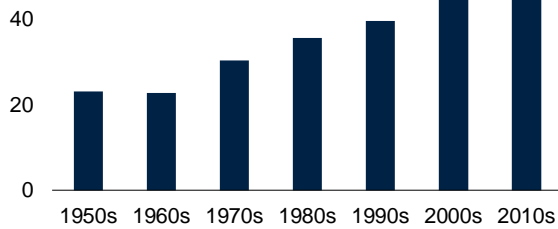


Sources: Feenstra, Inklaar, and Timmer (2015); Kose and Terrones (2015); World Bank.
 Note: Each bar in Panel A shows the average distribution of world output among country groups in the decade indicated (computed using market exchange rates). Each bar in Panel B corresponds to the average of each country group’s contribution to growth in world GDP in the decade indicated. The 2010s period refers to 2010-19, which includes estimates for 2019.

Figure 3. World trade and financial integration

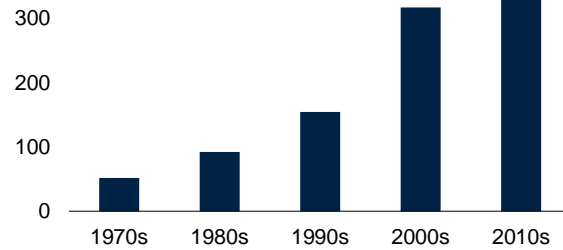
A. Trade openness

Percent of GDP
60



B. Financial openness

Percent of GDP
400

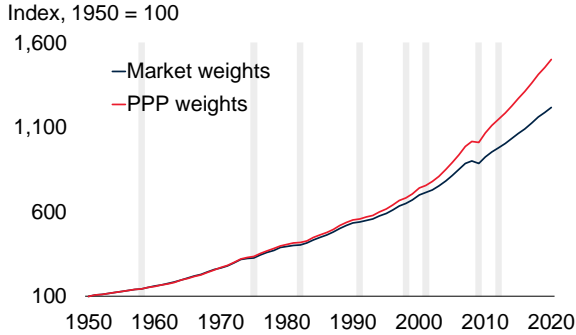


Sources: Feenstra, Inklaar, and Timmer (2015); International Monetary Fund; Lane and Milesi-Ferretti (2018); World Bank.

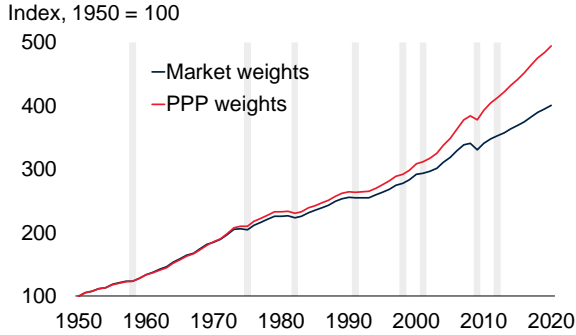
Note: Trade openness is the ratio of world exports and imports to world GDP. Financial openness is the sum of foreign assets and liabilities in percent of GDP across all countries. Each bar corresponds to the average in the decade indicated. The 2010s period refers to 2010-19, with estimates for 2019 in trade openness. For financial openness, data for 2019 are based on the numbers for the first two quarters.

Figure 4. Evolution of world output and world output per capita

A. World output



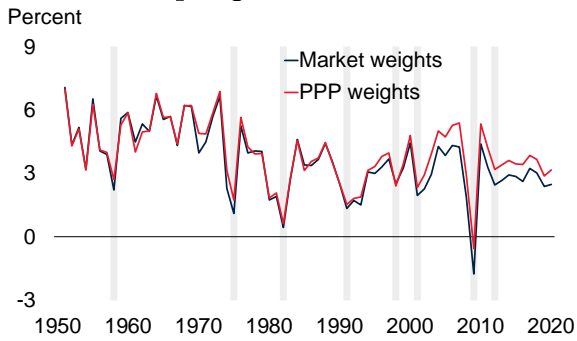
B. World per capita output



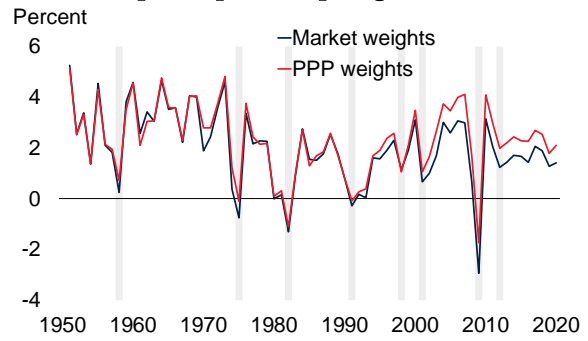
Sources: Feenstra, Inklaar, and Timmer (2015); Kose and Terrones (2015); World Bank.
 Note: Shaded areas indicate global recessions in 1975, 1982, 1991, and 2009, and global downturns in 1958, 1998, 2001, and 2012. Data for 2019 and 2020 are estimates and forecasts, respectively.

Figure 5. Growth of world output

A. World output growth



B. World per capita output growth

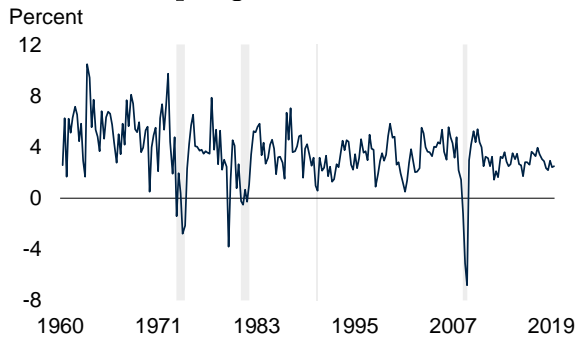


Sources: Feenstra, Inklaar, and Timmer (2015); Kose and Terrones (2015); World Bank.

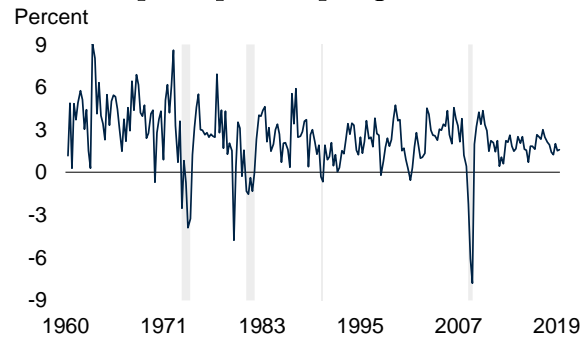
Note: Shaded areas indicate global recessions in 1975, 1982, 1991, and 2009, and global downturns in 1958, 1998, 2001, and 2012. Data for 2019 and 2020 are estimates and forecasts, respectively.

Figure 6. Growth of world output, quarterly

A. World output growth



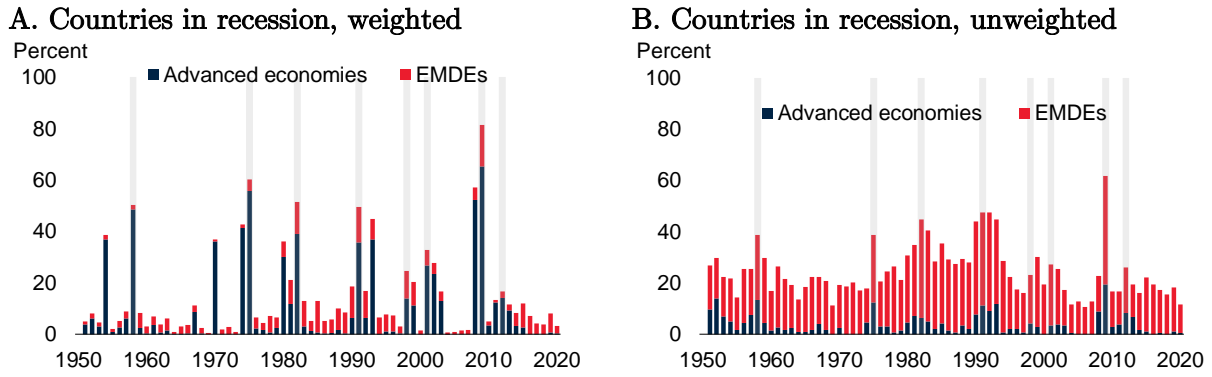
B. World per capita output growth



Sources: Feenstra, Inklaar, and Timmer (2015); Haver Analytics; Organisation for Economic Co-operation and Development; World Bank.

Note: Shaded areas show global recessions, which are identified using per capita output data and the algorithm in Harding and Pagan (2002). Last observation is 2019:3. For details, see Appendix 2.

Figure 7. International synchronization of recessions



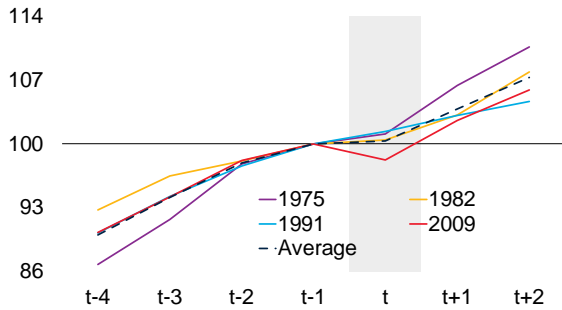
Sources: Feenstra, Inklaar, and Timmer (2015); Kose and Terrones (2015); World Bank.

Note: Panel A shows the proportion of countries (weighted by GDP using market exchange rates) in recession, defined as a contraction in per capita GDP. Panel B shows the unweighted proportion of countries in recession. Shaded areas indicate global recessions in 1975, 1982, 1991, and 2009, and global downturns in 1958, 1998, 2001, and 2012. Data for 2019 and 2020 are estimates and forecasts, respectively.

Figure 8.A. Economic activity during global recessions

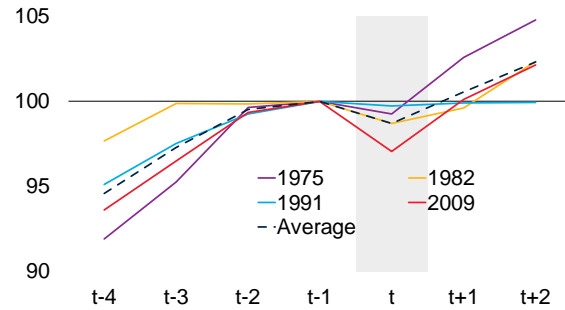
A. Output

Index, t-1 = 100



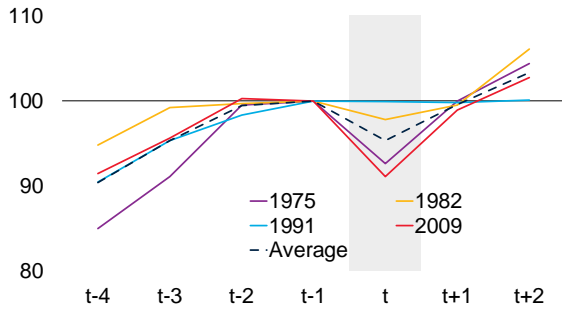
B. Output per capita

Index, t-1 = 100



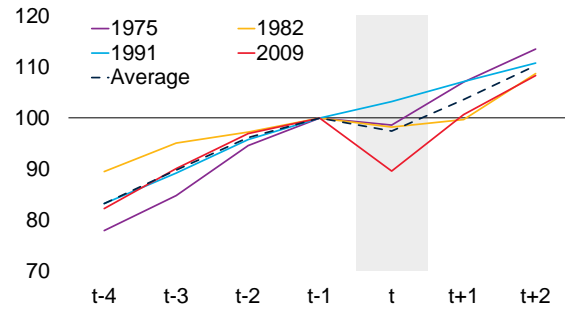
C. Industrial production

Index, t-1 = 100



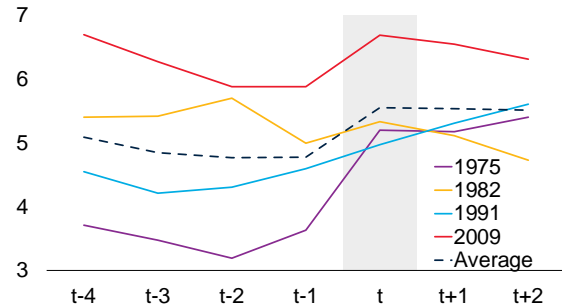
D. Trade

Index, t-1 = 100



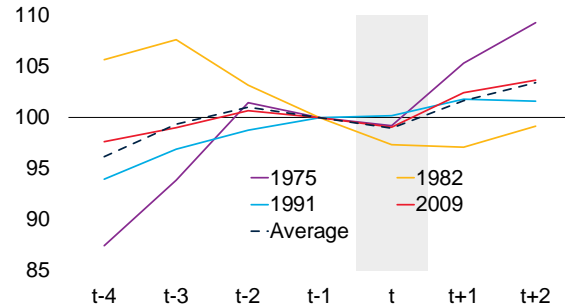
E. Unemployment rate

Percent



F. Oil consumption

Index, t-1 = 100

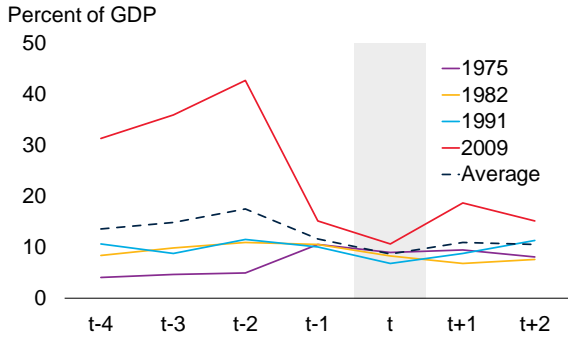


Sources: British Petroleum; Feenstra, Inklaar, and Timmer (2015); Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

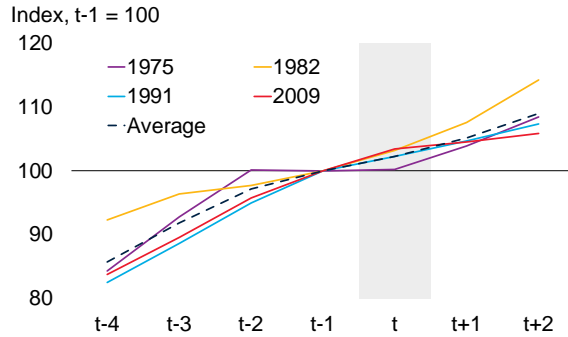
Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of four global recessions with available data. Output, output per capita, industrial production, trade, and oil consumption are index numbers equal to 100 one year before year “t” (i.e., t-1 = 100). Aggregates for output, output per capita, and industrial production are market-weighted. For details, see Appendix 2.

Figure 8.B. Financial markets during global recessions

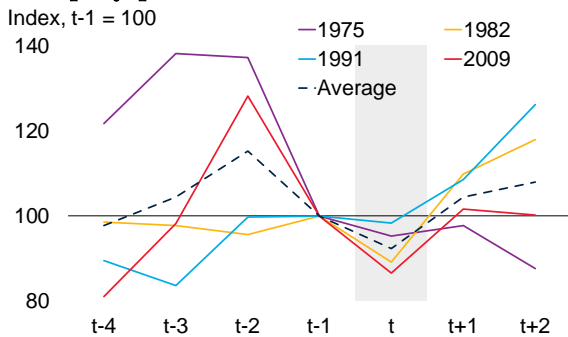
A. Capital flows



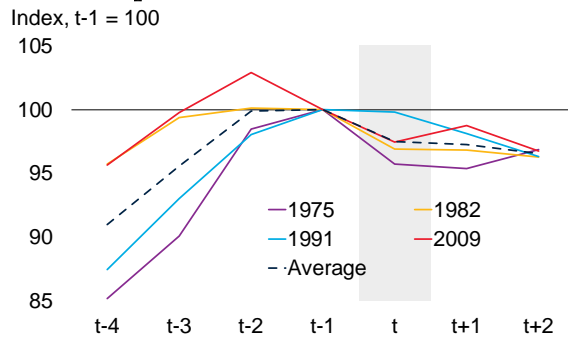
B. Credit



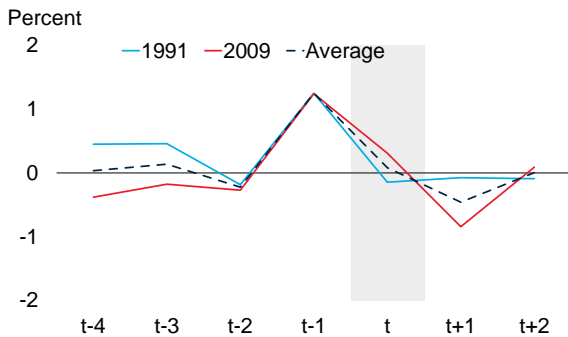
C. Equity prices



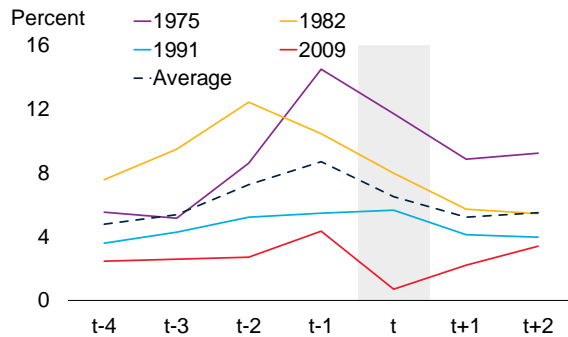
D. House prices



E. Financial conditions



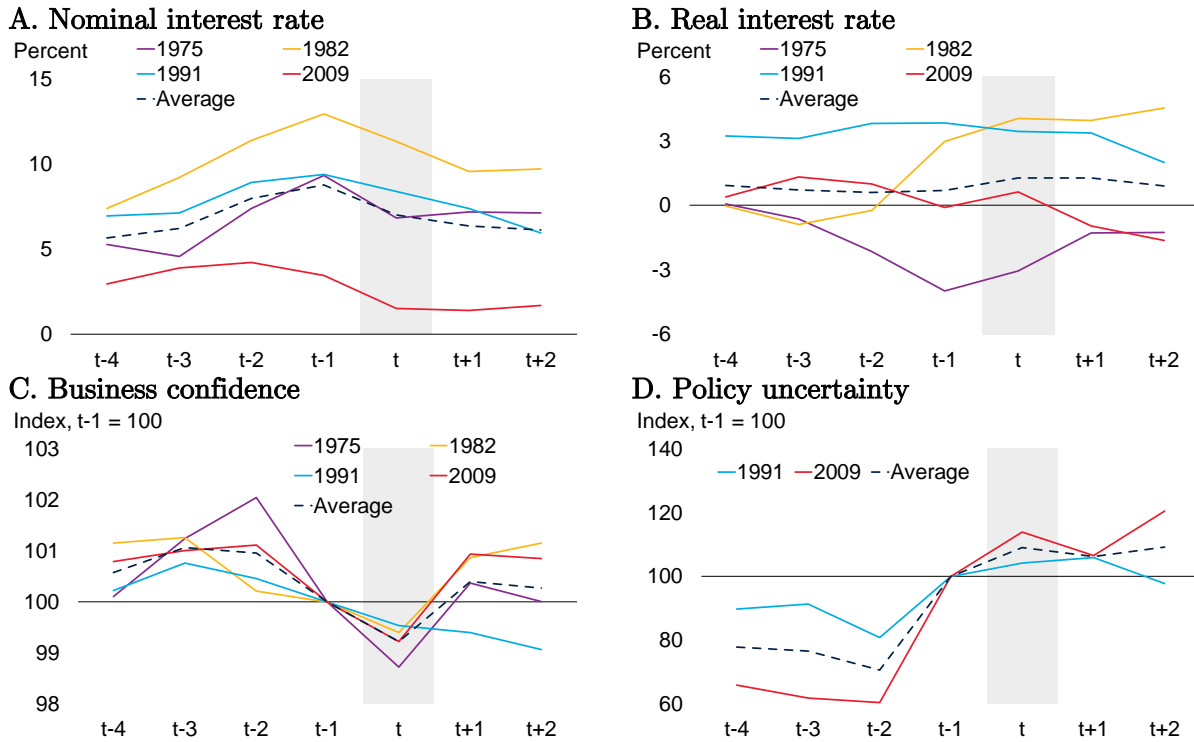
F. Inflation



Sources: Bank for International Settlements; Bloomberg; Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of four global recessions with available data. Equity prices, house prices, financial conditions, and inflation are weighted by GDP in U.S. dollars. Credit, equity prices, and house prices are index numbers equal to 100 one year before year “t” (i.e., t-1 = 100). For details, see Appendix 2.

Figure 8.C. Interest rates, confidence, and uncertainty during global recessions

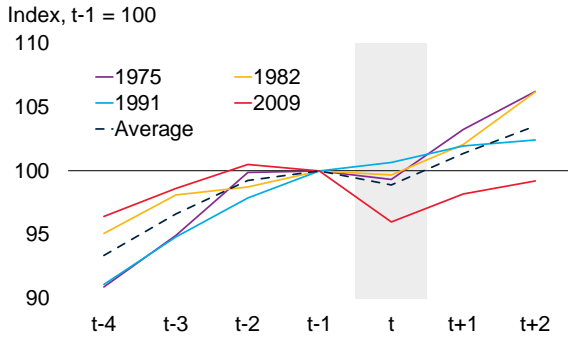


Sources: Bank for International Settlements; Davis (2016); Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

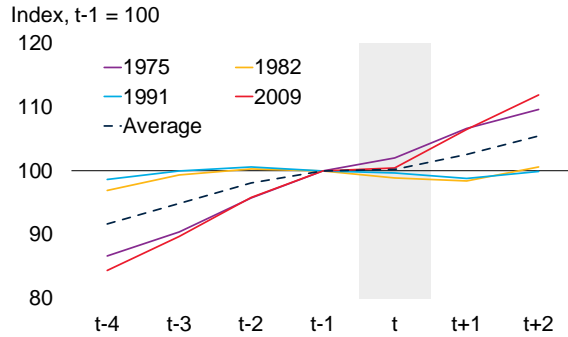
Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of four global recessions with available data. Variables are weighted by GDP in U.S. dollars at market exchange rates. Business confidence and policy uncertainty are index numbers equal to 100 one year before year “t” (i.e., t-1 = 100). For details, see Appendix 2.

Figure 8.D. Economic activity during global recessions, by country group

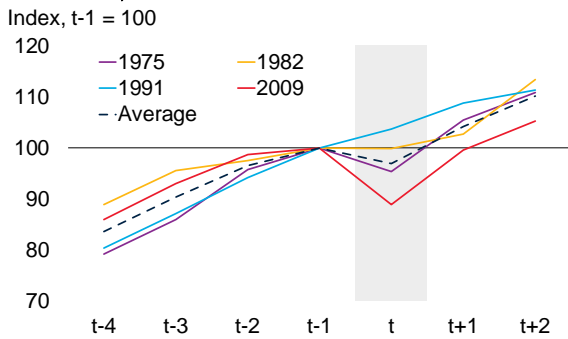
A. Output per capita, advanced economies



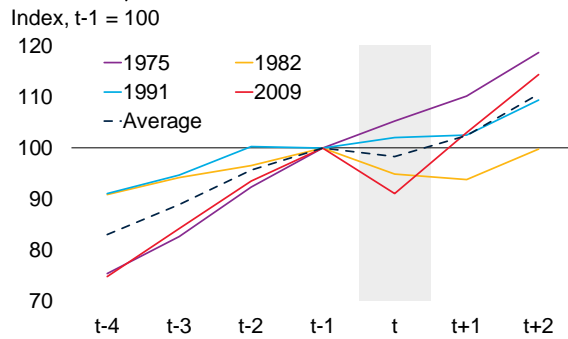
B. Output per capita, EMDEs



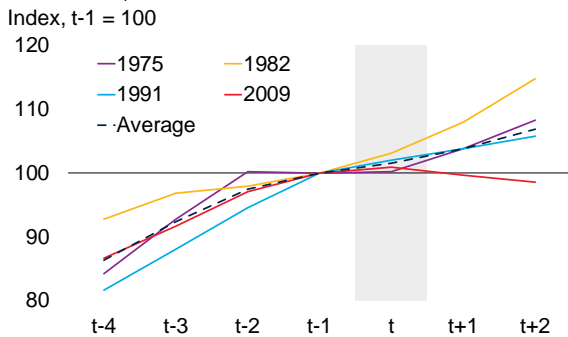
C. Trade, advanced economies



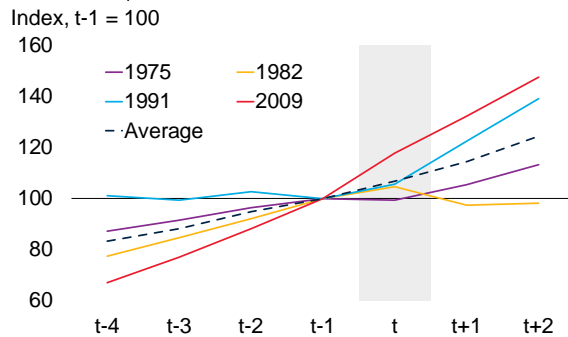
D. Trade, EMDEs



E. Credit, advanced economies



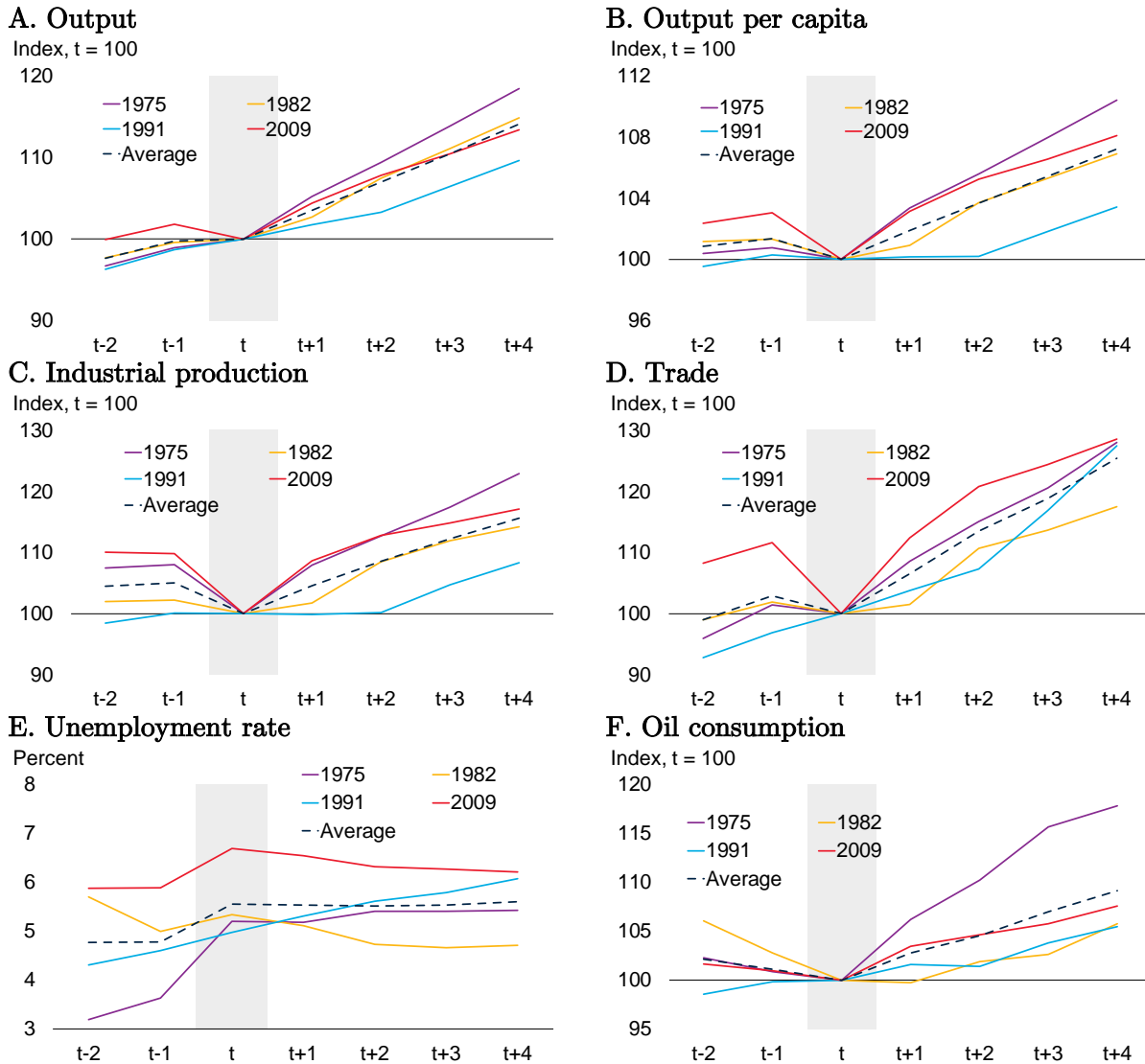
F. Credit, EMDEs



Sources: Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of four global recessions with available data. Variables are index numbers equal to 100 one year before year “t” (i.e., $t-1 = 100$). Aggregates for output per capita are market-weighted. For details, see Appendix 2.

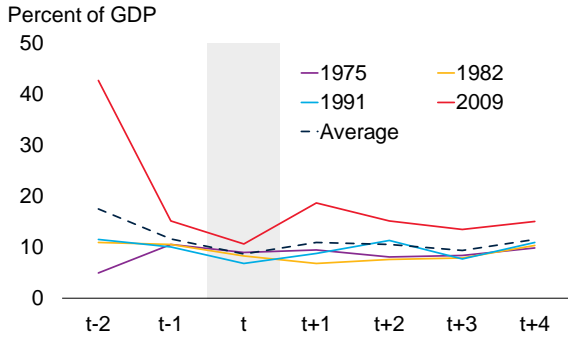
Figure 9.A. Economic activity during global recoveries



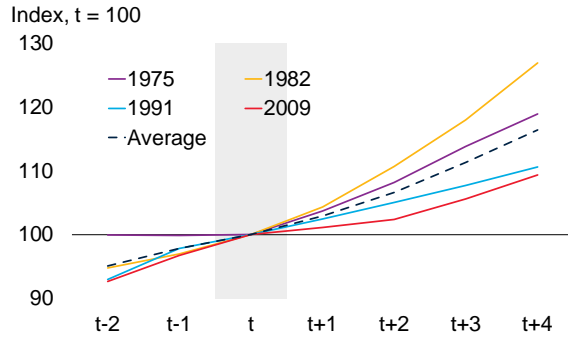
Sources: British Petroleum; Feenstra, Inklaar, and Timmer (2015); Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.
 Note: Year “ t ” denotes the year of the respective global recessions (shaded in gray). Average refers to the average of the four global recessions identified. Output, output per capita, industrial production, trade, and oil consumption are index numbers equal to 100 in recession years. Aggregates for output, output per capita, and industrial production are market-weighted. For details, see Appendix 2.

Figure 9.B. Financial markets during global recoveries

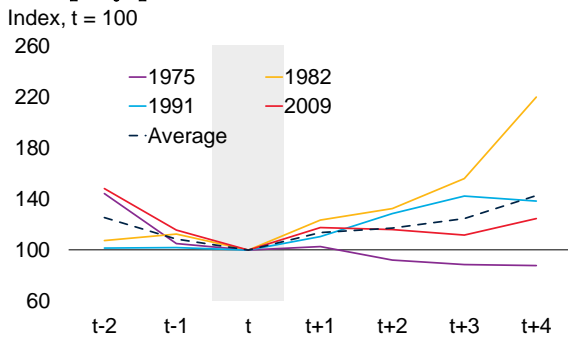
A. Capital flows



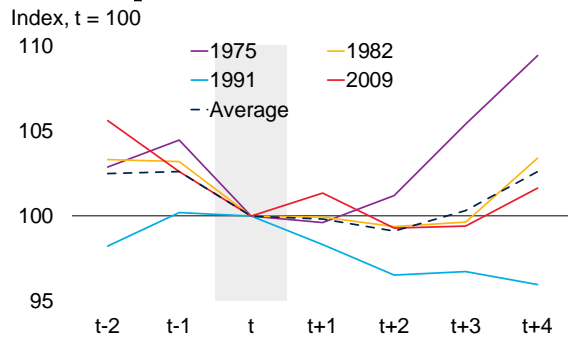
B. Credit



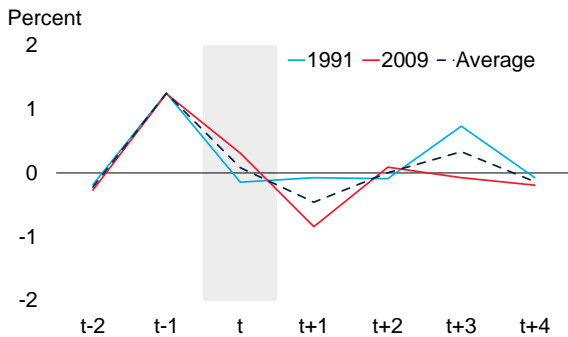
C. Equity prices



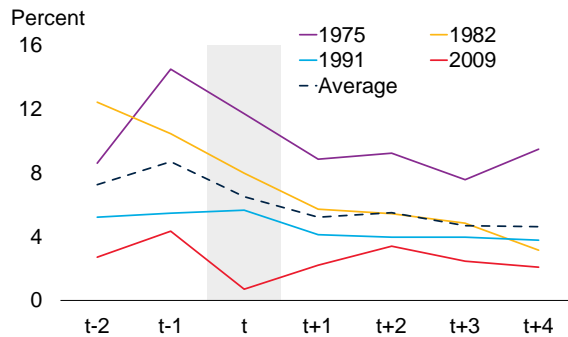
D. House prices



E. Financial conditions



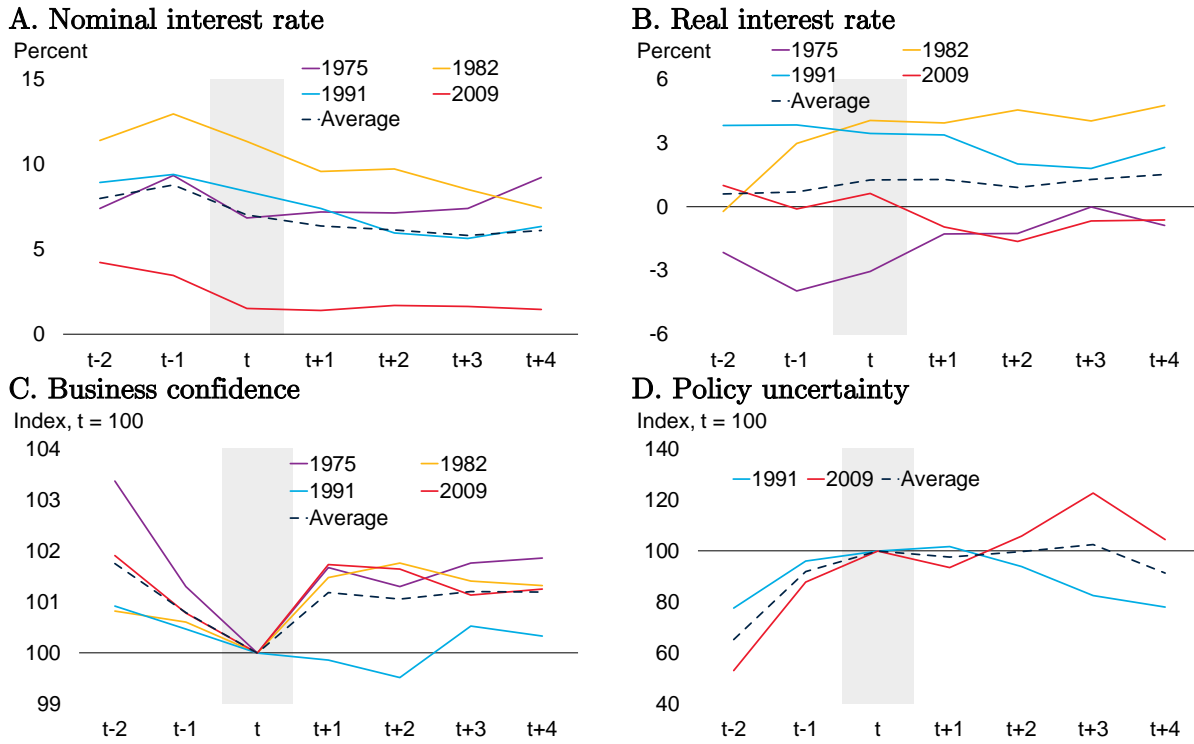
F. Inflation



Sources: Bank for International Settlements; Bloomberg; Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of four global recessions with available data. Equity prices, house prices, financial conditions, and inflation are weighted by GDP in U.S. dollars. Credit, equity prices, and house prices are index numbers equal to 100 in recession years. For details, see Appendix 2.

Figure 9.C. Interest rates, confidence, and uncertainty during global recoveries

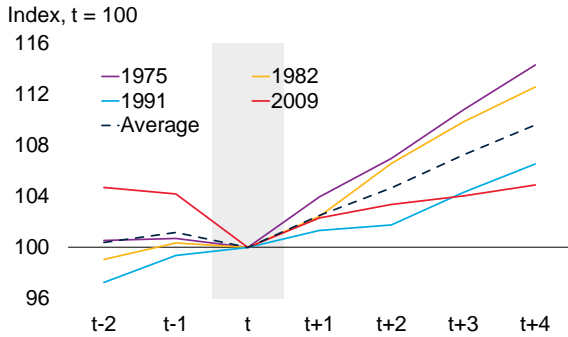


Sources: Bank for International Settlements; Davis (2016); Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

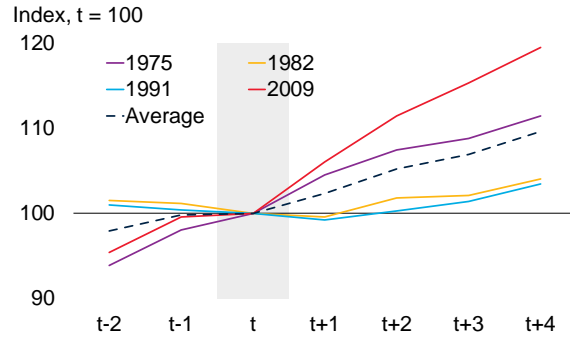
Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of four global recessions with available data. Variables are weighted by GDP in U.S. dollars. Business confidence and policy uncertainty are index numbers equal to 100 in recession years. For details, see Appendix 2.

Figure 9.D. Economic activity during global recoveries, by country group

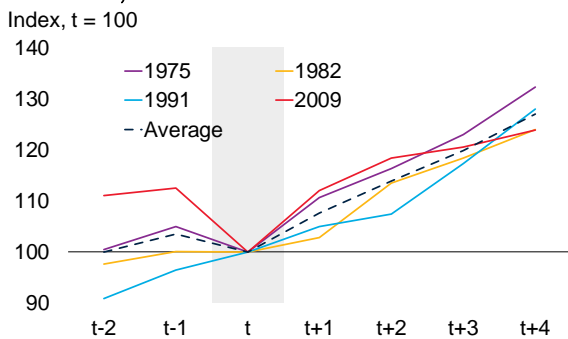
A. Output per capita, advanced economies



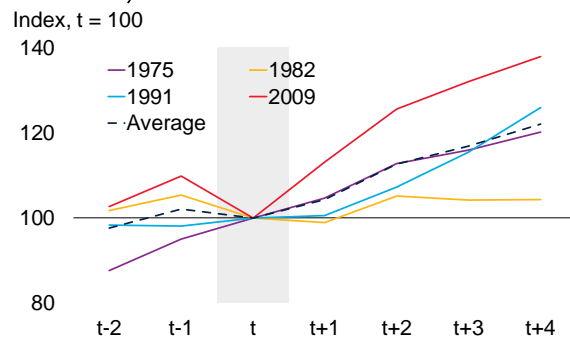
B. Output per capita, EMDEs



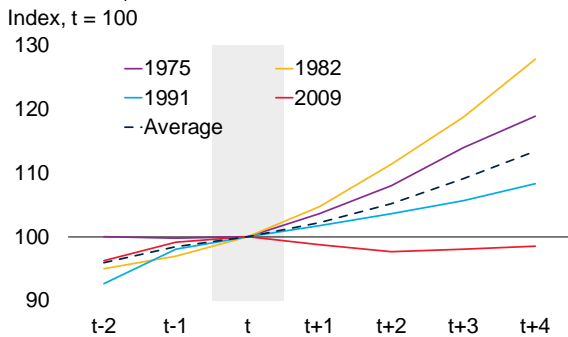
C. Trade, advanced economies



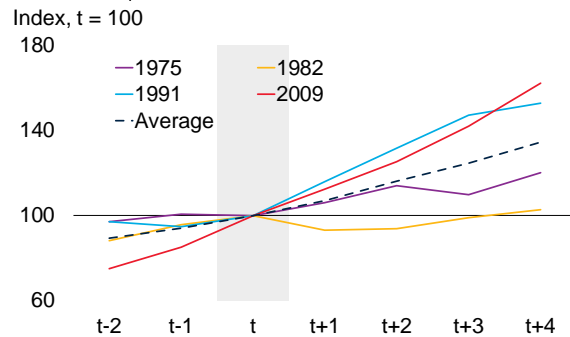
D. Trade, EMDEs



E. Credit, advanced economies



F. Credit, EMDEs

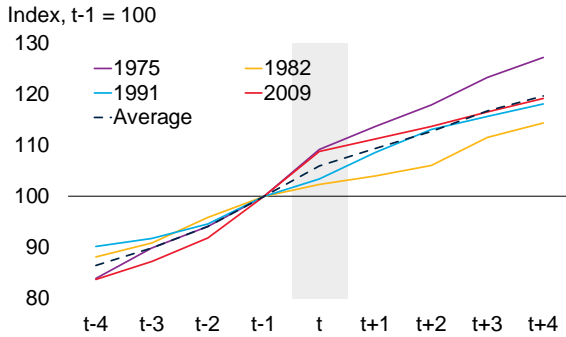


Sources: Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

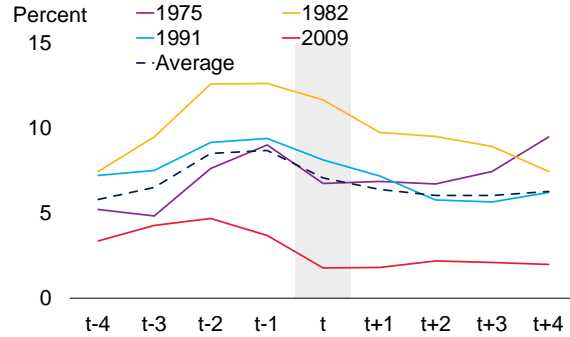
Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of the four global recessions identified. Variables are index numbers equal to 100 in recession years. Aggregates for output per capita are market-weighted. For details, see Appendix 2.

Figure 10. Fiscal and monetary policies during global recessions and recoveries

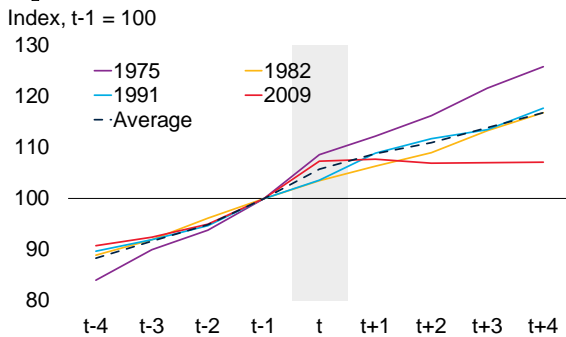
A. World, government expenditure



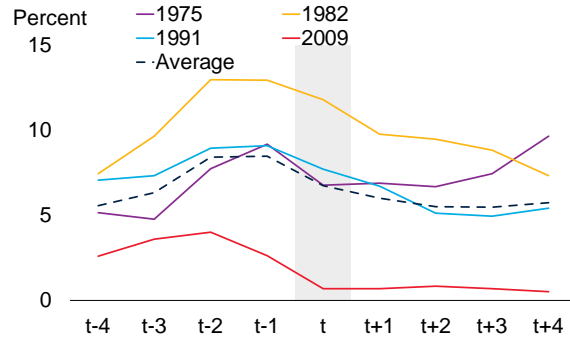
B. World, policy interest rate



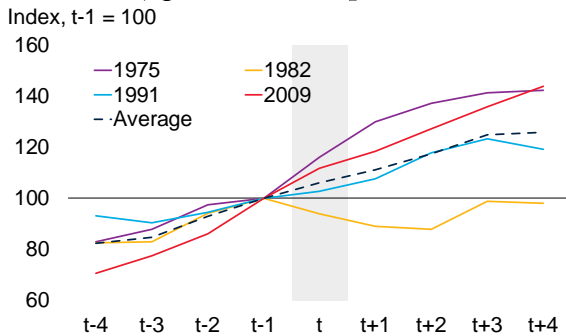
C. Advanced economies, government expenditure



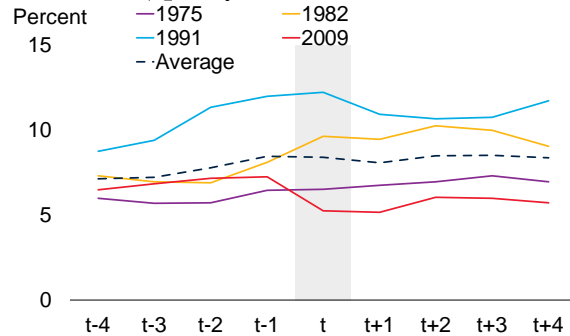
D. Advanced economies, policy interest rate



E. EMDEs, government expenditure



F. EMDEs, policy interest rate

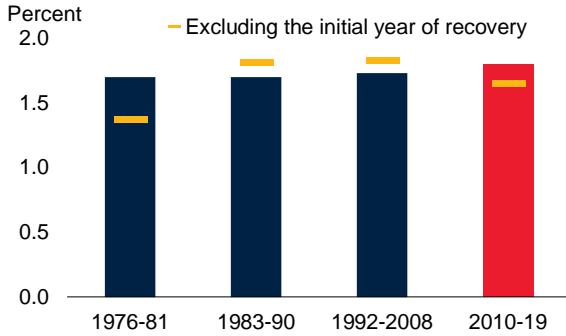


Sources: Feenstra, Inklaar, and Timmer (2015); Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

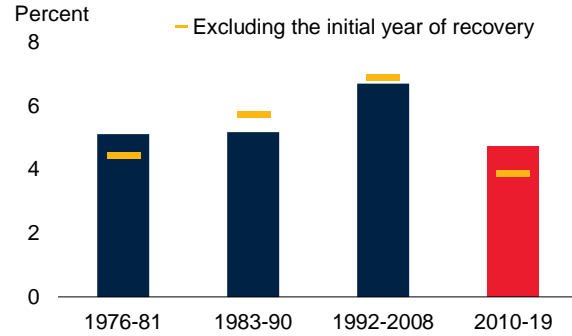
Note: Year “t” denotes the year of the respective global recessions (shaded in gray). Average refers to an average of four global recessions with available data. Government expenditure is an index number equal to 100 in recession years. Aggregates are market-weighted. For details, see Appendix 2.

Figure 11.A. Global economic activity and financial market developments in global expansions

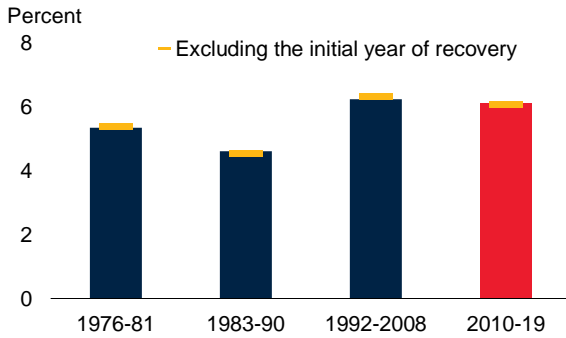
A. Output per capita



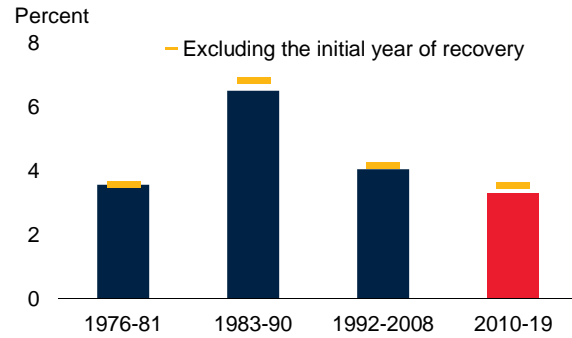
B. Trade



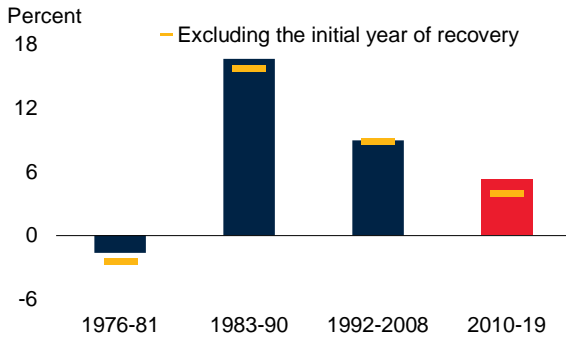
C. Unemployment rate



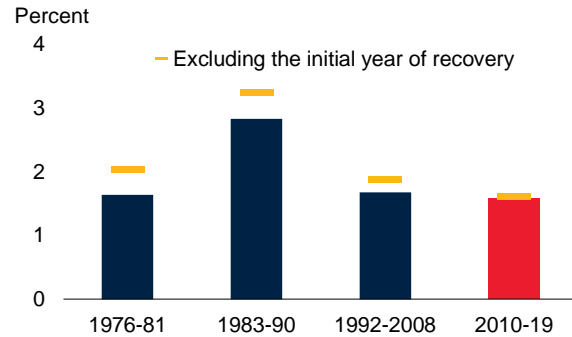
D. Credit



E. Equity prices



F. House prices

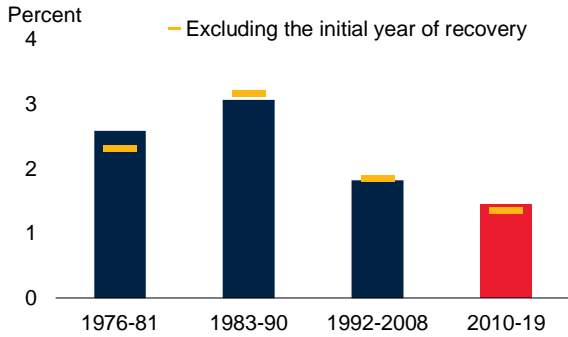


Sources: Feenstra, Inklaar, and Timmer (2015); Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

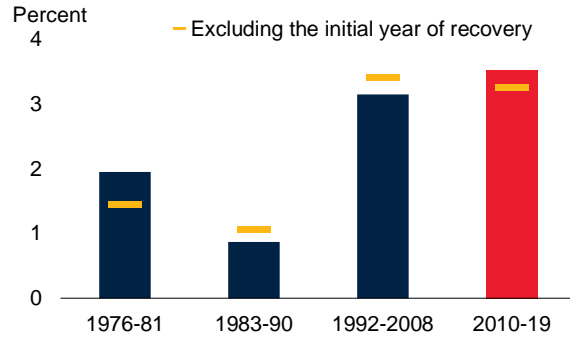
Note: Each bar represents average growth during the periods of global expansions. The growth rates of per capita output, credit, equity prices, and house prices are market-weighted (by GDP in U.S. dollars).

Figure 11.B. Global expansions by country group

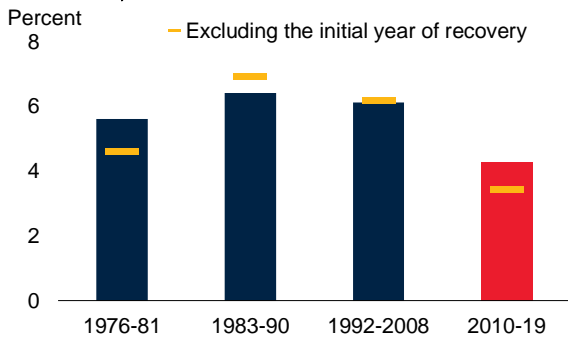
A. Output per capita, advanced economies



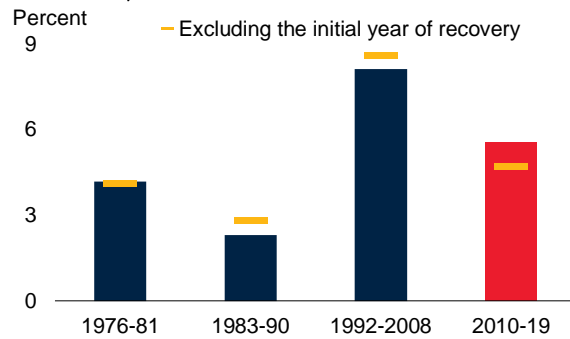
B. Output per capita, EMDEs



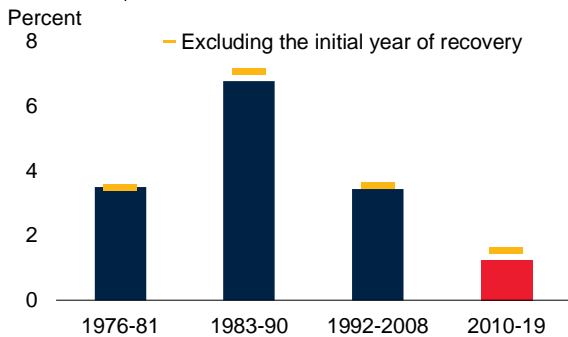
C. Trade, advanced economies



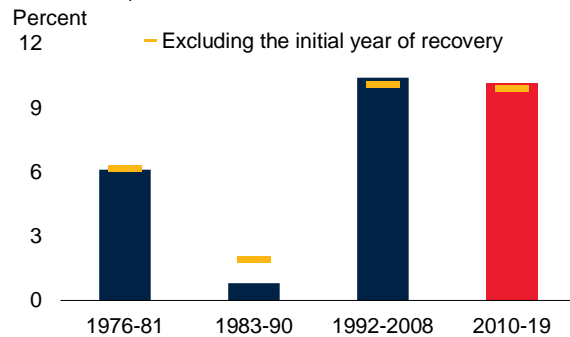
D. Trade, EMDEs



E. Credit, advanced economies



F. Credit, EMDEs

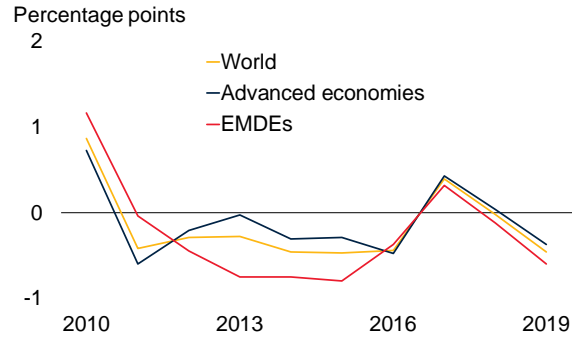


Sources: Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

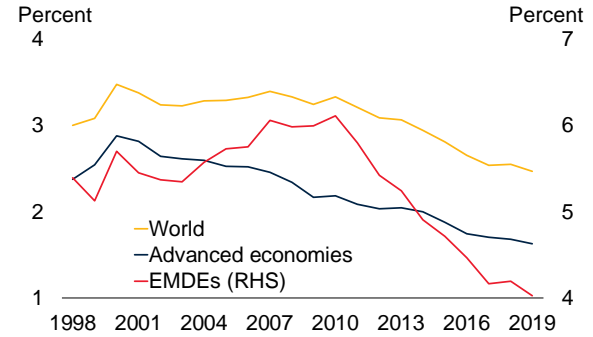
Note: Each bar represents average growth during the periods of global expansions. The growth rates of per capita output and credit are market-weighted (by GDP in U.S. dollars).

Figure 12. Global growth forecasts

A. Current-year growth forecast revisions



B. Long-term growth forecasts



Sources: Consensus Economics, World Bank.

Note: Panel A shows differences in growth forecasts for current years as of December of the year and those made a year ago, in percentage points. The sample includes 85 countries, consisting of 33 advanced economies and 52 EMDEs, weighted by GDP in U.S. dollars. In Panel B, the horizontal axis refers to the year of consensus forecast surveys. Annual averages of results from multiple surveys conducted in each year are presented. For example, forecasts for 2019 are based on surveys that were conducted in January, April, July, and October. The sample includes 38 countries, consisting of 20 advanced economies and 18 EMDEs, weighted by GDP in U.S. dollars.

Table 1. Main features of global recessions and expansions (with quarterly series)

	Duration (quarters)	Amplitude (percent)	Average (percent)
Recessions			
1974:1-1975:1	5	-9.3	-1.9
1981:4-1982:4	5	-4.5	-0.9
1990:4-1991:1	2	-0.9	-0.5
2008:3-2009:1	3	-15.3	-5.4
Average	4	-7.5	-2.2
Quarters with negative growth			
1970:4	1	-0.7	-0.7
1980:2	1	-4.8	-4.8
1981:2	1	-0.3	-0.3
1998:1	1	-0.2	-0.2
2001:3	1	-0.5	-0.5
Expansions			
1975:2-1981:3	26		2.5
1983:1-1990:3	31		2.8
1991:2-2008:2	69		2.2
2009:2-2019:3	42		2.1
Average	42		2.4

Note: The table shows the periods identified as global recessions and expansions, using the algorithm in Harding and Pagan (2002), or those with negative per capita growth. Amplitude and average are based on per capita global GDP growth. “Amplitude” is measured as a percent change in per capita output during each recession (i.e., a cumulative change over the denoted period). “Average” refers to average annualized growth during each period.

Table 2. Output growth during global downturns

	Global downturns					Global recessions	Non-recessions	All years
	1958	1998	2001	2012	Average			
World								
Output	2.2	2.5	1.9	2.5	2.3	0.3	3.9	3.7
Output per capita	0.2	1.1	0.7	1.2	0.8	-1.3	2.2	2.0
Output (PPP)	2.7	2.4	2.3	3.2	2.7	0.8	4.2	4.0
Output per capita (PPP)	0.7	1.0	1.1	2.0	1.2	-0.8	2.5	2.3
Advanced economies								
Output	1.6	2.7	1.5	1.2	1.8	-0.4	3.5	3.3
Output per capita	0.4	2.1	0.9	0.6	1.0	-1.1	2.7	2.4
Output (PPP)	1.5	2.7	1.5	1.2	1.7	-0.4	3.5	3.3
Output per capita (PPP)	0.3	2.1	0.9	0.6	1.0	-1.1	2.7	2.5
EMDEs								
Output	6.2	1.8	3.2	4.9	4.0	2.1	4.9	4.7
Output per capita	3.8	0.3	1.8	3.5	2.4	0.2	3.0	2.8
Output (PPP)	6.4	1.9	3.4	4.9	4.2	2.4	4.9	4.8
Output per capita (PPP)	4.0	0.4	2.0	3.6	2.5	0.5	3.0	2.9

Note: All variables show percent changes. “Global recessions” refers to average growth rates during the four global recessions (1975, 1982, 1991, and 2009). “Non-recessions” refers to averages during 1950-2019, which are shown as “All years,” excluding years of global recessions.

Table 3. Main features of global recessions

	Global recessions					Non-recessions	Global downturns	All years
	1975	1982	1991	2009	Average			
Activity								
Output	1.1	0.4	1.3	-1.8	0.3	3.9	2.3	3.7
Output per capita	-0.7	-1.3	-0.3	-2.9	-1.3	2.2	0.8	2.0
Industrial production	-7.4	-2.2	-0.1	-8.9	-4.6	4.0	0.3	3.5
Trade	-1.4	-1.8	3.2	-10.4	-2.6	6.3	2.2	5.8
Unemployment rate	1.6	0.3	0.4	0.8	0.8	0.0	0.2	0.1
Oil consumption	-0.8	-2.7	0.2	-1.0	-1.1	2.5	0.9	2.3
Investment	0.7	-1.1	-1.0	-5.0	-1.6	4.7	2.0	4.4
Consumption	2.6	1.6	1.9	-0.1	1.5	3.7	2.7	3.6
Output (PPP)	1.8	0.6	1.5	-0.5	0.8	4.2	2.7	4.0
Output per capita (PPP)	-0.1	-1.1	-0.1	-1.7	-0.8	2.5	1.2	2.3
Financial markets								
Capital flows	-1.6	-2.3	-3.2	-4.5	-2.9	0.5	-3.8	0.2
Credit	0.2	3.2	2.2	3.4	2.2	5.4	3.8	5.2
Equity prices	-4.8	-10.9	-1.7	-13.5	-7.7	6.2	-2.9	5.3
House prices	-4.3	-3.1	-0.2	-2.5	-2.5	2.2	1.5	1.8
Financial conditions	...	-0.2	-0.1	0.3	0.0	0.1	0.2	0.1
Inflation	-2.8	-2.5	0.2	-3.6	-2.2	0.2	-0.2	0.0
Interest rates, confidence, and uncertainty								
Nominal interest rate	-2.5	-1.6	-1.0	-1.9	-1.8	0.1	-0.4	0.0
Real interest rate	0.9	1.1	-0.4	0.7	0.6	-0.1	0.1	0.0
Business confidence	-1.3	-0.6	-0.5	-0.8	-0.8	0.1	-0.7	0.0
Policy uncertainty	...	...	4.2	14.0	9.1	3.4	31.3	3.8
Policies								
Government expenditure	9.2	2.3	3.4	8.7	5.9	4.7	4.8	4.8
Policy rate	-2.3	-1.0	-1.2	-1.9	-1.6	0.1	-0.6	0.0

Note: All variables show percent changes, except in capital flows, unemployment rates, inflation, nominal and real interest rates, and policy rate, in which percentage-point changes of these variables are reported. “Non-recessions” refers to averages during 1950-2019, which are shown as “All years,” excluding years of global recessions. “Global downturns” shows averages during the four global downturns (1958, 1998, 2001, and 2012). “fi” indicates that data are either unavailable or aggregates are not computed due to small sample size. For details, see Appendix 2.

Table 4. Main features of global recessions (by country group)

	Global recessions					Non-recessions	Global downturns	All years
	1975	1982	1991	2009	Average			
Advanced economies								
Output	0.2	0.3	1.3	-3.4	-0.4	3.5	1.8	3.3
Output per capita	-0.7	-0.3	0.6	-4.0	-1.1	2.7	1.0	2.4
Industrial production	-7.8	-2.5	-0.2	-12.4	-5.7	3.6	-0.3	3.0
Trade	-4.7	-0.1	3.7	-11.1	-3.1	6.4	1.7	5.9
Unemployment rate	1.5	1.3	0.6	2.2	1.4	-0.1	0.0	0.0
Output (PPP)	0.2	0.3	1.3	-3.3	-0.4	3.5	1.7	3.3
Output per capita (PPP)	-0.7	-0.4	0.6	-3.9	-1.1	2.7	1.0	2.5
Credit	0.2	3.1	2.0	0.9	1.6	4.9	3.0	4.7
Government expenditure	8.6	3.5	3.6	7.3	5.7	4.2	3.5	4.2
Policy rate	-2.4	-1.2	-1.4	-2.0	-1.7	0.1	-0.7	0.0
EMDEs								
Output	4.2	0.9	1.5	1.8	2.1	4.9	4.0	4.7
Output per capita	2.0	-1.2	-0.4	0.4	0.2	3.0	2.4	2.8
Industrial production	...	...	0.4	-0.2	0.1	5.4	3.1	5.0
Trade	5.3	-5.1	2.0	-9.0	-1.7	6.1	3.8	5.6
Unemployment rate	...	-0.2	0.3	0.4	0.2	0.0	0.2	0.0
Output (PPP)	4.2	1.1	1.9	2.3	2.4	4.9	4.2	4.8
Output per capita (PPP)	2.1	-0.9	0.0	0.9	0.5	3.0	2.5	2.9
Credit	-0.7	4.5	5.7	17.7	6.8	7.9	9.8	7.8
Government expenditure	16.0	-6.2	2.7	11.7	6.0	5.8	6.5	5.8
Policy rate	0.1	1.5	0.2	-2.0	0.0	0.0	0.4	0.0
LICs								
Output	0.1	1.0	-0.5	5.9	1.6	3.9	3.6	3.8
Output per capita	-2.3	-1.6	-3.3	3.0	-1.1	1.3	0.9	1.1
Trade	3.6	-5.6	-1.4	4.6	0.3	6.4	7.5	6.0
Output (PPP)	0.5	0.9	-0.2	5.0	1.6	4.0	3.6	3.9
Output per capita (PPP)	-1.9	-1.7	-3.1	2.1	-1.2	1.4	1.0	1.2

Note: All variables show percent changes, except in unemployment rates and policy rate, in which percentage-point changes of these variables are reported. See footnote of Table 3.

Table 5. Main features of global recessions (by region)

	Global recessions					Non-recessions	Global downturns	All years
	1975	1982	1991	2009	Average			
East Asia and Pacific								
Output	6.6	6.3	8.3	7.5	7.2	7.0	6.7	7.0
Output per capita	4.4	4.6	6.7	6.7	5.6	5.4	5.4	5.4
Industrial production	...	...	11.1	8.0	9.5	9.9	6.3	9.9
Trade	0.2	-2.1	16.6	-6.4	2.1	9.0	4.0	8.6
Output (PPP)	6.4	6.0	8.2	7.3	7.0	6.9	6.2	6.9
Output per capita (PPP)	4.3	4.3	6.6	6.5	5.4	5.3	5.0	5.3
Europe and Central Asia								
Output	6.2	3.0	-5.8	-5.1	-0.4	3.5	1.5	3.2
Output per capita	5.3	2.1	-6.2	-5.4	-1.0	2.9	1.3	2.6
Industrial production	...	...	...	-8.7	-8.7	3.8	1.3	3.3
Trade	8.5	-1.5	-17.1	-14.3	-6.1	5.8	3.0	5.0
Output (PPP)	6.2	3.1	-5.9	-5.4	-0.5	3.4	1.4	3.2
Output per capita (PPP)	5.2	2.2	-6.3	-5.6	-1.1	2.8	1.3	2.6
Latin America and the Caribbean								
Output	3.8	-0.6	3.3	-1.8	1.2	4.1	2.6	3.9
Output per capita	1.4	-2.8	1.4	-2.9	-0.7	2.0	0.8	1.8
Industrial production	...	...	0.3	-6.5	-3.1	2.1	0.4	1.7
Trade	-1.7	-10.4	11.2	-10.9	-3.0	6.0	2.5	5.5
Output (PPP)	3.7	-0.8	3.6	-2.0	1.2	4.0	2.6	3.8
Output per capita (PPP)	1.3	-2.9	1.7	-3.1	-0.8	1.9	0.8	1.8
Middle East and North Africa								
Output	-1.3	-6.4	6.9	0.5	-0.1	5.3	5.0	5.0
Output per capita	-4.0	-9.5	4.4	-1.6	-2.7	2.7	2.8	2.4
Industrial production	...	...	...	...	...	...	...	...
Trade	5.0	-7.3	13.4	-7.0	1.0	5.4	7.5	5.1
Output (PPP)	-0.5	-5.1	7.2	0.4	0.5	5.2	4.7	4.9
Output per capita (PPP)	-3.2	-8.2	4.7	-1.7	-2.1	2.7	2.6	2.4
South Asia								
Output	7.5	3.8	2.3	4.8	4.6	5.0	5.3	5.0
Output per capita	5.0	1.3	0.1	3.3	2.4	3.0	3.5	3.0
Industrial production	...	...	...	...	...	...	...	...
Trade	6.7	5.3	7.4	-6.5	3.2	6.9	4.8	6.6
Output (PPP)	7.6	3.9	2.3	4.7	4.6	5.0	5.3	5.0
Output per capita (PPP)	5.1	1.4	0.1	3.2	2.5	3.0	3.4	3.0
Sub-Saharan Africa								
Output	0.3	0.3	0.2	3.2	1.0	4.0	3.7	3.8
Output per capita	-2.3	-2.6	-2.6	0.4	-1.8	1.2	1.0	1.1
Industrial production	...	...	...	...	...	...	...	...
Trade	6.4	-10.3	4.5	-9.9	-2.3	4.7	2.7	4.3
Output (PPP)	0.3	0.4	0.3	3.6	1.1	4.0	3.8	3.9
Output per capita (PPP)	-2.4	-2.5	-2.6	0.8	-1.6	1.3	1.1	1.1

Note: All variables show percent changes. See footnote of Table 3. Regional aggregates include EMDEs only.

Table 6. Main features of global recoveries

	Global recoveries (initial years)					Global recoveries (first three years)					All years
	1976	1983	1992	2010	Average	1976-78	1983-85	1992-94	2010-12	Average	
Activity											
Output	5.2	2.7	1.7	4.4	3.5	4.4	3.6	2.1	3.4	3.4	3.7
Output per capita	3.4	0.9	0.2	3.1	1.9	2.6	1.7	0.6	2.1	1.8	2.0
Industrial production	7.9	1.7	-0.1	8.6	4.5	5.5	3.9	1.6	4.8	3.9	3.5
Trade	8.5	1.5	3.8	12.4	6.6	6.4	4.4	5.4	7.6	6.0	5.8
Unemployment rate	0.0	-0.2	0.3	-0.1	0.0	0.1	-0.2	0.3	-0.1	0.0	0.1
Oil consumption	6.2	-0.2	1.6	3.4	2.8	5.0	0.9	1.3	1.9	2.2	2.3
Investment	5.6	1.8	-1.8	5.3	2.7	5.0	2.8	0.3	5.1	3.3	4.4
Consumption	4.7	3.3	2.7	3.0	3.4	4.3	3.5	2.7	2.7	3.3	3.6
Output (PPP)	5.6	2.8	1.8	5.3	3.9	4.6	3.5	2.3	4.2	3.7	4.0
Output per capita (PPP)	3.8	1.0	0.3	4.1	2.3	2.8	1.7	0.8	3.0	2.1	2.3
Financial markets											
Capital flows	0.5	-1.5	2.0	8.0	2.3	-0.2	-0.1	0.3	1.0	0.2	0.2
Credit	3.7	4.3	2.4	1.1	2.9	4.4	5.7	2.5	1.8	3.6	5.2
Equity prices	2.6	23.2	10.4	17.4	13.4	-3.9	16.2	12.5	4.1	7.2	5.3
House prices	-0.4	-0.1	-1.7	1.3	-0.2	1.8	-0.1	-1.1	-0.2	0.1	1.8
Financial conditions	...	0.2	-0.1	-0.8	-0.2	...	0.3	0.2	-0.3	0.1	0.1
Inflation	-2.8	-2.3	-1.5	1.5	-1.3	-1.4	-1.0	-0.6	0.6	-0.6	0.0
Interest rates, confidence, and uncertainty											
Nominal interest rate	0.3	-1.8	-1.0	-0.1	-0.6	0.2	-0.9	-0.9	0.0	-0.4	0.0
Real interest rate	1.8	-0.1	-0.1	-1.6	0.0	1.0	0.0	-0.5	-0.4	0.0	0.0
Business confidence	1.7	1.5	-0.1	1.7	1.2	0.6	0.5	0.2	0.4	0.4	0.0
Policy uncertainty	...	...	1.7	-6.6	-2.4	...	...	-6.1	7.5	0.7	3.8
Policies											
Government expenditure	4.1	1.7	5.0	2.3	3.3	4.1	2.9	3.8	2.3	3.3	4.8
Policy rate	0.1	-1.9	-1.0	0.0	-0.7	0.2	-0.9	-0.8	0.1	-0.3	0.0

Note: All variables show percent changes, except in capital flows, unemployment rates, inflation, nominal and real interest rates, and policy rate, in which percentage-point changes of these variables are reported. “All years” refers to averages during 1950-2019. “fi” indicates that data are either unavailable or aggregates are not computed due to small sample size. For details, see Appendix 2.

Table 7. Main features of global recoveries (by country group)

	Global recoveries (initial years)					Global recoveries (first three years)					All years
	1976	1983	1992	2010	Average	1976-78	1983-85	1992-94	2010-12	Average	
Advanced economies											
Output	4.8	3.1	2.0	2.9	3.2	4.2	3.8	2.1	1.9	3.0	3.3
Output per capita	3.9	2.4	1.3	2.3	2.5	3.5	3.2	1.4	1.3	2.3	2.4
Industrial production	7.8	2.3	-0.3	7.6	4.3	5.5	3.9	1.3	3.4	3.5	3.0
Trade	10.7	2.8	5.0	12.0	7.6	7.2	5.8	5.5	6.5	6.3	5.9
Unemployment rate	0.0	0.3	0.6	0.3	0.3	0.0	-0.1	0.3	0.0	0.1	0.0
Output (PPP)	4.9	3.2	2.1	3.0	3.3	4.3	3.9	2.2	2.0	3.1	3.3
Output per capita (PPP)	4.1	2.5	1.4	2.4	2.6	3.6	3.2	1.5	1.4	2.4	2.5
Credit	3.6	4.7	1.7	-1.2	2.2	4.5	5.9	1.8	-0.6	2.9	4.7
Government expenditure	3.4	2.8	5.1	0.4	2.9	3.9	3.1	3.1	-0.1	2.5	4.2
Policy rate	0.1	-2.0	-1.0	0.0	-0.7	0.2	-1.0	-0.9	0.0	-0.4	0.0
EMDEs											
Output	6.7	1.6	0.9	7.4	4.2	5.0	2.8	2.1	6.3	4.0	4.7
Output per capita	4.5	-0.5	-0.8	6.0	2.3	2.9	0.7	0.5	4.9	2.2	2.8
Industrial production	...	...	1.4	11.0	6.2	...	...	3.6	7.9	5.7	5.0
Trade	4.6	-1.2	0.5	13.2	4.3	5.1	1.4	5.0	9.8	5.3	5.6
Unemployment rate	...	-0.5	0.3	-0.3	-0.2	...	-0.3	0.3	-0.2	-0.1	0.0
Output (PPP)	6.7	2.2	1.4	7.5	4.5	5.0	2.9	2.4	6.3	4.2	4.8
Output per capita (PPP)	4.6	0.2	-0.3	6.1	2.6	2.9	0.9	0.7	4.9	2.3	2.9
Credit	6.0	-6.8	15.8	12.5	6.9	3.3	-0.2	13.8	12.4	7.3	7.8
Government expenditure	12.0	-5.2	4.7	6.0	4.4	6.9	2.0	6.3	6.7	5.5	5.8
Policy rate	0.2	-0.2	-1.3	-0.1	-0.3	0.3	0.1	-0.5	0.2	0.0	0.0
LICs											
Output	0.9	1.3	-1.7	6.9	1.9	0.7	2.0	-0.4	6.4	2.2	3.8
Output per capita	-1.5	-1.4	-4.5	4.0	-0.8	-1.7	-0.8	-3.3	3.5	-0.6	1.1
Trade	-2.3	0.9	-6.3	15.1	1.8	4.7	7.9	-0.8	13.8	6.4	6.0
Output (PPP)	1.3	1.4	-1.3	7.2	2.1	1.0	2.1	0.0	6.3	2.3	3.9
Output per capita (PPP)	-1.1	-1.4	-4.1	4.2	-0.6	-1.4	-0.7	-2.9	3.3	-0.4	1.2

Note: All variables show percent changes, except in unemployment rates and policy rate, in which percentage-point changes of these variables are reported. See footnote of Table 6.

Table 8. Main features of global recoveries (by region)

	Global recoveries (initial years)					Global recoveries (first three years)					All years
	1976	1983	1992	2010	Average	1976-78	1983-85	1992-94	2010-12	Average	
East Asia and Pacific											
Output	3.4	7.5	10.9	9.8	7.9	6.7	8.3	11.0	8.6	8.6	7.0
Output per capita	1.4	5.8	9.5	8.9	6.4	4.8	6.5	9.6	7.8	7.2	5.4
Industrial production	...	...	10.4	14.5	12.5	...	...	13.0	11.6	12.3	9.9
Trade	2.6	7.7	16.0	18.1	11.1	8.6	9.3	17.8	12.3	12.0	8.6
Output (PPP)	3.9	7.1	10.5	9.6	7.8	6.8	7.8	10.6	8.4	8.4	6.9
Output per capita (PPP)	1.9	5.4	9.0	8.8	6.3	4.9	6.0	9.2	7.6	6.9	5.3
Europe and Central Asia											
Output	6.1	4.3	-9.4	4.6	1.4	4.9	2.7	-7.3	4.6	1.2	3.2
Output per capita	5.2	3.4	-9.8	4.2	0.8	4.0	1.9	-7.6	4.1	0.6	2.6
Industrial production	...	...	-1.7	9.5	3.9	...	...	-0.7	7.6	3.4	3.3
Trade	5.9	0.9	-22.4	11.9	-0.9	6.8	5.3	-7.1	8.4	3.3	5.0
Output (PPP)	6.1	4.3	-9.8	4.5	1.3	4.9	2.7	-7.8	4.4	1.1	3.2
Output per capita (PPP)	5.2	3.4	-10.1	4.2	0.7	4.0	1.9	-8.1	4.1	0.5	2.6
Latin America and the Caribbean											
Output	6.0	-2.5	2.5	6.7	3.2	4.8	1.8	4.0	4.6	3.8	3.9
Output per capita	3.5	-4.6	0.7	5.5	1.3	2.4	-0.4	2.2	3.5	1.9	1.8
Industrial production	...	...	0.6	7.9	4.2	...	...	4.2	3.2	3.7	1.7
Trade	1.9	-5.3	12.1	17.6	6.6	5.1	1.6	10.5	9.8	6.8	5.5
Output (PPP)	5.4	-2.4	2.9	6.7	3.1	4.6	1.6	4.2	4.7	3.8	3.8
Output per capita (PPP)	3.0	-4.5	1.0	5.5	1.2	2.2	-0.6	2.3	3.5	1.9	1.8
Middle East and North Africa											
Output	15.7	-1.5	5.8	4.8	6.2	6.1	-0.4	3.2	4.5	3.3	5.0
Output per capita	12.5	-4.8	3.5	2.6	3.4	3.1	-3.7	1.1	2.1	0.7	2.4
Industrial production	...	...	...	...	...	...	...	...	...	...	...
Trade	6.2	-3.9	6.6	1.3	2.6	2.4	-7.0	2.3	4.8	0.6	5.1
Output (PPP)	15.6	-0.5	5.3	4.1	6.1	5.9	0.1	2.9	3.4	3.1	4.9
Output per capita (PPP)	12.4	-3.8	3.0	2.0	3.4	2.9	-3.2	0.7	1.3	0.4	2.4
South Asia											
Output	2.3	6.7	5.3	9.6	6.0	4.9	5.4	5.3	7.3	5.7	5.0
Output per capita	-0.1	4.1	3.1	8.0	3.8	2.5	2.9	3.1	5.8	3.6	3.0
Industrial production	...	...	...	...	...	...	...	...	...	...	...
Trade	8.0	9.0	14.6	14.6	11.6	9.3	4.4	12.7	13.7	10.0	6.6
Output (PPP)	2.3	6.7	5.3	9.6	6.0	5.0	5.5	5.3	7.2	5.7	5.0
Output per capita (PPP)	-0.1	4.2	3.1	8.0	3.8	2.5	3.0	3.1	5.8	3.6	3.0
Sub-Saharan Africa											
Output	4.9	-1.5	-0.8	6.5	2.3	2.3	1.2	0.3	5.2	2.3	3.8
Output per capita	2.1	-4.3	-3.5	3.7	-0.5	-0.4	-1.7	-2.5	2.4	-0.6	1.1
Industrial production	...	...	...	...	...	...	...	...	...	...	...
Trade	-1.0	-7.2	-3.8	7.4	-1.2	4.1	-0.9	3.5	6.3	3.2	4.3
Output (PPP)	5.1	-1.5	-0.6	6.8	2.5	2.5	1.2	0.3	5.3	2.3	3.9
Output per capita (PPP)	2.3	-4.3	-3.4	4.0	-0.3	-0.2	-1.7	-2.5	2.5	-0.5	1.1

Note: All variables show percent changes. See footnote of Table 6. Regional aggregates include EMDEs only.

Table 9. Main features of global expansions

	Global expansions					Global expansions (excluding initial years)					All years
	1976-81	1983-90	1992-2008	2010-19	Average	1977-81	1984-90	1993-2008	2011-19	Average	
Activity											
Output	3.5	3.5	3.1	3.0	3.3	3.1	3.6	3.2	2.8	3.2	3.7
Output per capita	1.7	1.7	1.7	1.8	1.7	1.4	1.8	1.8	1.6	1.7	2.0
Industrial production	3.7	3.5	2.8	2.9	3.2	2.8	3.7	3.0	2.3	2.9	3.5
Trade	5.1	5.2	6.7	4.7	5.4	4.4	5.7	6.9	3.9	5.2	5.8
Unemployment rate	0.0	-0.1	0.1	-0.1	0.0	0.0	-0.1	0.0	-0.1	0.0	0.1
Oil consumption	1.6	1.8	1.5	1.6	1.6	0.7	2.1	1.5	1.4	1.4	2.3
Investment	3.4	3.8	3.4	3.9	3.6	2.9	4.1	3.8	3.7	3.6	4.4
Consumption	3.4	3.4	3.1	2.7	3.2	3.1	3.5	3.1	2.7	3.1	3.6
Output (PPP)	3.6	3.5	3.6	3.7	3.6	3.2	3.6	3.7	3.5	3.5	4.0
Output per capita (PPP)	1.8	1.7	2.2	2.5	2.1	1.4	1.8	2.4	2.3	2.0	2.3
Financial markets											
Capital flows	0.3	0.2	0.5	0.3	0.3	0.2	0.5	0.4	-0.6	0.1	0.2
Credit	3.6	6.5	4.1	3.3	4.4	3.6	6.8	4.2	3.5	4.5	5.2
Equity prices	-1.7	16.6	8.9	5.3	7.3	-2.5	15.6	8.8	3.9	6.5	5.3
House prices	1.6	2.8	1.7	1.6	1.9	2.0	3.2	1.9	1.6	2.2	1.8
Financial conditions	0.2	0.5	0.1	-0.1	0.1	0.2	0.5	0.1	-0.1	0.2	0.1
Inflation	-0.2	-0.3	-0.1	0.1	-0.1	0.3	0.0	0.0	0.0	0.1	0.0
Interest rates, confidence, and uncertainty											
Nominal interest rate	1.0	-0.2	-0.3	0.0	0.1	1.2	0.0	-0.2	0.1	0.2	0.0
Real interest rate	1.0	0.0	-0.2	-0.1	0.2	0.8	0.0	-0.2	0.1	0.2	0.0
Business confidence	0.1	0.2	0.0	0.1	0.1	-0.2	0.0	0.0	-0.1	-0.1	0.0
Policy uncertainty	...	0.1	2.7	6.3	3.0	...	0.1	2.8	7.7	3.5	3.8
Policies											
Government expenditure	4.2	3.0	4.1	2.8	3.5	4.3	3.2	4.0	2.9	3.6	4.8
Policy rate	1.0	-0.3	-0.3	0.1	0.1	1.2	-0.1	-0.2	0.1	0.2	0.0

Note: All variables show percent changes, except in capital flows, unemployment rates, inflation, nominal and real interest rates, and policy rate, in which percentage-point changes of these variables are reported. "All years" refers to averages during 1950-2019. "fi" indicates that data are either unavailable or aggregates are not computed due to small sample size. For details, see Appendix 2.

Table 10. Main features of global expansions (by country group)

	Global expansions					Global expansions (excluding initial years)					All years
	1976-81	1983-90	1992-2008	2010-19	Average	1977-81	1984-90	1993-2008	2011-19	Average	
Advanced economies											
Output	3.3	3.7	2.5	1.9	2.9	3.0	3.8	2.5	1.8	2.8	3.3
Output per capita	2.6	3.1	1.8	1.4	2.2	2.3	3.2	1.8	1.4	2.2	2.4
Industrial production	3.5	3.5	2.0	1.8	2.7	2.7	3.7	2.1	1.2	2.4	3.0
Trade	5.6	6.4	6.1	4.3	5.6	4.6	6.9	6.2	3.4	5.3	5.9
Unemployment rate	0.2	-0.2	0.0	-0.3	-0.1	0.3	-0.3	-0.1	-0.4	-0.1	0.0
Output (PPP)	3.4	3.8	2.6	2.0	2.9	3.1	3.8	2.6	1.9	2.8	3.3
Output per capita (PPP)	2.6	3.1	1.9	1.5	2.3	2.3	3.2	2.0	1.4	2.2	2.5
Credit	3.5	6.8	3.4	1.2	3.7	3.5	7.1	3.5	1.5	3.9	4.7
Government expenditure	3.9	3.3	2.9	1.1	2.8	4.1	3.3	2.8	1.2	2.8	4.2
Policy rate	1.0	-0.3	-0.3	0.0	0.1	1.2	-0.1	-0.3	0.0	0.2	0.0
EMDEs											
Output	4.0	3.0	4.7	4.9	4.1	3.5	3.2	4.9	4.6	4.0	4.7
Output per capita	2.0	0.9	3.2	3.5	2.4	1.4	1.1	3.4	3.3	2.3	2.8
Industrial production	...	...	5.6	5.1	5.3	...	...	5.8	4.4	5.1	5.0
Trade	4.2	2.3	8.1	5.5	5.0	4.1	2.8	8.6	4.7	5.0	5.6
Unemployment rate	-2.0	0.0	0.1	0.0	-0.5	-2.0	0.1	0.1	0.0	-0.4	0.0
Output (PPP)	4.0	3.2	4.8	5.1	4.3	3.4	3.3	5.1	4.9	4.2	4.8
Output per capita (PPP)	1.9	1.1	3.3	3.8	2.5	1.4	1.2	3.6	3.6	2.4	2.9
Credit	6.1	0.8	10.4	10.1	6.9	6.1	1.9	10.1	9.9	7.0	7.8
Government expenditure	6.8	1.4	7.1	5.7	5.3	5.8	2.4	7.2	5.7	5.3	5.8
Policy rate	0.3	0.3	-0.3	0.0	0.1	0.3	0.4	-0.2	0.0	0.1	0.0
LICs											
Output	1.3	2.5	4.0	5.9	3.4	1.4	2.6	4.3	5.8	3.5	3.8
Output per capita	-1.1	-0.4	1.1	3.0	0.6	-1.1	-0.3	1.5	2.9	0.7	1.1
Trade	1.7	4.5	7.4	8.8	5.6	2.5	5.0	8.2	8.2	6.0	6.0
Output (PPP)	1.6	2.6	4.2	6.1	3.6	1.6	2.8	4.5	6.0	3.7	3.9
Output per capita (PPP)	-0.9	-0.3	1.3	3.1	0.8	-0.8	-0.1	1.6	3.0	0.9	1.2

Note: All variables show percent changes, except in unemployment rates and policy rate, in which percentage-point changes of these variables are reported. See footnote of Table 9.

Table 11. Main features of global expansions (by region)

	Global expansions					Global expansions (excluding initial years)					All years
	1976-81	1983-90	1992-2008	2010-19	Average	1977-81	1984-90	1993-2008	2011-19	Average	
East Asia and Pacific											
Output	6.8	8.0	8.7	7.1	7.6	7.5	8.0	8.5	6.8	7.7	7.0
Output per capita	5.0	6.0	7.6	6.3	6.2	5.7	6.1	7.5	6.1	6.3	5.4
Industrial production	...	12.7	10.4	8.0	10.4	...	12.7	10.4	7.3	10.1	9.9
Trade	10.2	10.1	12.5	7.2	10.0	11.7	10.4	12.2	6.0	10.1	8.6
Output (PPP)	6.8	7.7	8.3	7.0	7.5	7.4	7.8	8.2	6.7	7.6	6.9
Output per capita (PPP)	5.0	5.8	7.3	6.3	6.1	5.7	5.8	7.2	6.0	6.2	5.3
Europe and Central Asia											
Output	2.8	1.9	2.2	3.2	2.5	2.1	1.6	2.9	3.0	2.4	3.2
Output per capita	1.9	1.1	2.1	2.7	1.9	1.2	0.8	2.8	2.5	1.8	2.6
Industrial production	...	...	3.5	4.2	3.9	...	...	3.9	3.6	3.7	3.3
Trade	4.5	1.0	6.2	5.0	4.2	4.3	1.0	8.0	4.2	4.4	5.0
Output (PPP)	2.8	1.9	2.1	3.0	2.4	2.1	1.5	2.8	2.9	2.3	3.2
Output per capita (PPP)	1.9	1.1	2.0	2.6	1.9	1.2	0.7	2.7	2.5	1.8	2.6
Latin America and the Caribbean											
Output	4.9	2.0	3.2	2.2	3.1	4.7	2.6	3.3	1.7	3.1	3.9
Output per capita	2.5	-0.1	1.7	1.1	1.3	2.3	0.6	1.8	0.6	1.3	1.8
Industrial production	...	...	3.0	0.5	1.7	...	...	3.1	-0.4	1.4	1.7
Trade	7.5	4.6	7.2	4.6	6.0	8.6	6.1	6.9	3.2	6.2	5.5
Output (PPP)	4.8	1.9	3.2	2.4	3.1	4.7	2.5	3.3	1.9	3.1	3.8
Output per capita (PPP)	2.4	-0.2	1.7	1.2	1.3	2.3	0.4	1.8	0.8	1.3	1.8
Middle East and North Africa											
Output	4.5	1.8	4.1	3.0	3.3	2.3	2.3	4.0	2.8	2.8	5.0
Output per capita	1.4	-1.3	2.2	0.9	0.8	-0.8	-0.8	2.1	0.7	0.3	2.4
Industrial production	...	...	...	...	...	...	...	...	...	...	...
Trade	0.7	0.0	5.4	3.0	2.3	-0.4	0.6	5.3	3.2	2.2	5.1
Output (PPP)	4.1	2.0	4.0	2.6	3.2	1.8	2.3	3.9	2.5	2.6	4.9
Output per capita (PPP)	1.0	-1.1	2.1	0.7	0.7	-1.3	-0.7	2.1	0.5	0.1	2.4
South Asia											
Output	4.1	5.6	6.1	6.8	5.7	4.5	5.4	6.2	6.5	5.6	5.0
Output per capita	1.6	3.1	4.2	5.5	3.6	2.0	3.0	4.2	5.2	3.6	3.0
Industrial production	...	...	...	...	...	...	...	...	...	...	...
Trade	7.2	5.1	13.0	6.9	8.0	7.0	4.5	12.9	6.1	7.6	6.6
Output (PPP)	4.1	5.6	6.1	6.8	5.7	4.5	5.4	6.2	6.5	5.7	5.0
Output per capita (PPP)	1.7	3.2	4.2	5.5	3.6	2.0	3.0	4.3	5.2	3.6	3.0
Sub-Saharan Africa											
Output	2.5	2.2	4.0	3.7	3.1	2.0	2.7	4.3	3.4	3.1	3.8
Output per capita	-0.2	-0.7	1.3	0.9	0.3	-0.7	-0.2	1.6	0.6	0.3	1.1
Industrial production	...	...	...	...	...	...	...	...	...	...	...
Trade	3.9	1.0	7.2	3.6	3.9	4.9	2.2	7.9	3.1	4.5	4.3
Output (PPP)	2.5	2.3	4.1	3.9	3.2	2.0	2.9	4.4	3.6	3.2	3.9
Output per capita (PPP)	-0.3	-0.6	1.4	1.1	0.4	-0.8	-0.1	1.7	0.8	0.4	1.1

Note: All variables show percent changes. See footnote of Table 9. Regional aggregates include EMDEs only.

Appendix 1. List of countries in the database

Advanced economies (36)		
Australia	Hong Kong SAR, China	New Zealand
Austria	Iceland	Norway
Belgium	Ireland	Portugal
Canada	Israel	Singapore
Cyprus	Italy	Slovak Republic
Czech Republic	Japan	Slovenia
Denmark	Korea, Rep.	Spain
Estonia	Latvia	Sweden
Finland	Lithuania	Switzerland
France	Luxembourg	Taiwan, China
Germany	Malta	United Kingdom
Greece	Netherlands	United States
Emerging market and developing economies (144)		
East Asia and Pacific (22)		
Cambodia*	Micronesia, Fed. Sts.*	Thailand
China	Mongolia	Timor-Leste*
Fiji*	Myanmar*	Tonga*
Indonesia	Palau*	Tuvalu*
Kiribati*	Papua New Guinea*	Vanuatu*
Lao PDR*	Philippines	Vietnam
Malaysia	Samoa*	
Marshall Islands*	Solomon Islands*	
Europe and Central Asia (24)		
Albania	Hungary	Romania
Armenia*	Kazakhstan	Russian Federation
Azerbaijan	Kosovo*	Serbia
Belarus	Kyrgyz Republic*	<i>Tajikistan*</i>
Bosnia and Herzegovina	Moldova	Turkey
Bulgaria	Montenegro	Turkmenistan*
Croatia	North Macedonia	Ukraine
Georgia	Poland	Uzbekistan*

Latin America and the Caribbean (30)

Antigua and Barbuda*	Dominican Republic	Panama
Argentina	Ecuador	Paraguay
Bahamas, The*	El Salvador	Peru
Barbados*	Grenada*	St. Kitts and Nevis*
Belize	Guatemala	St. Lucia*
Bolivia	Guyana*	St. Vincent and the Grenadines*
Brazil	<i>Haiti*</i>	Suriname*
Chile	Honduras	Uruguay
Colombia	Jamaica*	
Costa Rica	Mexico	
Dominica*	Nicaragua	

Middle East and North Africa (16)

Algeria*	Jordan	Saudi Arabia
Bahrain	Kuwait	Tunisia
Djibouti*	Lebanon*	United Arab Emirates
Egypt, Arab Rep.	Morocco	West Bank and Gaza
Iran, Islamic Rep.	Oman*	
Iraq*	Qatar	

South Asia (8)

<i>Afghanistan*</i>	India	Pakistan*
Bangladesh*	Maldives*	Sri Lanka
Bhutan*	<i>Nepal*</i>	

Sub-Saharan Africa (44)

Angola*	<i>Ethiopia*</i>	Namibia
<i>Benin*</i>	Gabon*	<i>Niger*</i>
Botswana	<i>Gambia, The*</i>	Nigeria
<i>Burkina Faso*</i>	Ghana	<i>Rwanda*</i>
<i>Burundi*</i>	<i>Guinea*</i>	Senegal
Cabo Verde*	<i>Guinea-Bissau*</i>	Seychelles*
Cameroon	Kenya	<i>Sierra Leone*</i>
<i>Chad*</i>	Lesotho	South Africa
Comoros*	<i>Liberia*</i>	Sudan*
<i>Congo, Dem. Rep.*</i>	<i>Madagascar*</i>	<i>Tanzania</i>
Congo, Rep.*	<i>Malawi*</i>	<i>Togo*</i>
Côte d'Ivoire	<i>Mali*</i>	<i>Uganda</i>
Equatorial Guinea*	Mauritania*	Zambia
<i>Eritrea*</i>	Mauritius*	Zimbabwe*
Eswatini*	<i>Mozambique</i>	

Note: The number of countries is in parentheses next to the country group name. Those in italics are low-income countries (based on the World Bank classification for FY2020). Those with * are not included in the quarterly series. The quarterly data are available in 106 countries.

Appendix 2. Definitions and sources of variables

Variable	Definition	Source
Economic activity		
Output	GDP in constant 2010 U.S. dollars (market weighted), taken from the World Bank. Prior to 1960, the series is extended using data from the Penn World Tables 9.1 (PWT 9.1). Sample includes 180 countries, including 36 advanced economies and 144 EMDEs. For PPP-weighted series, GDP is in constant 2010 international dollars.	Feenstra, Inklaar, and Timmer (2015); World Bank.
Output per capita	GDP per capita, in constant 2010 U.S. dollars (market weighted), taken from the World Bank. Prior to 1960, both GDP and population series are extended using data from PWT 9.1. Sample includes 180 countries. For PPP-weighted series, GDP per capita is in constant 2010 international dollars.	Feenstra, Inklaar, and Timmer (2015); World Bank.
Industrial production	Industrial production index (if not available, manufacturing production index is used). Data are obtained at a quarterly frequency and used as annual averages of year-on-year growth rates. For aggregated groups, market-weighted output is used as a weight. The main source of the series is the World Bank and, for countries and quarters without data, the series is extended using growth rates of data from the Organisation for Economic Co-operation and Development (OECD) and Haver Analytics.	Haver Analytics, OECD, World Bank.
Trade	Exports plus imports of goods and services, in constant 2010 U.S. dollars, taken from the World Bank. Prior to 1960, the series of exports and imports are extended using data from PWT 9.1. Trade for aggregated groups is the sum of exports and imports of individual countries.	Feenstra, Inklaar, and Timmer (2015); World Bank.
Unemployment rate	Unemployment, in percent of labor force, taken from the International Monetary Fund (IMF). Data for aggregated groups are computed as the sum of those unemployed in individual countries divided by the sum of labor force.	IMF.
Oil consumption	Oil consumption, in thousand barrels per day. Oil consumption in advanced economies and EMDEs is computed as the sum of consumption in individual countries. If there are differences between the world total and the sum of advanced economies and EMDEs, the residuals are added to the EMDE aggregate. The number of world oil consumption for 2019 is based on data over the first nine months of the year.	British Petroleum, U.S. Energy Information Administration.

Appendix 2. Definitions and sources of variables (continued)

Variable	Definition	Source
Financial market		
Capital flows	Total capital flows, defined as the sum of absolute values of outflows (net acquisition of financial asset, including direct, portfolio, and other assets) and inflows (net incurrence of liabilities, including direct, portfolio, and other liabilities), in current U.S. dollars, taken from the IMF Balance of Payments Statistics (sixth edition). The figures for 2019 show data over the first two quarters of the year. For the historical series, the statistics based on the fifth edition are also used. The series is shown as a percent of GDP, which is taken from the World Bank and PWT 9.1.	Feenstra, Inklaar, and Timmer (2015); IMF; World Bank.
Credit	Nominal credit provided by banks and other financial corporations, deflated by the consumer price index (CPI). Data are at a quarterly frequency and shown as annual averages of year-on-year growth of real credit. Nominal credit series is taken from the IMF (International Financial Statistics: IFS), titled claims on private sector (by depository or financial corporations), and the Bank for International Settlements. CPI is taken from the Bank for International Settlements, Haver Analytics, and the IMF. Credit for aggregated groups is computed as follows. First, real credit (in local currency) is converted to constant 2010 U.S. dollars, and then U.S.-dollar real credit in individual countries is aggregated into respective groups.	Bank for International Settlements, Haver Analytics, IMF.
Equity prices	Share price index, deflated by CPI. Data are at a quarterly frequency and used as annual averages of year-on-year growth of real equity prices. Data are from the IMF (IFS) and Haver Analytics and available as period averages and end-of-period values. The one with longer data availability is used as the main series. Growth in aggregated groups is computed with market-weighted output as a weight. CPI is taken from the Bank for International Settlements, Haver Analytics, and the IMF.	Bank for International Settlements, Haver Analytics, IMF, World Bank.
House prices	House (or property) prices, deflated by CPI. Data are at a quarterly frequency and used as annual averages of year-on-year growth of real house prices. Data are from the Bank for International Settlements, Haver Analytics, and OECD. Growth in aggregated groups is computed with market-weighted output as a weight. CPI is taken from the Bank for International Settlements, Haver Analytics, and the IMF.	Bank for International Settlements, Haver Analytics, IMF, OECD, World Bank.
Financial conditions	An index of financial conditions, computed as a weighted average of short-term and long-term interest rates, trade-weighted dollar, an index of credit spreads, and the ratio of equity prices to the 10-year average of earnings per share, as explained in Hatzius and Stehn (2018). Higher index numbers reflect tighter financial conditions. Data are at a monthly frequency and used as annual averages of year-on-year growth of the index. Growth in aggregated groups is computed with market-weighted output as a weight.	Bloomberg, Goldman Sachs, World Bank.
Inflation	Change in CPI in percent. Data are at a quarterly frequency and used as annual averages of year-on-year percent changes of CPI. The series is taken from the Bank for International Settlements, Haver Analytics, and the IMF. Inflation in aggregated groups is computed with market-weighted output as a weight. In order to eliminate an effect of countries with a history of high inflation, countries whose average inflation over the entire sample period (based on quarterly data) is above the top 20th percentile, are excluded.	Bank for International Settlements, Haver Analytics, IMF, World Bank.

Appendix 2. Definitions and sources of variables (continued)

Variable	Definition	Source
Interest rates, confidence, and uncertainty		
Shor-term interest rate (nominal and real)	Treasury bill rates or money market rates, with the maturity of three months or less. In countries where 3-month rates are unavailable, shorter maturity rates (including overnight rates) are used. Data are at a quarterly frequency and used as annual averages. The real short-term interest rate is the difference between nominal rate and inflation in the following quarter (as a proxy of expected inflation). Data are taken from different sources, and the data series with the longest time coverage is used as the main series. Then, the main series is spliced with those from other data sources. Data for aggregated groups are computed with market-weighted output as a weight.	Bank for International Settlements, Haver Analytics, IMF, OECD, World Bank.
Business confidence	Business confidence index, originally taken from the European Commission, OECD, and country sources (including statistical offices, central banks, academic institutions, and think tanks). The series is obtained as quarterly data and used as annual averages. Data from different sources are first standardized and converted to an index equal to 100 in 2015-18. Confidence for aggregated groups is computed with market-weighted output as a weight.	European Commission, OECD, country sources, World Bank.
Policy uncertainty	Economic policy uncertainty index, which is based on the frequency of articles in domestic newspapers mentioning economic policy uncertainty. Country-level indices are at a monthly frequency and used as annual averages. Data are first converted to a 6-month moving average and then an index equal to 100 in 2015-18. Aggregated policy uncertainty is computed with market-weighted output as a weight, based on 20 countries with available data.	Davis (2016); World Bank.
Policies		
Government expenditure	Government primary expenditure (i.e., government total expenditure excluding interest expense) in local currency, deflated by GDP deflator. The expenditure series is first taken from the IMF and then extended with data in Mauro et al. (2015). GDP deflator is taken from the IMF, PWT 9.1, and the World Bank. Real government expenditure growth in aggregated groups is computed with market-weighted output as a weight.	IMF; Mauro et al. (2015); World Bank.
Policy interest rate	Nominal central bank policy rates. Data are at a quarterly frequency and used as annual averages. Data are taken from different sources, and the data series with the longest time coverage is used as the main series. Then, the main series is spliced with those from other data sources. Data for aggregated groups are computed with market-weighted output as a weight.	Bank for International Settlements; Haver Analytics; IMF; OECD; World Bank.

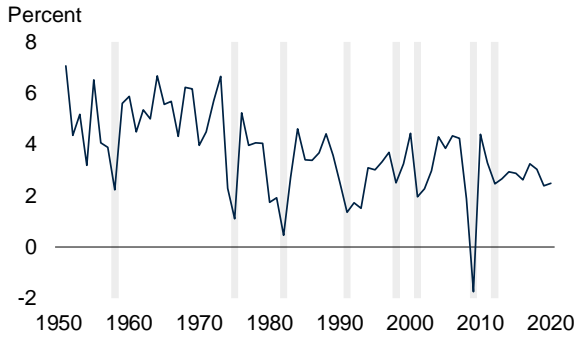
Appendix 2. Definitions and sources of variables (continued)

Variable	Definition	Source
Quarterly series		
Output (per capita) growth	Quarterly real GDP is taken from Haver Analytics and OECD. Quarter-on-quarter annualized growth rates of seasonally-adjusted real GDP are computed. If the original data are not seasonally-adjusted, the U.S. Census X-13 program is used to perform seasonal adjustment first. Quarterly growth for aggregated groups is computed with market-weighted annual output as a weight—the same weights are applied to four quarters in given years. In computing per capita growth, population data are used on an annual basis and taken from the World Bank and PWT, and therefore, the same population growth numbers are used in four quarters in given years. As a result, output per capita growth is calculated as the difference between aggregated annualized quarterly GDP growth and annual population growth. When computing growth rates over two quarters with different samples, countries are restricted to the common samples between these two quarters and with GDP and population. Sample includes 106 countries, though the sample size varies by quarter, over 1960:1-2019:3. Data for the 1950s are excluded, due to the limited data availability.	Feenstra, Inklaar, and Timmer (2015); Haver Analytics; OECD; World Bank.

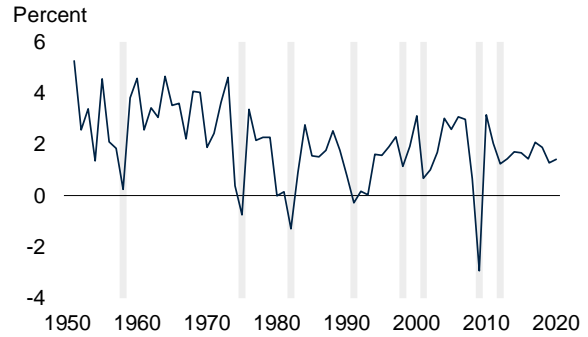
Note: Country-group aggregates are not computed, if the sample size is limited—specifically, data need to be available at least for 10 countries in all variables except in financial conditions, short-term interest rates, business confidence, policy uncertainty, and policy interest rates (at least 4 countries, because of more limited data availability in the original series). The sample coverage mentioned in the table is the maximum number of countries and the sample size varies by year or quarter. Figures A2.1 to A2.4 display time series data of global aggregate. Output from other data sources is also utilized for comparison purposes: the IMF World Economic Outlook (October 2019) has annual data available since 1980 and the United Nations National Accounts Main Aggregates Database has annual data starting in 1970.

Figure A2.1. Global activity

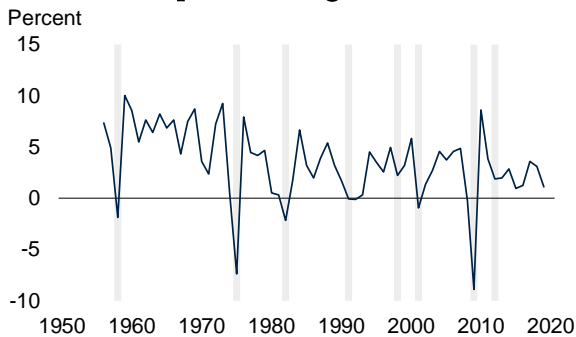
A. Output growth



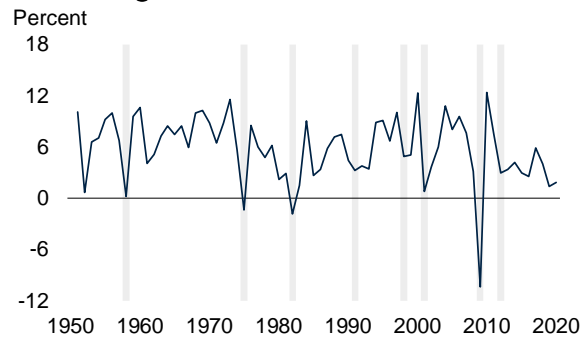
B. Output per capita growth



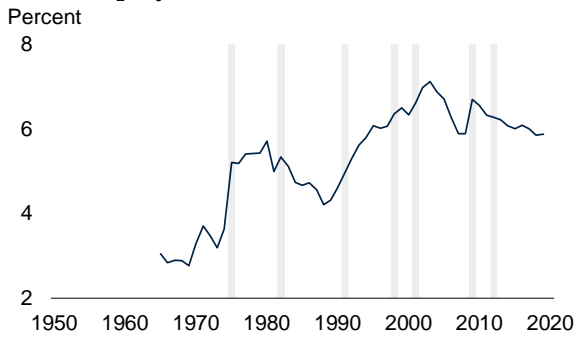
C. Industrial production growth



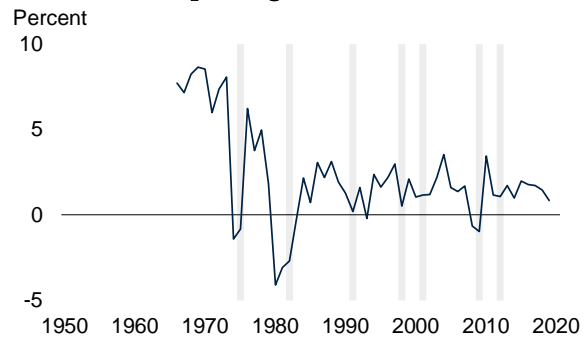
D. Trade growth



E. Unemployment rate



F. Oil consumption growth

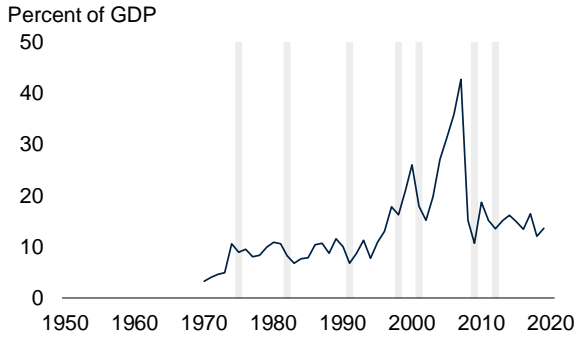


Sources: British Petroleum; Feenstra, Inklaar, and Timmer (2015); Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

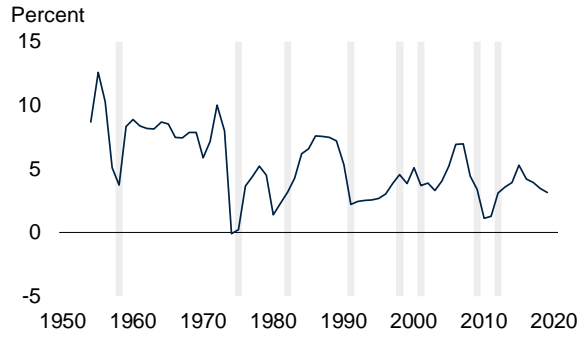
Note: Aggregates for output, output per capita, and industrial production are market-weighted. Shaded areas indicate global recessions in 1975, 1982, 1991, and 2009, and global downturns in 1958, 1998, 2001, and 2012. World aggregates are not computed if data are available in less than 10 countries.

Figure A2.2. Global financial markets

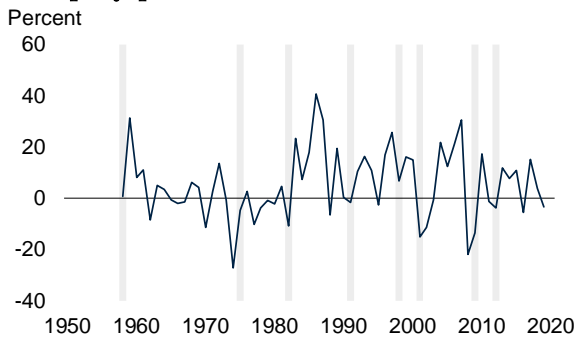
A. Capital flows



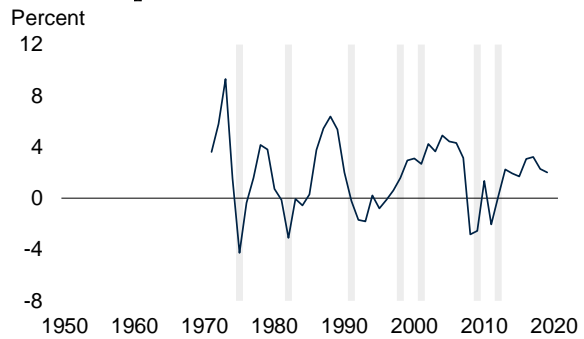
B. Credit



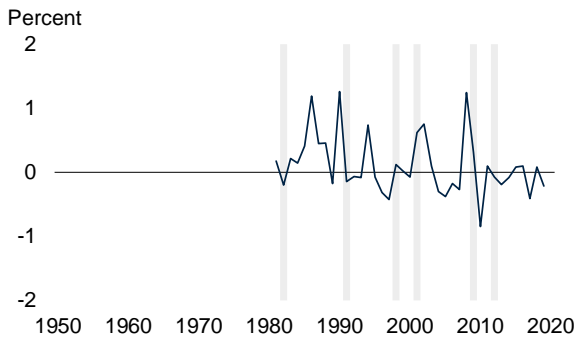
C. Equity prices



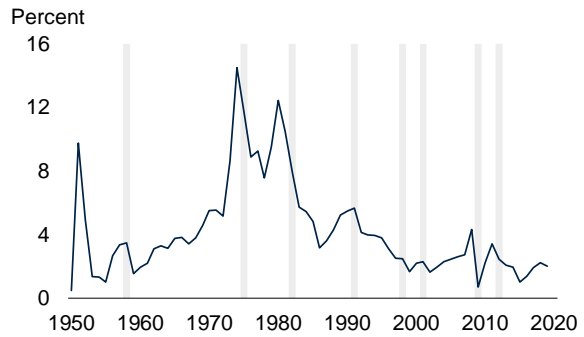
D. House prices



E. Financial conditions index



F. Inflation

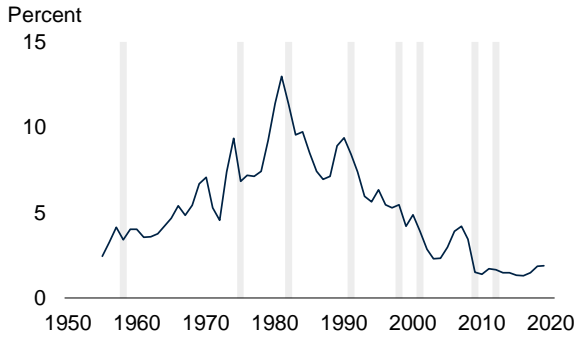


Sources: Bank for International Settlements; Bloomberg; Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; World Bank.

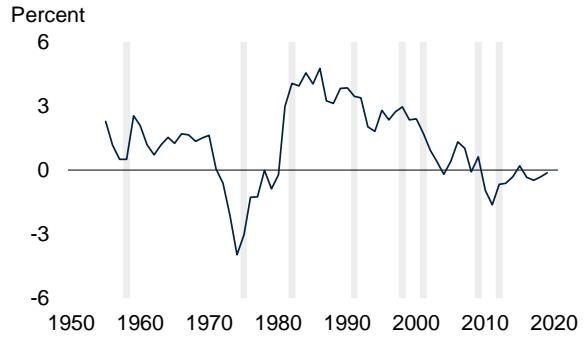
Note: Equity prices, house prices, financial conditions index, and inflation are weighted by GDP in U.S. dollars. Shaded areas indicate global recessions in 1975, 1982, 1991, and 2009, and global downturns in 1958, 1998, 2001, and 2012. World aggregates are not computed if data are available in less than 10 countries (in Panels A to D, and F) and 4 countries (in Panel E).

Figure A2.3. Global interest rates, confidence, and uncertainty

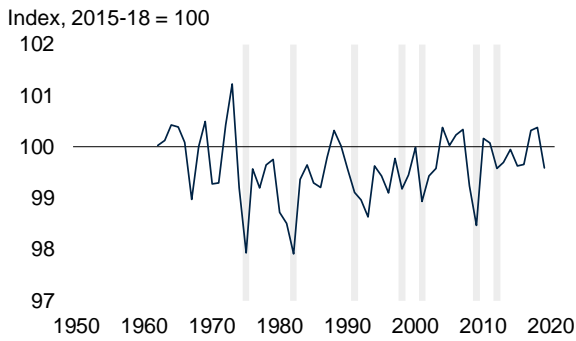
A. Nominal interest rates



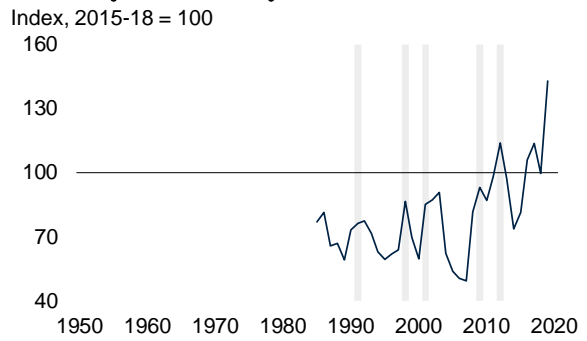
B. Real interest rates



C. Business confidence



D. Policy uncertainty

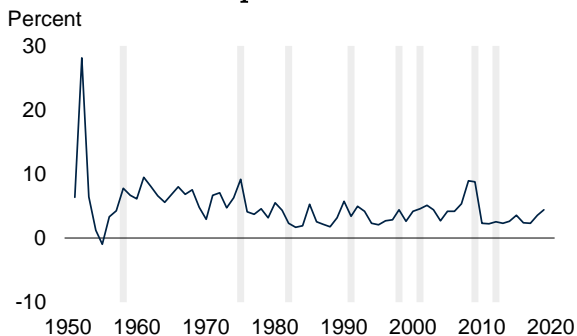


Sources: Bank for International Settlements; Davis (2016); European Commission; Haver Analytics; International Monetary Fund; Kose and Terrones (2015); Organisation for Economic Co-operation and Development; country sources; World Bank.

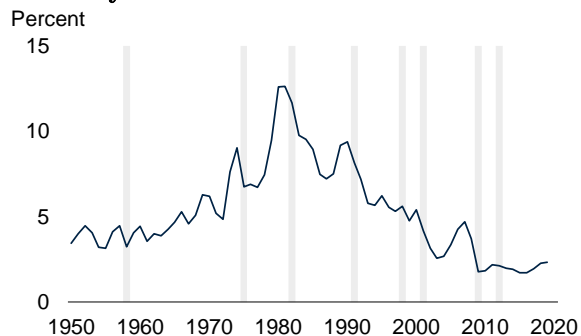
Note: Variables are weighted by GDP in U.S. dollars. Shaded areas indicate global recessions in 1975, 1982, 1991, and 2009, and global downturns in 1958, 1998, 2001, and 2012. World aggregates are not computed if data are available in less than 4 countries.

Figure A2.4. Global policies

A. Government expenditure



B. Policy interest rate



Sources: Bank for International Settlements; Haver Analytics; International Monetary Fund; Mauro et al. (2015); Organisation for Economic Co-operation and Development; World Bank.

Note: Variables are weighted by GDP in U.S. dollars. Shaded areas indicate global recessions in 1975, 1982, 1991, and 2009, and global downturns in 1958, 1998, 2001, and 2012. World aggregates are not computed if data are available in less than 10 countries (Panel A) and 4 countries (Panel B).

Appendix 3. Identification of business cycle turning points

The dating method introduced by Harding and Pagan (2002) requires a search for maxima and minima over a given period of time. Then, it selects pairs of adjacent, locally absolute maxima and minima that meet certain censoring rules. Specifically, a peak in per-capita global GDP, y_t , occurs at time t if:

$$(y_t > y_{t-1}) \textit{ and } (y_t < y_{t+1})$$

Similarly, a cyclical trough occurs at time t if:

$$(y_t < y_{t-1}) \textit{ and } (y_t > y_{t+1})$$

With annual data, the methodology requires a minimum three-year duration of a cycle and a minimum one-year duration of each of the cyclical phases. A complete cycle goes from one peak to the next peak with its two phases, the recession phase (from peak to trough) and the expansion phase (from trough to the next peak). These rules apply to world per capita GDP using market weights.

With quarterly data, a minimum five-quarter duration of a cycle and a minimum two-quarter duration of each of the cyclical phases are chosen (Claessens, Kose, and Terrones 2012).

Appendix 4. List of years with the worst records of global activity (1950-2019)

	Output per Output	Output per capita	Industrial production	Trade	Unemployment rate	Oil consumption	Investment	Consumption	Output (PPP)	Output per capita (PPP)
1	2009	2009	2009	2009	1975	1980	2009	2009	2009	2009
2	1982	1982	1975	1982	2009	1981	1952	1981	1982	1982
3	1975	1975	1982	1975	1970	1982	1992	1982	1991	1975
4	1991	1991	<i>1958</i>	<i>1958</i>	1974	1974	1982	2008	1975	1991
5	1993	1980	<i>2001</i>	1952	1971	2009	1991	1991	1992	1980
6	1992	1993	2008	<i>2001</i>	1991	1975	1993	1974	1980	1992
7	1980	1981	1992	2019	2002	2008	1974	1980	1993	1981
8	2008	1992	1991	1983	1982	1983	1981	1993	1981	1993
9	1981	<i>1958</i>	1981	1980	1992	1993	<i>1958</i>	<i>2012</i>	<i>2001</i>	<i>1958</i>
10	<i>2001</i>	1974	1993	2016	1993	1991	<i>2001</i>	2019	<i>1998</i>	1990
11	<i>1958</i>	2008	1974	1985	1990	<i>1998</i>	1975	2013	1990	1983
12	2002	<i>2001</i>	1980	1981	1995	1985	2002	2015	<i>1958</i>	<i>1998</i>
13	1974	1990	2015	2015	<i>1998</i>	2019	1980	2002	1983	<i>2001</i>
14	2019	1983	2019	<i>2012</i>	<i>2001</i>	2014	1983	1975	2019	1974
15	<i>2012</i>	2002	2016	2008	1980	2000	2008	2014	2002	1985
16	1990	<i>1998</i>	2002	1991	1977	<i>2012</i>	1990	1992	2008	1954
17	<i>1998</i>	<i>2012</i>	1990	1986	1994	2011	2019	2003	1985	2002
18	2016	2019	1983	2013	2003	<i>2001</i>	<i>1998</i>	<i>2001</i>	1974	1994
19	2013	1954	<i>2012</i>	1993	1999	2002	2016	2011	1994	2008
20	1983	2013	1986	2002	1989	1990	1985	2016	1954	1986

Note: The table lists the 20 worst annual prints of each variable since 1950. The ranking is based on percent changes in all variables, except the unemployment rate, in which percentage-point changes are considered. These years are identified by simply sorting each variable in descending order, except the unemployment rate (in ascending order). Years in bold and italics refer to those of global recessions and global downturns, respectively. For details, see Appendix 2.