CHAPTER 2

THE GREAT TIGHTENING: INSIGHTS FROM THE RECENT INFLATION EPISODE

The recent global inflationary experience was characterized by a complex set of events. During COVID-19 lockdowns, demand shifted toward goods and then pivoted toward services as economies reopened. These demand shifts occurred in the context of supply disruptions and unprecedented fiscal and monetary stimulus. Subsequently, the war in Ukraine led to spikes in commodity prices. Evidence suggests that the pass-through of sectoral price pressures to core inflation and the steepening of the inflation-slack relationship—that is, the Phillips curve—are essential to understanding the global surge in inflation. This evidence is consistent with key sectors hitting their supply bottlenecks as demand rotated across sectors and was boosted over time by a drawdown of savings. This chapter offers a new lesson and confirms an old one for monetary policy. In extreme cases when sectoral supply bottlenecks are widespread across an economy and interact with strong demand, inflation can surge, but tighter policy can bring it down quickly with limited output costs. Outside of such cases, when supply bottlenecks are confined to specific sectors, conventional policy rules, such as those that target measures of core inflation, perform well.

Introduction

The past three years have witnessed an extraordinary set of inflationary events. Initially, the COVID-19 pandemic triggered widespread economic shutdowns, causing many businesses to cut back on production. As the recovery began with pandemic restrictions still in place, consumer demand for goods surged. However, producers struggled to ramp up supply quickly enough amid ongoing supply-chain disruptions, leading to price pressures in the goods sector. When economies reopened, price pressures shifted as pent-up demand for services was released. While instrumental in containing the economic fallout from the pandemic, the unprecedented fiscal and monetary stimulus[1] deployed by advanced economies and some emerging markets initially increased savings. Over time, however, a drawdown of those savings boosted demand, widening supply-demand imbalances and spurring inflation as capacity remained constrained. The situation was exacerbated by the war in Ukraine, which led to a global food and energy crisis. By mid-2022, global inflation had tripled relative to its prepandemic level (Figure 2.1, panel 1).

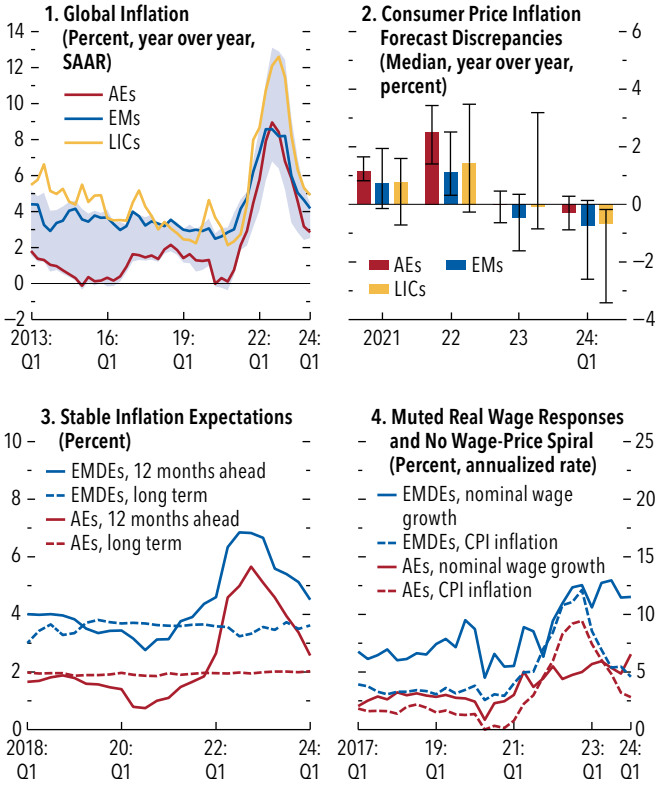
These inflationary pressures tested monetary policy frameworks and resulted in a global tightening cycle, or "Great Tightening." The sectoral nature of the shocks, the accompanying relative price shifts, and the uncertainty about their ultimate inflationary effects, as well as the desire to prevent scarring from the pandemic, made it a challenge for central banks to calibrate the timing and pace of monetary responses. Central banks had to rely on tools and frameworks that did not fully account for the features of the new economic landscape. The simultaneous use of multiple policy levers by many countries, including balance sheet policies, price-suppressing measures, and fiscal policy, required assessment of their joint effects in real time. Despite the global nature of the tightening cycle, central banks did not start their rate hikes at the same time, with some (for example, Brazil and Chile) moving earlier than others, depending on country-specific circumstances and the timing and asymmetric effects of shocks.

Taking stock of the experience since late 2020, this chapter aims to disentangle the contribution of shocks and policy responses in accounting for the inflation surge and the subsequent disinflation, with the goal of drawing lessons for monetary policymakers. The chapter's findings can be informative as rising geopolitical tensions and extreme weather events are likely to trigger further sectoral shocks, and as central banks review their monetary policy strategies and

The authors of this chapter are Jorge Alvarez (co-lead), Emine Boz (co-lead), Thomas Kroen, Alberto Musso, Galip Kemal Ozhan, Nicholas Sander, Sebastian Wende, and Sihwan Yang, under the guidance of Jean-Marc Natal. Research assistance was provided by Canran Zheng and Weili Lin. The authors thank Benjamin Carton, Rafael Portillo, and Silvana Tenreyro for their very helpful comments.

[1]Fiscal stimulus amounted to an average of about 12 percent of GDP in advanced economies and to an average of 4 percent of GDP in emerging markets (Deb and others 2024); quantitative easing policies amounted to about 20 percent of GDP in several advanced economies (Erceg and others 2024a).

Figure 2.1. Cross-Country Inflation Dynamics



Sources: Consensus Economics; Haver Analytics; International Labour Organization; Organisation for Economic Co-operation and Development; and IMF staff calculations.

Note: In panel 1, lines are the median of consumer price index (CPI) inflation within each analytical group. The band depicts the 25th to 75th percentiles of data across economies. In panel 2, forecast discrepancies are derived by comparing one-year-ahead inflation forecasts with actual figures in the April *World Economic Outlook*. The bars represent median inflation rates, and the whiskers extend from the 25th to the 75th percentiles of data across economies. The data for the first quarter of 2024 are annualized year-over-year percent changes. Panel 3 reports quarterly 12-month- and five-year-ahead inflation expectations. Panel 4 reports real wages computed as nominal wages (defined on a per worker basis) divided by the CPI and then indexed to 100 in each country in the first quarter of 2017. Each line reports the group median. AEs = advanced economies; EMs = emerging markets; EMDEs = emerging market and developing economies; LICs = low-income countries; SAAR = seasonally adjusted annual rate.

frameworks. The chapter's analysis is structured around the following questions:

- What accounts for the recent inflation dynamics in advanced economies and in emerging market and developing economies? What role did sectoral shocks and capacity constraints play, and how did they interact with monetary and fiscal policy?
- Was the monetary policy response or its transmission unusual relative to the past?
- What lessons can be drawn for monetary policy? Did the global nature of tightening make a difference?

The chapter tackles these questions in three parts. It first lays out stylized facts, both using raw data and through the lens of empirical Phillips curves. The second part documents the monetary policy response and transmission across countries and time. Third, findings from the empirical section motivate the development of a new multisector network model. The model is used to construct counterfactual scenarios to assess the importance of sectoral capacity constraints, the global nature of monetary tightening, and other fundamental factors in driving both the recent inflation surge and the ensuing disinflation. This part also compares the performance of alternative simple policy rules under different scenarios.

The chapter's main findings are as follows:

- *Price surges in specific sectors and their broadening over time were a defining feature of the recent inflation episode.* Price pressures emerged sooner and were more pronounced in the goods sector and in sectors with higher energy dependence and flexible prices. The spillovers from higher prices in the energy and other sectors to core inflation played an important role. Overall, there is little evidence in most economies—with the possible exception of the US—to suggest that inflation was driven by labor market strength, at least during peak inflation.
- *Price Phillips curves steepened, but wage Phillips curves did not.* The relationship between economic slack and inflation in the data—that is, price Phillips curves—shifted upward and steepened. In other words, inflation accelerated faster than expected when unemployment declined, and in the same vein, disinflation took place with fewer job losses than expected. This was not the case for wage Phillips curves, as wages did not spike in the same way as prices did.
- *Interaction of supply bottlenecks with demand pressures can rationalize the steepening of price Phillips curves.* The decline in capacity in sectors that were in high demand—for example, in durable goods early in the pandemic and in transportation during reopening—contributed significantly to inflationary pressures.
- *Tightening on a global scale can be more effective than that by individual countries, as it can lower the price of tradable goods, especially commodities.*
- *The prevalence of supply bottlenecks and their interaction with demand are key for policy responses.* A diagnosis of the drivers of inflation, though challenging in real time, remains vital.

- When the Phillips curve is steep for an economy overall, the benefits of monetary tightening are amplified. In other words, counteracting the inflationary effects of demand in the presence of prevalent supply bottlenecks—as experienced recently—presents a favorable sacrifice ratio.
- However, when supply constraints are confined to the commodity sector, conventional policy rules, such as those targeting measures of core inflation, remain appropriate. Reacting strongly to flexible commodity prices, when supply constraints are present only in those sectors, brings down inflation fast but risks a recession later. In contrast, targeting sticky prices results in more gradual disinflation with a smoother output path.

The chapter focuses mainly on the role of policy interest rates through conventional demand channels. As such, it is complementary to other work focusing on the role of central bank communications in inflation expectations (see Chapter 3 of the October 2023 *World Economic Outlook*), financial market risks, balance sheet policies (Box 2.1), price-suppressing measures (Box 2.2), liquidity measures, and other policy instruments beyond policy rates. Although lessons in these areas can be drawn from recent experience, the stability of long-term inflation expectations and the lack of broad-based financial distress motivate the chapter's focus on interest rates, economic slack, and sectoral activity.

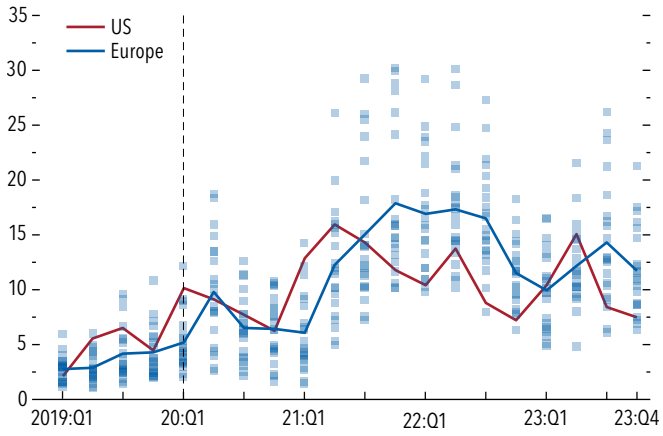
What Happened? Dissecting Inflation Dynamics

Starting in late 2020, inflation rose simultaneously and unexpectedly across the world to levels not seen since the 1970s (Figure 2.1, panel 1). Annual inflation peaked in 2022 at about 8 percent in the median advanced economy and emerging market and extended beyond that in the median low-income country, before receding over the course of 2023. The inflation surge was largely unexpected. Starting in 2021, *World Economic Outlook* forecasts, like many others, *underestimated* inflation for many countries, as evidenced by positive forecast errors in panel 2 of Figure 2.1.[2] The positive forecast errors were even larger in 2022, particularly for advanced economies, in which the median forecast error reached 2.5 percentage points (1.1 percentage points for emerging markets and 1.5 percentage points for low-income countries). The disinflation of 2023–24 also progressed faster than expected, with negative forecast errors this time, especially for forecasts made in 2023 regarding 2024 inflation.

Even though global inflation reached unprecedented levels in recent history, the feared de-anchoring of inflation expectations reminiscent of the 1970s (Carvalho and others 2023) did not materialize, although short-term expectations and nominal wages went up (Figure 2.1, panels 3 and 4). Crucially, real wage growth remained contained in most economies and wage-price spirals—simultaneous accelerations of nominal wages and prices—did not occur in line with most historical experience (Alvarez and others 2024).

A defining feature of this inflationary episode was the prevalence of large sectoral shifts driven by both supply and demand. As a result of these shifts, relative prices changed and the variation in inflation across sectors spiked (Figure 2.2). Two main forces were at play. First, demand initially rotated toward goods amid lockdowns and supply-chain disruptions (Figure 2.3, panels 1 and 2). This caused goods inflation to take off, before a rebalancing of demand as the lockdowns eased. Because of this, inflation peaked earlier and higher in goods than in services. Second, the war

Figure 2.2. Movements in Sectoral Price Dispersion
(Percent)

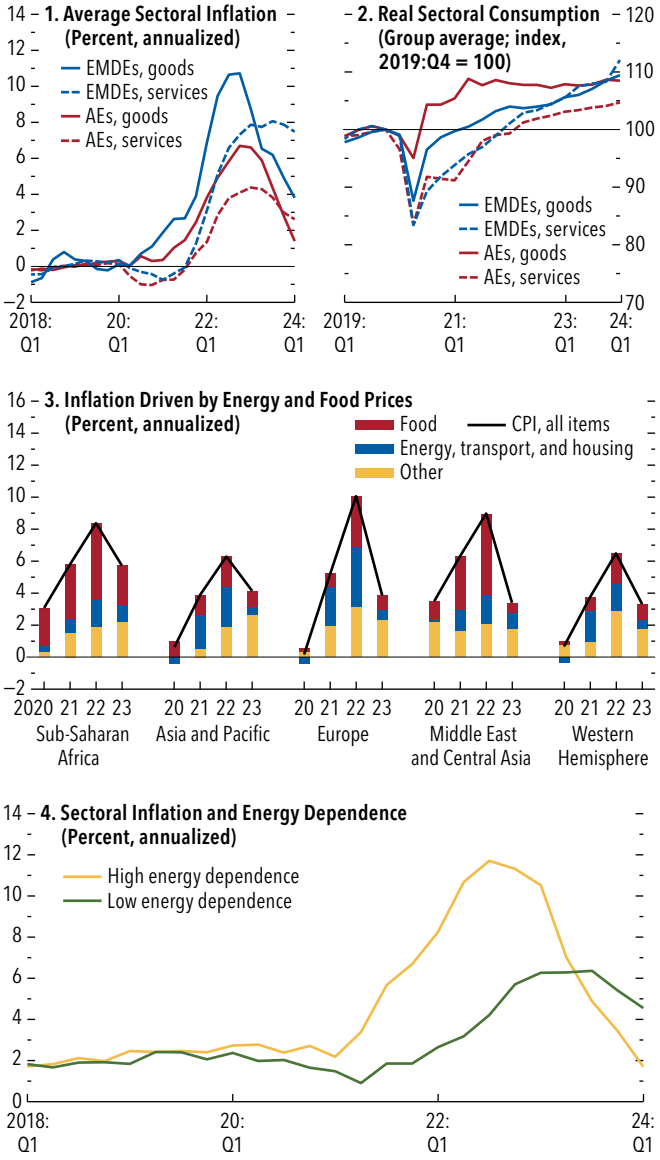


Sources: Eurostat; US Bureau of Labor Statistics; and IMF staff calculations.

Note: Figure shows average sectoral price dispersion measured using the cross-sectoral standard deviation of producer price index (PPI) inflation for European countries (Norway, UK, EU countries) and the United States. The red line is quarterly standard deviation across US PPI sectors. Each blue square represents one European country's cross-sectoral standard deviation, and the blue line represents the median of European countries in each given quarter.

[2]Koch and Noureldin (2024) provide an in-depth analysis of inflation forecast errors.

Figure 2.3. Sectoral Characteristics and Inflation Dynamics



Sources: Haver Analytics; IMF, Consumer Price Index (CPI) data portal; Organisation for Economic Co-operation and Development; US Bureau of Economic Analysis; and IMF staff calculations.

Note: Panel 1 displays the average inflation rates for goods (excluding food and energy) and services across a sample of 30 AEs and 13 EMDEs over time. Data are reported as deviations from 2018–19 average. Panel 2 shows the purchasing-power-parity GDP-weighted average of real sectoral consumption across AEs and EMDEs, normalized to the fourth quarter of 2019. Panel 3 shows the median contributions and aggregate inflation rate for each region. For panel 4, energy dependence is computed as the total share of oil, gas, and utilities in sectoral inputs. Sectors are defined as energy dependent if their energy dependence is above the median. Remaining sectors have low energy dependence. Sectoral inflation rates (measured as sectoral value-added deflators) are collapsed by median within each group. AEs = advanced economies; EMDEs = emerging market and developing economies.

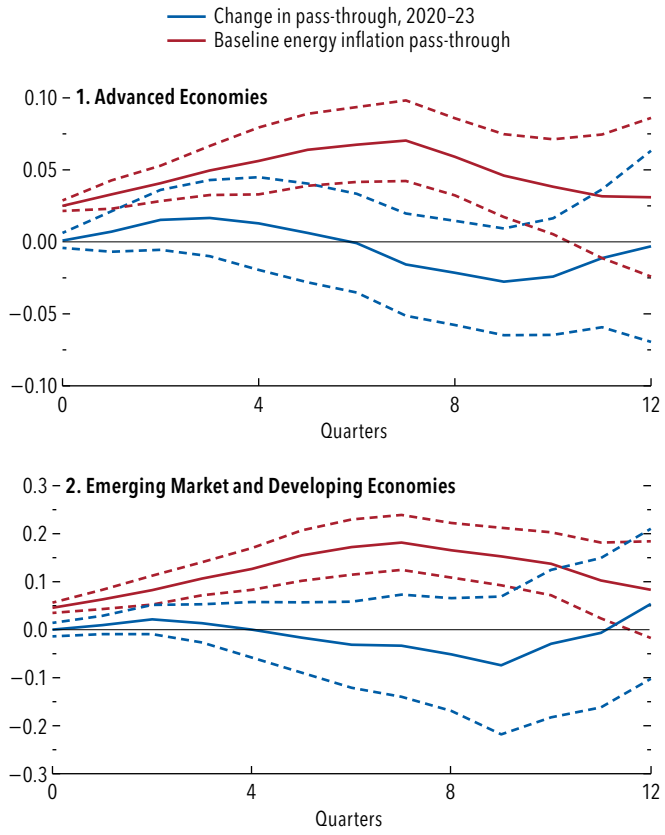
in Ukraine placed substantial pressure on noncore components of headline inflation. These drove the lion's share of both the increase and the subsequent decrease in overall inflation (Figure 2.3, panel 3), with a major role for food price inflation, particularly in sub-Saharan Africa, the Middle East, and Central Asia, whereas energy prices were the primary driver of inflation dynamics in Europe.

The increases in commodity prices had substantial downstream effects, because commodities are an input for many other sectors. Using international input-output tables, the chapter computes the direct and indirect energy dependence of sectors through their supply chains. Inflation initially surged in energy-dependent sectors in 2021, even before the war in Ukraine began. During 2022, inflation in energy-dependent sectors peaked; inflation broadened and started rising in sectors with low energy dependence. Whereas inflation came down markedly in the energy-dependent sectors, it was just plateauing in less energy-dependent industries at the end of 2023 (Figure 2.3, panel 4), and these industries then became the primary drivers of overall inflation.

This is broadly consistent with past patterns in transmission of energy shocks across sectoral networks: energy shocks spread according to sectoral price flexibility and energy dependence (Online Annex Figure 2.2.6), with stronger pass-through in more energy-dependent sectors and in sectors with more flexible prices (Minton and Wheaton 2022; Afrouzi, Bhattarai, and Wu 2024). Even though the energy price shocks were extraordinarily large this time around (Online Annex Figure 2.2.2), the pass-through was not necessarily out of line. Historically, the peak pass-through from a 1 percentage point increase in energy prices into consumer price index (CPI) inflation at the country level was about 0.06 percentage point in advanced economies and 0.17 percentage point in emerging market and developing economies.[3]

[3]These estimated magnitudes are in the ballpark of those in Task Force of the Monetary Policy Committee of the ESCB (2010); Choi and others (2018); Minton and Wheaton (2022); and Afrouzi, Bhattarai, and Wu (2024). The larger impact on emerging market and developing economies partly reflects the greater share of energy-intensive sectors (for example, mining and manufacturing) in those countries (see also the October 2023 Asia and Pacific *Regional Economic Outlook*). Online Annex Figure 2.2.4 additionally tests for nonlinearities in pass-through, which are a feature of some structural models, such as that of Cavallo, Lippi, and Miyahara (2023). Although there is some evidence for nonlinearities in energy price pass-through, there is no evidence for a broad-based postpandemic strengthening of these nonlinearities. All online annexes are available at www.imf.org/en/Publications/WEO.

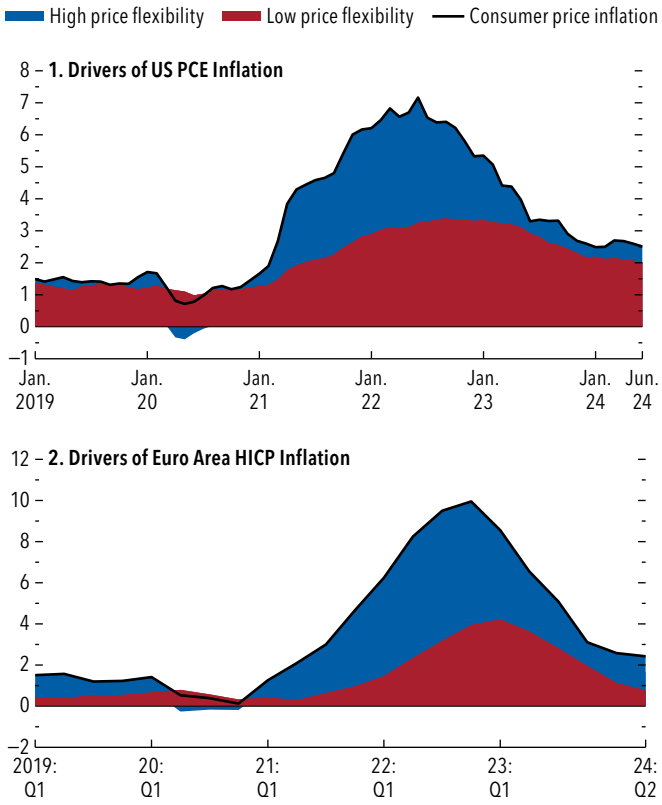
Figure 2.4. Energy Price Pass-Through into CPI Inflation
(Percentage points)



Sources: Haver Analytics; IMF, Consumer Price Index (CPI) data portal; and IMF staff calculations.

Note: Figure reports results of local projections of country-level consumer price index (CPI) inflation on energy prices for a 100 basis point energy price shock. The sample covers 2010–24 data for 26 advanced economies (AEs) and 9 emerging market and developing economies (EMDEs). COVID period is defined as the third quarter of 2020 onward. The first two quarters of 2020 are excluded. Controls include two lags of output gap, CPI inflation, policy rate, and change in nominal effective exchange rate. Regressions also include country fixed effects. Standard errors are double-clustered by country and time. Lines report local-projection coefficients for up to 12 quarters ahead alongside 95 percent confidence bands (dashed lines).

Figure 2.5. Sectoral Inflation and Price Flexibility
(Percent, annualized rate)



Sources: Organisation for Economic Co-operation and Development; and IMF staff calculations.

Note: Inflation is measured as HICP inflation across euro area sectors. Sectoral price flexibility is computed using data from Rubbo (2023). Sectoral data feature 12 HICP sectors. Sectors are split along median of price flexibility, and then inflation is aggregated across countries using PPP country weights and within-country HICP weights. PCE = personal consumption expenditures; HICP = harmonised index of consumer prices; PPP = purchasing power parity.

The values were comparable this time around, because the pass-through from energy prices into CPI inflation did not strengthen materially across a wide range of countries (Figure 2.4; Online Annex Figures 2.2.4 and 2.2.5).[4] Moreover, countries with lower energy price inflation, notably Asian emerging market and developing economies (Online Annex Figure 2.2.2, panel 4), had lower overall CPI inflation, suggesting that energy prices may have played a prominent role in inflation dynamics—a theme that is revisited in this chapter using statistical inflation decompositions and in Box 2.2, in which the role of price-suppressing measures in containing (energy) inflation is explored.

Partly because of the role of energy and commodity price shocks, headline inflation was initially led by more price-flexible goods sectors such as energy, vehicles, and household equipment and followed by flexible-price services sectors such as restaurants, hotels, and recreation. These flexible-price sectors explain the bulk of the rise and fall in inflation observed in the United States and the euro area. Sectors with more rigid prices did not experience substantial price increases until late 2022 and early 2023. By the end of 2023, however, inflation was driven primarily by inflexible-price sectors such as clothing, communications, and health (Figure 2.5, panels 1 and 2). The chapter's structural model captures different degrees of

[4]The strength of oil price pass-through across countries may be affected by the level of fuel excise taxes (Ahn 2024), with stronger pass-through in countries with lower rates for these taxes.

price stickiness across sectors and the pass-through of inflation from flexible to sticky prices over time.

Before turning to the implications of these patterns for monetary policy, this section further dissects these inflation dynamics through the lens of aggregate and sectoral Phillips curves.

Shifting and Steepening of the Phillips Curve

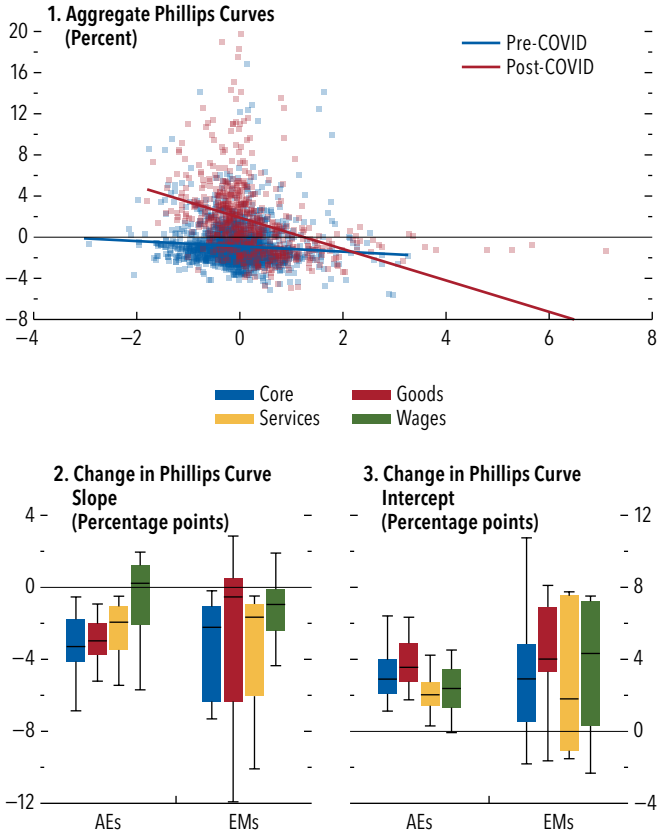
Monetary policymakers pay particular attention to the relationship between economic slack and inflation, or the Phillips curve, because this relationship provides a measure of forgone employment and output as a cost of lowering inflation. Prior to the pandemic, the relationship was relatively flat, suggesting a weak trade-off between output and inflation (Blanchard 2016; Del Negro and others 2020; Hazell and others 2022; Rubbo 2023).[5] In other words, before 2020, even when the economy was close to full employment, inflationary pressures were weak. However, during the pandemic, the empirical Phillips curve notably steepened and shifted upward (Figure 2.6; Ari and others 2023; Benigno and Eggertsson 2023; Gudmundsson, Jackson, and Portillo 2024; Inoue, Rossi, and Wang 2024). These patterns were particularly pronounced in advanced economies, and when comparisons are made across sectors, the shifting and steepening of empirical Phillips curves were somewhat more pronounced for goods than for services inflation (Figure 2.6, panels 2 and 3; Online Annex Figure 2.2.7). The steeper slope of the empirical Phillips curve implies that for a given *decrease* in economic slack, a larger increase in inflation was observed; conversely, a given *increase* in economic slack was associated with a larger decline in inflation. This pattern is consistent with the finding in the previous section that forecasts, presumably based on flatter prepandemic Phillips curves, underestimated inflation when it was surging and overestimated it when it was declining.

To test these relationships at the country level, the chapter estimates empirical Phillips curve relationships country by country and compares coefficients before and after the pandemic. The results confirm that the patterns were nearly universal across advanced economies and most emerging markets (Figure 2.6, panels 2 and 3). This holds true as well in a richer version of the model, which controls for other factors, including lagged inflation (to control in turn for potential mean reversion), inflation expectations, and energy and import prices (Online Annex Figure 2.2.7, panels 1 and 2).[6]

[5]As discussed in McLeay and Tenreyro (2020), the flat prepandemic Phillips curve may also partly be the result of monetary policy that accommodated cost-push shocks and successfully stabilized economies in the wake of demand shocks.

[6]Hooper, Mishkin, and Sufi (2020); McLeay and Tenreyro (2020); and Hazell and others (2022) argue for identifying Phillips curves from regional data to mitigate concerns about cost-push shocks biasing Phillips curves estimates from aggregate data. A regional estimation within the euro area with time fixed effects (Online Annex Figure 2.2.7, panels 5 and 6) confirms results presented earlier in the chapter.

Figure 2.6. Evolution of Phillips Curves



Sources: Haver Analytics; and IMF staff calculations.

Note: Throughout the figure, the first two quarters of 2020 are excluded. In panel 1, *x*-axis shows unemployment gap and *y*-axis denotes core inflation deviation. Inflation measures are residualized on a country fixed effect within each country. Blue and red lines are linear fits with a sample of 29 advanced economies and 15 emerging markets during the period from the first quarter of 2010 to the first quarter of 2024. "Post-COVID" is defined as the first quarter of 2020 onward. The unemployment gap is estimated using a univariate Hodrick-Prescott filter. Outliers with deviations of inflation from country average by more than 20 percentage points are excluded. Panels 2 and 3 report distribution of Phillips curve slope changes and intercept changes across countries from country-level estimations of pre-2020 and post-2020 raw Phillips curves. Outside values (more than 1.5 interquartile ranges below first quartile or above third quartile) are excluded from boxplots. AEs = advanced economies; EMs = emerging markets.

However, the patterns were less pronounced for the empirical wage Phillips curve, which did not steepen much in either advanced economies or emerging markets, but shifted upward as short-term inflation expectations increased (green boxplots in Figure 2.6, panel 3). Because wages were less responsive, recent inflation dynamics likely did not reflect, at least not solely, excessive tightness in the labor market. The chapter's structural model rationalizes the steepening of the Phillips curve with shocks and constraints that originate outside of the labor market.

Pass-Through of Commodity Price Shocks

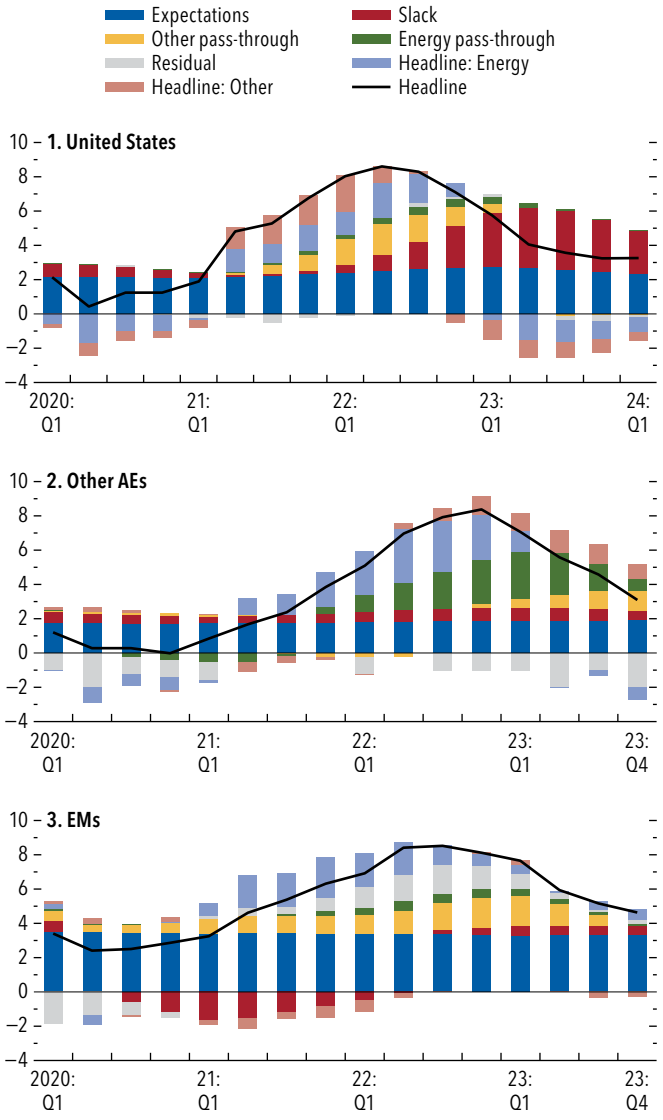
If a richer estimated Phillips curve is employed (Online Annex Figure 2.2.7), inflation in different countries can be decomposed through use of a methodology similar to that of Ball, Leigh, and Mishra (2022) and Dao and others (2024). Such a statistical decomposition does not break down the contribution of structural shocks to inflation but instead provides a correlational analysis of key factors contributing to inflation dynamics.[7]

Across the board, with the possible exception of the United States during the later period, since mid-2022, tight labor markets (a proxy for the amount of slack in the economy) play a moderate role in explaining inflation dynamics (Figure 2.7). This result is consistent with findings noted earlier in the chapter of a muted real wage response and limited changes to the wage Phillips curve. Instead, energy shocks and other shocks to headline inflation played an outsized role. These shocks were subsequently passed on to broader inflation, with import prices accounting for a sizable part of the pass-through in emerging markets. Finally, long-term inflation expectations remained anchored across countries and did not directly contribute to inflation dynamics.

More specifically, US inflation (Figure 2.7, panel 1) was initially driven by energy price shocks and other sector-specific shocks as shortages and the pandemic disrupted supply chains. These headline shocks subsequently passed through into broader

[7]The impact of economic slack also captures the aggregate demand effects of fiscal stimulus or monetary policy. The impact through short-term inflation expectations is captured under pass-through, and the impact of food prices is captured under other headline shocks. The specification employed in the chapter allows labor market tightness to affect core inflation directly, rather than only indirectly through wage inflation, consistent with the evidence of Dao and others (2024).

Figure 2.7. Inflation Drivers in the United States, Other Advanced Economies, and Emerging Markets
(Percent, year-over-year rate)



Sources: Consensus Economics; Haver Analytics; and IMF staff calculations.

Note: US inflation drivers are estimated on monthly data (following Dao and others 2024) and then converted to quarterly; for other countries, estimation is conducted on quarterly data. "Slack" is measured using the vacancy-to-unemployment ratio for AEs and using the unemployment gap (estimated using a univariate Hodrick-Prescott filter) for EMs. Country-level contributions for AEs and EMs are aggregated across country groups using purchasing-power-parity GDP weights. Fitted values for inflation gap are converted into 12-month rates. AEs = advanced economies; EMs = emerging markets.

inflation in 2021 and early 2022. Since mid-2022, however, the main driver of US inflation has been a tight labor market.[8] By the first quarter of 2024, labor market tightness was still contributing 2.5 percentage points to US CPI inflation, which was partly offset by a modest deflation in energy costs.

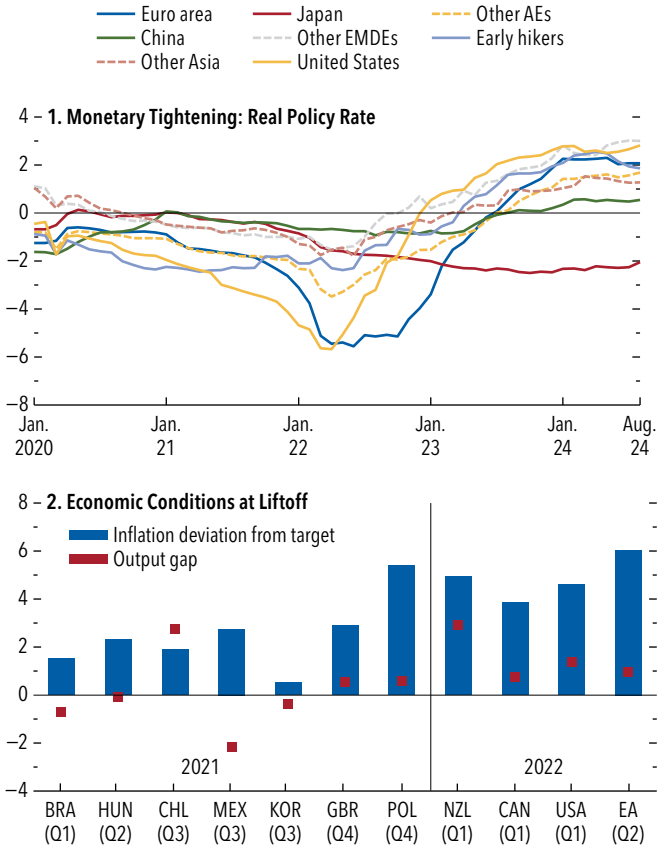
In contrast, the contribution of labor market slack to inflation in other advanced economies and emerging markets was small. Inflation in other advanced economies, particularly those in Europe (Figure 2.7, panel 2), was initially driven by large energy price shocks that passed through into broad inflation, with the pass-through of energy price shocks alone contributing more than 2.5 percentage points to CPI inflation at its peak. For emerging markets (Figure 2.7, panel 3), import price pass-through was a significant driver of inflation pass-through, which would include any exchange rate effects, because import prices in local currency were used.[9]

Understanding the recent inflation dynamics requires understanding how sectoral shocks, including those in the energy and commodity sectors, led to broad-based inflationary pressures. Going beyond traditional models with one sector, the multisector structural model employed here sheds further light on the pass-through of sectoral shocks across the production network.

The Monetary Policy Reaction

Faced with the pandemic, central banks worldwide initially adopted expansionary monetary policies aimed at stimulating economies and maintaining financial stability (Figure 2.8, panel 1). As broader inflationary pressures emerged, central banks transitioned to tightening policy. Although the tightening was broadly synchronized, its exact timing and pace varied across countries, depending on the impact of the shocks on individual economies, the timing of lockdowns and reopening, and initial conditions and institutional features. For example, commodity price increases after the start of the war in Ukraine led to terms-of-trade improvements for exporters, but to terms-of-trade deteriorations for importers. Central banks with a history of low and stable inflation had built policy credibility and could afford to "look through" seemingly transitory supply shocks for longer. In contrast, the presence of wage and price indexation mechanisms

Figure 2.8. Monetary Policy Tightening
(Percent)



Sources: Bank for International Settlements; Consensus Economics; Haver Analytics; and IMF staff calculations.

Note: Sample comprises 16 AEs and 65 EMDEs. "Other" aggregates are medians. "Early hikers" are Brazil, Chile, Hungary, Korea, New Zealand, Norway, Peru, and Poland, which hiked much earlier than major central banks. In panel 1, real rates are constructed as nominal rates minus one-year-ahead inflation expectations. Panel 2 reports economic conditions at first interest rate hike during current tightening cycle for early hikers other than Peru, Canada, the euro area, the United Kingdom, and the United States. Countries are sorted by the timing of their first interest rate hike. Inflation is reported as deviation of central bank's targeted inflation rate from central bank target in quarter of first tightening. The output gap data are annual. Data labels in the figure use International Organization for Standardization (ISO) country codes. AEs = advanced economies; EA = euro area; EMDEs = emerging market and developing economies.

[8]As argued by Ball, Leigh, and Mishra (2022); Barnichon and Shapiro (2024); and Bernanke and Blanchard (2024), labor market tightness in the United States is measured using the vacancy-to-unemployment ratio. Elsewhere, labor market tightness plays a much smaller role, regardless of the measure of tightness (vacancy-to-unemployment ratio or unemployment gap). Again, except in the case of the United States, using the output gap as the measure of economic slack results in similar findings (Online Annex Figure 2.2.7, panels 3 and 4), as does using country-by-country estimates for countries for which monthly data are available.

[9]Online Annex Figure 2.2.8 provides a detailed breakdown, highlighting, among other features, the importance of energy and headline shocks in eastern European emerging market and developing economies. Residuals across emerging markets overall could be explained partly by the cross-border transmission of global liquidity (Choi and others 2017).

limited room to maneuver in many countries. Finally, variation in other policy settings, such as the size of fiscal stimulus or price-suppressing measures, motivated different monetary responses. These differences resulted in some emerging market and developing economies, such as Brazil, Chile, and Mexico, starting their rate hikes earlier than others. Conversely, Asia exhibited a more tempered response, and the United States adjusted its policies relatively later (Figure 2.8, panel 2).

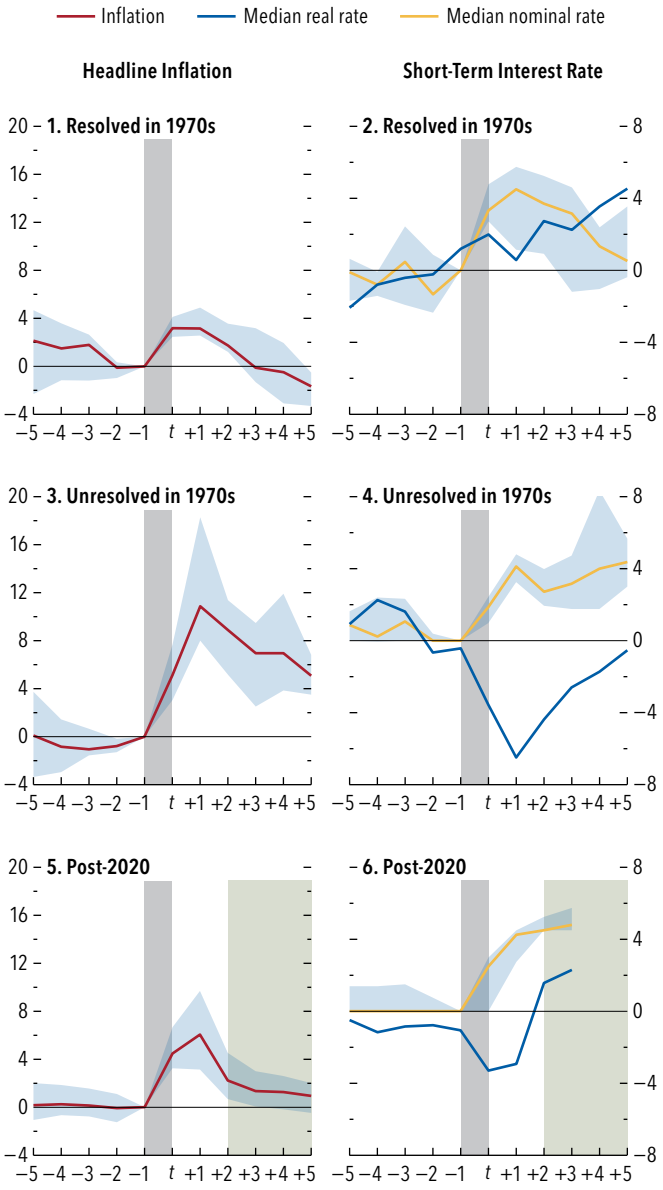
Policy Responses Compared with Those in the 1970s

The energy price shocks of the 1970s, which also had global repercussions, offer a natural, though imperfect, benchmark for comparing policy responses during the recent inflation surge. The benchmarking is imperfect because of the transformative changes in monetary policy frameworks and policy credibility since the 1970s and the fact that the recent experience coincided with a pandemic.

Such comparisons are facilitated by identifying inflationary episodes in a global sample. Following Ari and others (2023), this section defines an inflation episode as a period with an increase in inflation of more than 2 percentage points in a year. Such episodes are then grouped as "resolved" or "unresolved," in which an episode is considered resolved if inflation declines in the neighborhood of 1 percentage point of its pre-episode level within a five-year window. Comparison of the post-2020 and 1970s episodes yields the following observations (Figure 2.9):

- Post-2020 inflation episodes have been more pronounced and persistent compared with the *resolved* episodes of the 1970s, with inflationary pressures building sharply during the episodes (shaded gray areas in the figure) and continuing to rise in the subsequent year.
- Nominal interest rate hikes during *resolved* episodes of the 1970s were larger, as real rates swiftly transitioned to contractionary territory (Figure 2.9, panel 2). In contrast, post-2020 episodes involved a milder nominal rate adjustment and a more prolonged expansionary policy stance, indicated by sustained negative real interest rates.
- During *unresolved* episodes, the median policy stance remained consistently expansionary, characterized by more prolonged and more negative real interest rates than observed after 2020.

Figure 2.9. Comparison of Inflation Episodes
(Percent)



Sources: Ari and others 2023; Haver Analytics; and IMF staff calculations.

Note: "Median" refers to median outcome across inflation episodes. Inflation and short-term nominal interest rates are normalized to the preceding year ($t - 1$) as zero, with deviations shown thereafter. Real interest rates are shown in levels rather than normalized deviations. Blue-shaded areas indicate the 25th to 75th percentiles of data across inflation episodes. Gray-shaded areas denote identified inflation episodes, and green-shaded areas indicate projections.

Overall, the recent episode lies between the resolved and unresolved episodes of the 1970s in terms of inflation dynamics and the speed of the policy response. This conclusion for the policy response is corroborated when comparing the deviations from policy rates that would be implied by a simple policy rule targeting inflation and the output gap (Online Annex Figure 2.2.9). Although inflation expectations data for the 1970s are limited, proxying the degree of inflation expectations anchoring using past inflation volatility reveals that inflation expectations were more strongly anchored this time around (Online Annex Figure 2.2.10).

Transmission of Monetary Policy Tightening: Continuities and Changes

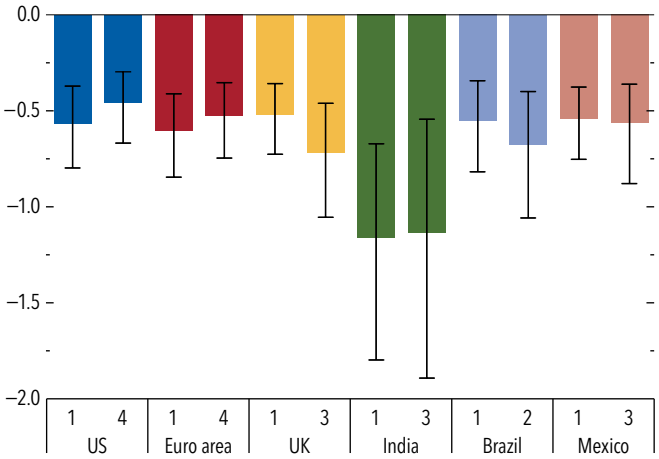
As has been documented in this chapter, monetary policy tightening kick-started after the initial extraordinary pandemic effects subsided, with most of the tightening occurring later in the episode.

But did the extraordinary shocks result in monetary transmission that was very different from historical experience? The answer is not obvious because some forces at play point to weaker transmission, whereas others point to a stronger transmission. For example, the policy transmission through housing markets may have weakened in some countries, given that the growing popularity of fixed rate mortgages may have reduced the sensitivity of households' payments to rising interest rates (see Chapter 2 of the April 2024 *World Economic Outlook*). Similarly, excess household savings have buffered household finances in many countries and may have resulted in resilience in consumption even as policy tightened. The globally synchronized nature of the tightening may have weakened the exchange rate channel of monetary policy, whereas it may have strengthened other channels, for example, through the world price of commodities (Bernanke, Gertler, and Watson 1997; Blanchard and Galí 2007b; Auclert and others 2023). Moreover, a steeper Phillips curve, as documented in the previous section, may imply that tightening could have a small effect on output but a strong disinflationary impact. Given these different forces, this section measures overall transmission.

The preliminary evidence suggests some variation but not a broad-based and significant change in transmission over time. The comparison focuses on the transmission of a standardized monetary policy tightening shock, as estimated by a vector autoregression model with time-varying coefficients, across selected countries during tightening cycles since the 1990s.[10] Estimates from the model suggest that the peak effects of consumer prices vary somewhat in response to the tightening shock (Figure 2.10; Online Annex Figure 2.3.2). However, the analysis does not detect a systematic and statistically significant difference in the magnitude of the responses when the post-2022 price responses are compared with the average transmission observed during the tightening cycles in the 1990s through 2019. This conclusion also holds when the full path of impulse responses over time, as opposed to only the peak effects, are compared (Online Annex Figure 2.3.1).

Several caveats are in order. The methodology employed in this section is designed to detect, using data available, significant changes in the overall transmission of policy tightening so far in countries' tightening cycles. It therefore does not rule out moderate

Figure 2.10. Monetary Policy Transmission to CPI during Tightening Episodes



Source: IMF staff calculations.

Note: The bars denote the country median peak response, and the whiskers represent the upper and lower bounds of the 68 percent HPD set of responses. 1 = 1990s to 2019, 2 = 2021 to 2022, 3 = 2021 to 2023, 4 = 2022 to 2023. CPI = consumer price index; HPD = highest posterior density set.

[10]The chapter focuses on the post-1990 period after countries adopted inflation-targeting regimes. Methodological details and further results are provided in Online Annex 2.3.

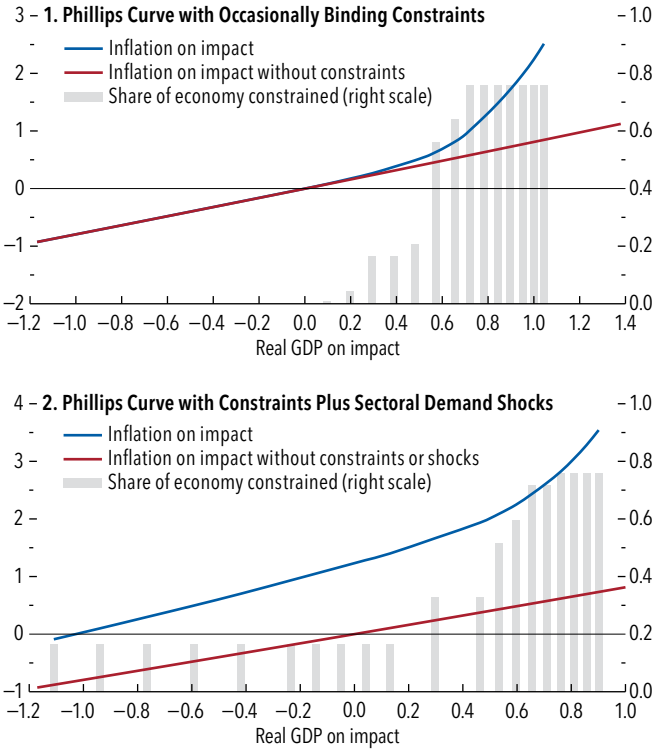
changes, given uncertainty surrounding the estimates, or the possibility that its conclusions will change once more data become available.

Lessons for Monetary Policy: A Model-Based Analysis

Guided by the chapter's findings so far, this section develops a new global model with input-output linkages, the Global Dynamic Network Model, to derive further policy insights. Crucially, the model includes these features:

- *Rich input-output linkages across sectors and countries.* To replicate the transmission of price pressures in individual sectors to core inflation, as in the empirical section, the model considers multiple sectors that are connected through input-output linkages. Relative demand for each sector can change both as a response to prices rising more in some sectors and if households' tastes change, as happened, for example, when demand for goods relative to services rose during the pandemic lockdowns. Because it features two countries with trade linkages, the model can assess the role of synchronized global tightening.
- *Occasionally binding supply constraints.* The model features sectoral constraints, in the form of limits on the maximum employment level of firms, that bind occasionally. These constraints mimic supply bottlenecks, and as will be shown, they are a key ingredient for rationalizing the recent steepening of the aggregate Phillips curve documented in the empirical section and observed in many countries (Gudmundsson, Jackson, and Portillo 2024; Comin, Johnson, and Jones 2023). In normal times, employment is rarely near these limits. However, in extreme cases such as lockdowns, in which the maximum employment in a sector may fall, or demand may surge in certain sectors (durable goods is an example), then these constraints can limit production. Such dynamics would result in higher prices in sectors with binding supply constraints and would also trickle down to the rest of the economy, especially if constrained sectors are major providers of inputs to other sectors and those inputs are not easily substitutable.
- *Aggregate and sectoral shocks.* Given the potential role of monetary and fiscal stimulus during an episode, the model allows for monetary policy shocks as well as shocks to aggregate demand, in addition to a rich set of sectoral demand and supply shifts.

Figure 2.11. Phillips Curve under Different Constraints
(Percent)



Source: IMF staff calculations.

Note: The blue line shows combination of the impact effect of real GDP (*x*-axis) and inflation (left scale) on monetary policy shocks of various sizes, with panel 2 also including a relative demand shock. The gray bars (right scale) show the share of the economy constrained. The red line shows the same combination without any supply bottlenecks imposed. The Phillips curve shape will depend on choice of constraints.

Widespread Bottlenecks and Rationalization of Steep Phillips Curves

To illustrate how the model can account for the steepening of Phillips curves, both panels in Figure 2.11 present the relationship between peak effects of inflation and output in a scenario in which monetary policy starts out contractionary (on the left) and gradually becomes more expansionary (on the right). In both panels, the supply constraints are set such that they become binding in more sectors as demand strengthens.

- *Steepening.* When monetary policy is contractionary and demand is low, sectors operate below their labor constraints, and increases in demand lead to both higher employment and higher inflation. However, as policy becomes more expansionary, more sectors hit their supply constraints, as shown

by the gray bars in panel 1 of Figure 2.11 (see also Online Annex Figure 2.4.1). In turn, firms in these sectors cannot increase employment and output, and instead, prices must rise to equalize supply and demand. When such constraints are widespread, adding up across sectors for the entire macroeconomy reveals a nonlinear relationship between inflation and output; that is, a nonlinear aggregate Phillips curve (blue line). In the absence of supply bottlenecks, the analysis would have resulted in a linear aggregate Phillips curve (red line), underscoring the importance of the bottlenecks as a key mechanism in the model to account for the findings of the empirical section.[11]

- *Shifting.* Panel 2 of Figure 2.11 illustrates how the Phillips curve can shift when relative demand shocks are also added. In that case, high-demand sectors hit their supply constraints and face upward price pressures. At the same time, other sectors produce less because of weak demand. The combination of higher prices (in constrained sectors) and weak output (in unconstrained sectors) leads to an upward shift in the aggregate Phillips curve.

Because the model allows for both a steepening and a shift of the Phillips curve, the relative strength of the two alternatives is then determined by the data.

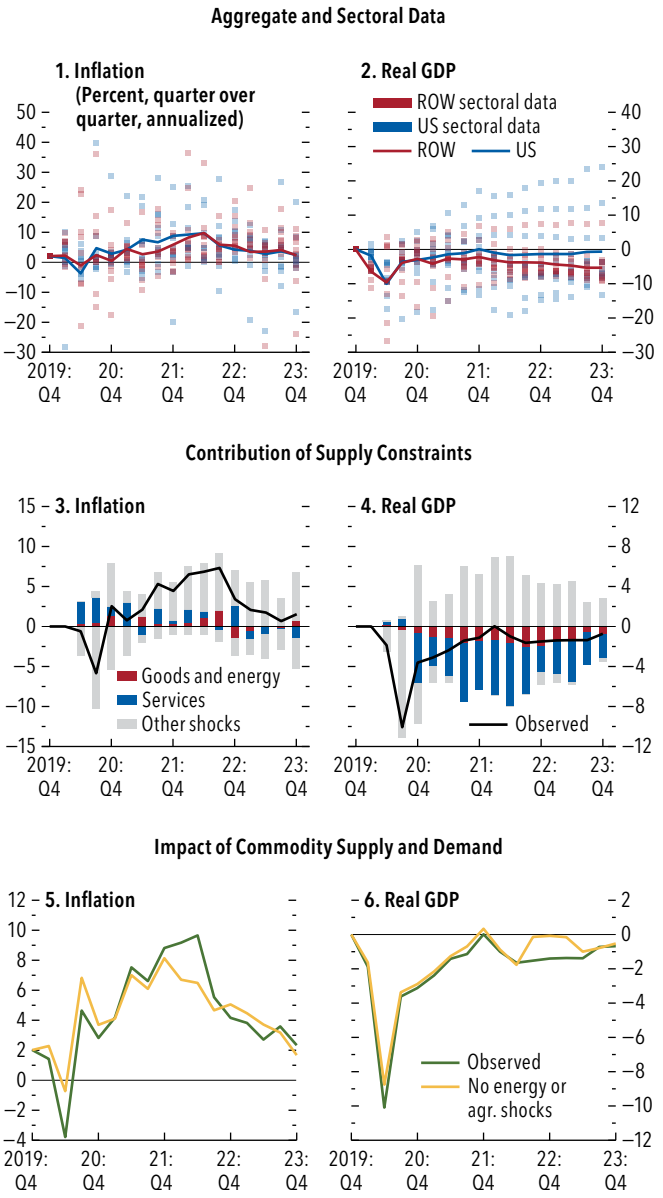
Role of Constraints and Commodity-Specific Shocks

To unpack the role of supply constraints and commodity-sector-specific shocks through the lens of the model, this section takes the model to the data and presents counterfactual scenarios.

With the United States and the rest of the world set as the two countries or regions in the model, sectoral and aggregate shocks are quantified to match the data. Because the matched data include inflation and output, the model matches the sectoral dispersion shown in panels 1 and 2 of Figure 2.12 (similar to the empirical section). In the same figure, panel 4 shows that supply constraints were an important persistent drag on real GDP during this period. In addition,

[11]Other mechanisms can also result in a steepening of the Phillips curve, such as asymmetries in wage setting, quasi-kinked demand for goods or informational frictions, and state-dependent pricing (Ilut, Valchev, and Vincent 2020; Harding, Lindé, and Trabandt 2022, 2023; Benigno and Eggertsson 2023; Dupraz 2024; Karadi and others 2024).

Figure 2.12. Impacts of Supply Constraints and Commodity Sector Shocks
(Percent deviation, unless noted otherwise)



Sources: Eurostat; Federal Reserve Economic Data; Organisation for Economic Co-operation and Development; and IMF staff calculations.

Note: The line in panel 3 shows inflation, and the line in panel 4 shows real GDP. The bars in panels 3 and 4 show the contributions from different groups of shocks. Note that the sum of all bars will equal the black line in each period. In panels 5 and 6 the "No energy or agriculture shocks" scenario assumes that monetary policy shocks remain as in the observed data, but monetary policy responds to changes in inflation, and that identified supply constraints in noncommodity sectors remain. agr. = agriculture; ROW = rest of the world.

they led to significant upward price pressures early in the pandemic, contributing 2–3 percentage points to US inflation during 2020–22 and playing a role in the subsequent disinflation, with a negative net contribution after 2023 (Figure 2.12, panel 3).[12] The inflation impacts appear to be less significant than GDP effects, largely because the supply bottlenecks—even if they may last for an extended period—raise prices persistently, leading to one-off rather than persistent increases in inflation.[13]

Because the empirical decompositions attribute an important role to "headline shocks," which include shocks to food and energy prices, a scenario with a similar spirit can be considered. Specifically, panels 5 and 6 in Figure 2.12 turn off the shocks specific to the agriculture and raw energy sectors. The exercise reveals that inflation would have been lower when these shocks are turned off, especially around the beginning of the war in Ukraine, when supply constraints in these sectors were tightest. Turning off shocks specific to commodity sectors makes a smaller difference for GDP.

Although the important role of the agriculture and raw energy sectors in regard to inflation broadly aligns with the empirical analysis (if findings for the US are used to compare the two, given the model's calibration), the two exercises are not identical. One important difference arises because shocks specific to agriculture and raw energy, which are turned off in this exercise, are not the only drivers of prices in their corresponding sectors. That's why turning off shocks to these sectors does not mean that their prices remain constant throughout the exercise. In fact, the analysis suggests that aggregate demand shocks (especially because agriculture and energy have relatively flexible prices) and constraints in other sectors (which raise input prices) play a role, too. In contrast, empirical decompositions take these sectoral prices as exogenous and measure their contributions to core inflation relative to a case in which they are unchanged, remaining agnostic about their drivers.

[12]The blue and red bars in panels 3 and 4 include supply constraints and their interactions with other shocks. "Other shocks," shown by the gray bars, include everything else. Because all shocks interact with supply constraints in complex ways, producing more detailed bars implying mutually exclusive contributions of shocks would be misleading.

[13]Supply bottlenecks can arise from tightening supply constraints for a given level of demand and their interaction with demand. The reported contributions measure the *total* impact of supply constraints, capturing the effects of supply constraints both in isolation and in combination with demand.

Policy Experiments

To draw policy lessons, this section undertakes two sets of analyses. The first comprises counterfactual scenarios with policies set differently from what central banks actually did. Because the data are first matched to the recent period featuring the effects of the pandemic and the war in Ukraine, the resulting policy lessons are more relevant for such tail event situations. The second set of analyses considers a hypothetical run-of-the-mill scenario. It features a supply constraint binding only for food and energy and a positive aggregate demand shock. For example, it could capture a situation in which a drought or a geopolitical shock constrains supply in agriculture and energy and is accompanied by fiscal support to contain its effects. In comparison with the experience since the pandemic, the share of sectors subject to supply bottlenecks would be much smaller in this scenario.

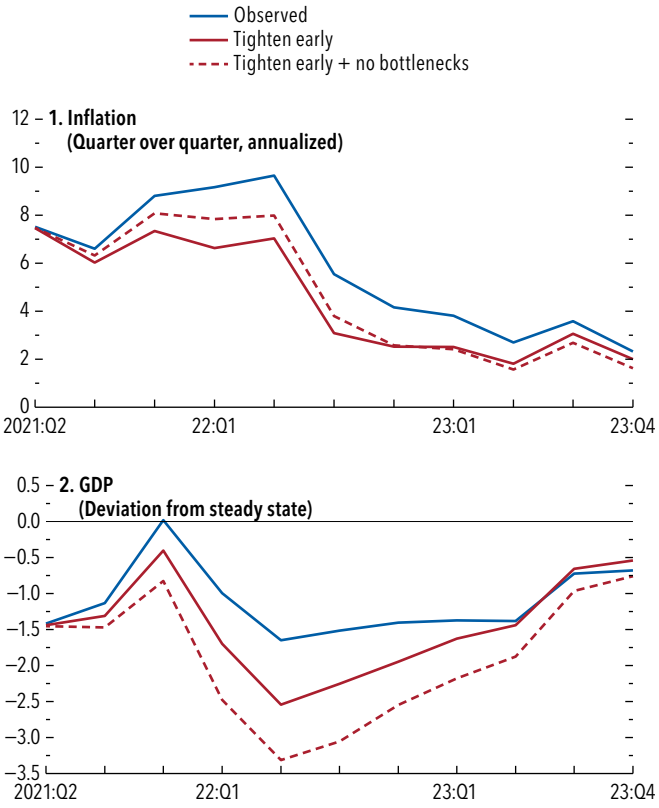
Counterfactual Scenarios

The counterfactual scenarios first ask, Would different policy choices by central banks have made a difference during the inflation surge? And how would they have interacted with bottlenecks? To answer these questions, Figure 2.13 presents cases in which policy tightens three quarters earlier than observed, combined with different assumptions about the presence of bottlenecks.

- Tightening earlier, shown by the solid red lines, lowers peak inflation by about 2 percentage points relative to the data (Figure 2.13, panel 1) but results in a 0.8 percentage point reduction in real GDP (Figure 2.13, panel 2) for 2022.
- Comparing two versions of the "earlier tightening" counterfactual further reveals the role of supply bottlenecks. When capacity constraints are imposed at levels estimated from fitting the model to the data (solid red lines), tighter policy has greater potency in lowering inflation, with low output cost relative to the case in which the constraints are assumed away (dashed red lines). This is because the constraints steepen the Phillips curve, as shown earlier, making expansionary policies more inflationary but also making it less costly to bring down inflation through monetary tightening. This comparison highlights how supply bottlenecks can steepen the Phillips curve and affect the cost of disinflation.

Would different policy choices by *other* central banks have made a difference? In the counterfactual scenario, the rest of the world tightens monetary

Figure 2.13. Counterfactual Monetary Policy
(Percent)



Sources: Federal Reserve Economic Data; Organisation for Economic Co-operation and Development; and IMF staff calculations.

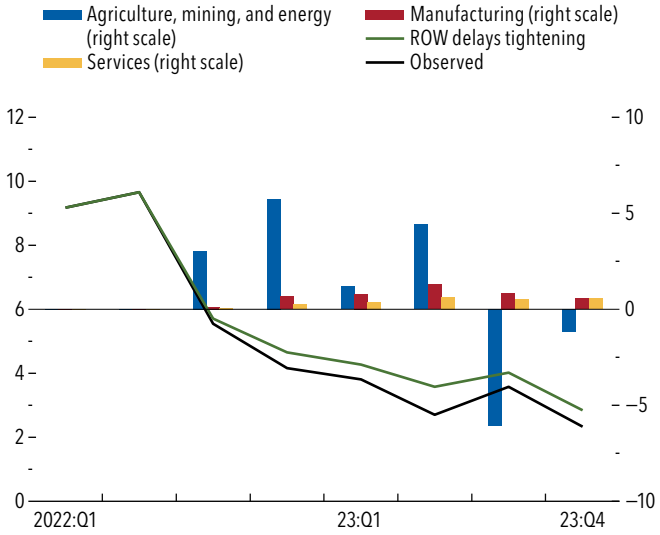
Note: "Tighten early" scenario assumes rates rise three quarters earlier. Standard monetary policy counterfactuals assume identified labor constraints remain. "No bottlenecks" assumes the wedge between the marginal product of labor and wages (shadow price of constraint) is kept consistent with the data, but the constraint does not bind.

policy later than the United States (Figure 2.14).[14] This delayed synchronization in tightening slows the domestic disinflation process. The difference between observed inflation and the counterfactual scenario is displayed by the bars in Figure 2.14 for each sector.[15] Agriculture, mining, and energy—sectors with highly flexible prices—experience stronger inflation than the other sectors, and although inflation diminishes in these sectors over time, they generate further waves of price increases in manufacturing and services through input-output linkages.

[14]Even though this simulation considers the United States, a similar mechanism would be applicable for other economies.

[15]The figure reports both the direct and indirect effects, for example, including the impact that food and energy prices likely have on the prices of other goods and services.

Figure 2.14. Role of Coordinated Monetary Policy
(Percent, quarter over quarter, annualized)



Sources: Federal Reserve Economic Data; Organisation for Economic Co-operation and Development; and IMF staff calculations.

Note: "The rest of the world (ROW) delays tightening" scenario assumes ROW hiking is delayed three quarters and US rates remain as observed. Identified labor constraints are assumed to remain. The right-hand *y*-axis shows percentage point difference in sectoral inflation between the observed data and "ROW delays tightening" scenario.

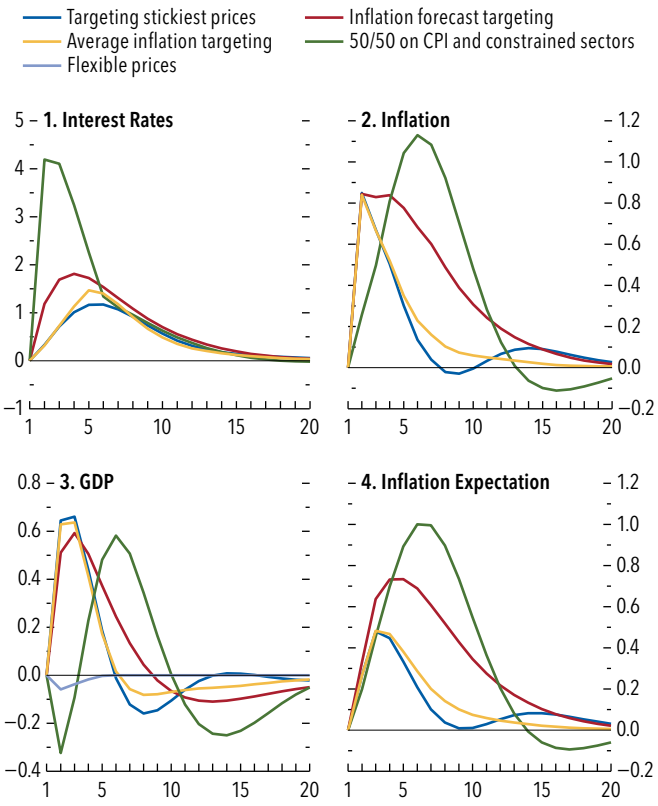
Hypothetical Scenario

The analysis next turns to a hypothetical scenario with positive aggregate demand shocks combined with negative capacity constraint shocks in the agriculture, mining, and energy sectors for both countries or regions in the model. As explained in this chapter, this would correspond to a milder set of shocks than those considered so far.

Figure 2.15 compares four simple monetary policy rules in this scenario: (1) targeting inflation in sectors with the stickiest prices;[16] (2) "inflation forecast targeting," which aims to stabilize the four-quarter moving average of future CPI inflation; and (3) "average inflation targeting," in which the central bank targets the average of the preceding four quarters of inflation, as well as (4) a sectoral Taylor rule that targets equally CPI inflation and sectoral inflation in agriculture, mining, and energy, which are the sectors subject to supply constraints but also those with the most flexible prices. The first three rules tend to be widely used or discussed, and the last one helps assess whether

[16]These sectors are information technology and telecommunications; finance and insurance; professional, scientific, and technical; education, health, and government services; and arts, entertainment, and recreation.

Figure 2.15. Alternative Policy Rules
(Percent deviation from steady state, quarter over quarter, annualized, y-axis; quarters, x-axis)



Source: IMF staff calculations.

Note: The Taylor rules are identical except for the inflation measure targeted. "Targeting stickiest prices" targets the five sectors with the steepest Phillips curves. "Inflation forecast targeting" targets the four-quarter moving average of future CPI inflation. "Average inflation targeting" represents average inflation targeting in which the central bank targets the average of the previous four quarters of inflation. "50/50 on CPI and constrained sectors" targets CPI inflation and sectoral inflation in agriculture, mining, and energy. "Flexible prices" shows relative prices in a scenario without nominal rigidities in any sector market. In each case the Taylor parameter is 3, the persistence parameter is 0.5, and neither GDP nor the output gap is targeted. CPI = consumer price index.

front-loading the policy adjustments in response to price increases in constrained sectors is appropriate. Because monetary policy can only alleviate the effect of nominal frictions on an economy's response to shocks, a benchmark "efficient" economy output for the case in which prices and wages are assumed to be perfectly flexible is also shown, in panel 3 of the figure.

Comparing the alternative policy rules yields the following insights (Figure 2.15):

- Targeting inflation in the stickiest-price sectors delivers relatively fast disinflation. By contrast, the inflation forecast targeting rule ends up "running the economy hot" by responding to medium-term inflation, which is lower than inflation on impact, and leads to a surge in inflation and inflation expectations. Despite higher nominal rates, this rule delivers lower real rates than the other policy rules. This leads to higher output initially but requires a prolonged medium-term reduction in real GDP to bring inflation to target.[17]
- The policy rule with the higher weight on food and energy tightens markedly more on impact, because food and energy prices are more flexible and sensitive to the demand shock, and these sectors themselves are supply constrained. The imposition of supply constraints, even if binding persistently, has transitory effects on inflation (Online Annex Figure 2.4.5).[18] When policy focuses on these sectors, it overreacts to transitory inflation, delivering a sharp recession. As shocks dissipate, food and energy prices fall faster than the overall CPI, because they are more flexible, leading to a rapid fall in policy rates, and in turn, inflation and GDP surge. Although this policy rule delivers relative prices closer to the flexible-price benchmark in the short term, in the longer term, relative price movements are more persistent, distorting resource allocation for longer (Online Annex Figure 2.4.6).
- "Average inflation targeting" features inflation and GDP responses that are most like those arising from the rule targeting inflation in the sectors with the stickiest prices. The main difference is that the delayed response of average inflation targeting to inflation delivers a more gradual return of inflation to target, which leads real GDP to remain below the steady state in the medium term for longer.

Summary and Policy Implications

A defining characteristic of the recent inflationary episode was the prominence of sectoral shifts amid policy stimulus and capacity constraints, partly arising from

[17]These downsides from forecast-based policy rules relative to targeting realization-based inflation are similar to the results from Erceg, Lindé, and Trabandt (2024). Despite the broad similarities in their conclusions, the frameworks in the two studies are different in terms of specific scenarios considered and the underlying mechanisms. For example, Erceg, Lindé, and Trabandt (2024) allow price and wage setters to index more intensively after prolonged periods of high inflation, amplifying the costs of delayed policy tightening.

[18]Supply constraints require higher *prices* to realign demand in a sector to be consistent with the constrained production available. Once *prices* have risen, no further price increases are required to keep sectoral demand low. This leads to a transitory effect on inflation.

supply-chain disruptions. Statistical decompositions attribute an important role to price pressures arising from individual sectors and their spillovers to core inflation. Evidence also suggests that the relationship between inflation and economic slack shifted and steepened. In line with the empirical findings, a newly developed structural model can account for the transmission of sector-specific price pressures to the rest of an economy, as well as the shifting and steepening of Phillips curves, with a mechanism running through binding supply constraints combined with demand shocks.

Even though the episode was unique, central banks can still draw lessons from the experience, especially as they review their monetary policy frameworks. In this vein, the chapter offers the following insights.

Sectoral supply constraints tend to have large but short-lived effects on inflation as they start to bind. Steeper Phillips curves stem from the *interaction* of these constraints with demand shocks. Hence, policymakers should aim to differentiate between the immediate and transitory effects of sectoral constraints and their more persistent impact when combined with demand pressures.

The chapter draws an important distinction between the steepening of *aggregate* Phillips curves and that of *sectoral* Phillips curves. In doing so, it offers a new policy insight and reaffirms an old one.

- *New lesson.* When supply bottlenecks are prevalent and combined with strong demand, the aggregate Phillips curve steepens, as it did in the recent episode. In such cases, policy tightening is effective because it can ease demand pressures and bring down inflation quickly with limited output costs; in other words, the sacrifice ratio is low. Monitoring whether key sectors bump against their supply bottlenecks in an overheated economy is crucial.
- *Old lesson.* When supply bottlenecks are confined to specific sectors, such as commodities, standard rules, such as those focusing on inflation in sectors with the stickiest prices, remain appropriate (Blanchard and Galí 2007a; Natal 2012). Although sectoral Phillips curves steepen in constrained sectors, their effects may not spread widely enough to cause a steepening of the aggregate Phillips curve. In that case, monetary tightening can achieve a sharp decline in commodities' flexible prices, but at the expense of lower output, and over time, inflation will undershoot as flexible commodity prices decline and other prices also react to tighter policy.
- *Putting them together.* Central banks should consider including well-defined escape clauses in their policy frameworks to tackle inflationary pressures when aggregate Phillips curves steepen. Forward guidance should internalize those escape clauses and allow for front-loading of tightening in such situations.

This distinction aligns with earlier IMF work that suggests refining the traditional prescription to "look through" temporary supply shocks. In this context, Gopinath (2022, 2024) underscores that second-round effects can be significant if supply shocks are large and far reaching, particularly when the economy is already overheated with high inflation. The chapter's differentiation between widespread bottlenecks and those confined to specific sectors mirrors the earlier work's focus on the size and scope of shocks. In addition, the chapter's emphasis on the interaction of these bottlenecks with demand pressures relates to the earlier work's observation about the importance of recognizing an already overheated economy.

While "running the economy hot" may have benefits—for example, facilitating relative price adjustment when shocks are permanent and the economy needs to adjust accordingly (Guerrieri and others 2021; Guerrieri and others 2023), those benefits need to be weighed against the risk of a potential de-anchoring of inflation expectations and wage-price spirals. When balancing these risks, central banks should consider not only the most likely outcomes but also the distribution of risks, and they should keep inflation from drifting too far from target for an extended period, especially when inflation expectations are less anchored and policy credibility is weaker (Gopinath 2024).

A better understanding of sectoral dynamics can help central banks calibrate their policy responses more effectively. Therefore, investing in improved models and data collection over time would be a valuable endeavor.

- Developing models that capture sectoral linkages and heterogeneity—as exemplified by the model in this chapter—can be a step in the right direction, which should be considered as central banks plan to revamp their modeling approaches in the context of their framework reviews (for example, Bank of England 2024).
- The collection of more granular sectoral data would allow sectoral networks to be mapped out and models to be refined. How much and how fast sectoral price pressures propagate across an economy, for example, depending on the centrality or criticality

of sectors or the degree of price stickiness, could be quantified through such data.

- High-frequency sectoral indicators of supply constraints and demand pressures can support policymaking in real time. Disruptions in supply chains can arise both upstream (such as component shortages) and downstream (such as congested ports), and surveys of producers could help identify them early. Constraints may also emerge from the labor market: although many central banks monitor labor market indicators, analyzing them at the sectoral level could provide a more detailed understanding of shortages. In addition, measures of overall supply-demand mismatches (such as back orders) could highlight the interacted effects of supply and demand shocks.

Open economies can benefit from positive spillovers of other central banks' policy tightening through lower tradable goods prices. Such spillovers can be particularly important for countries that have high exposure to those prices—for example, those for food and energy, and limited policy levers to respond to them—for example, low-income countries with fixed exchange rate regimes. Exchange rate depreciations and their pass-through into inflation can exert upward price pressures in countries with flexible exchange rate regimes if they are not hiking interest rates at the same time.[19] However, the exchange rate channel would be muted relative to the lower tradable goods prices channel to the extent that the policy tightening is synchronized.

Credible policy frameworks remain a valuable asset for central banks. The recent experience is a case in point: inflation expectations remained anchored and wage-price spirals did not materialize even as policymakers navigated difficult policy trade-offs under immense uncertainty in countries with credible frameworks. Better understanding of inflation expectations formation across different horizons and economic agents would help inform policymaking (Adrian 2023; Alvarez and Dizioli 2023; Brandão-Marques and others 2023; October 2023 *World Economic Outlook*).

It is important to emphasize that providing a precise quantification of the drivers of inflation in the context of simultaneous shocks during a once-in-a-century pandemic is an inherently difficult task. Reduced-form empirical analyses provide suggestive correlations. Using aggregate data or single-sector models leads to difficulties in the identification of demand and supply shocks, given input-output linkages: supply constraints in one sector can cause lower demand in complementary sectors that produce their intermediate inputs. The chapter's multisector model can capture such interlinkages and emphasizes supply constraints but also finds that their interaction with demand shocks must have played an important role in generating the size and persistence of inflation observed in the data.

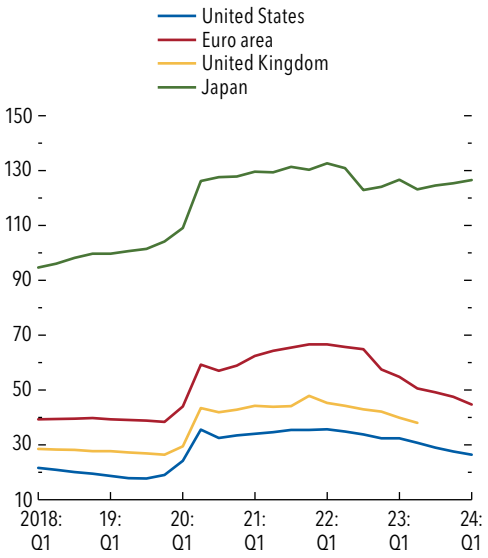
[19]Although such currency movements can facilitate expenditure switching, financial frictions or weakly anchored inflation expectations can hamper macroeconomic stability.

Box 2.1. The Role of Central Bank Balance Sheet Policies

Since the global financial crisis, central banks have expanded their toolkits by using balance sheet policies to achieve their objectives at the effective lower bound (ELB). This box documents that the unwinding of such policies, specifically quantitative tightening (QT), has had minimal effects so far, partly because of its slow and predictable implementation, facilitated by timely and extensive communication.

Central banks engaged in quantitative easing (QE) during the pandemic. QE was initially aimed at mitigating acute pandemic-related financial distress in spring 2020 and was used by many emerging markets as well as advanced economies. However, advanced economy central banks continued to expand their balance sheets even after the easing of financial distress in order to provide macroeconomic stimulus, although their policy rates were constrained by the ELB. Overall, during 2020–22, central bank balance sheets grew by more than 20 percent of GDP in Japan, the United Kingdom, and the euro area, and by about 18 percent of GDP in the United States (Figure 2.1.1). QE undertaken in this period is estimated to have had sizable effects in containing financial distress and supporting economic activity.

Figure 2.1.1. Central Bank Balance Sheets
(Percent of GDP)



Sources: Haver Analytics; and IMF staff calculations.

Note: Figure reports stock of central bank asset holdings as a percentage of GDP at monthly frequency. United Kingdom data ends in the second quarter of 2023 due to five-quarter reporting lag.

Once inflation surged, central banks began hiking policy rates and unwinding balance sheet policies, but QT is not merely QE in reverse.[1] First, central banks generally resort to QE when short-term policy rates are constrained by the ELB. This is not the case with QT, which has been used alongside policy tightening. Second, if QT and rate hikes are at least partially substitutable, greater QT can be partly offset by a slower tightening of policy rates—its effects, therefore, are more muted.[2] Third, QT may take place against a steeper Phillips curve (Erceg and others 2024a).

Evidence suggests that the effects of QT have so far been modest. Erceg and others (2024a), drawing on large-scale asset purchase shocks since the late 1990s, find that a one-standard-deviation QT shock has had a small, possibly slightly negative, effect on short-term rates while raising term premiums by about 12 basis points (Figure 2.1.2). Du, Forbes, and Luzzetti (2024) find that active QT tended to have a stronger impact on long-term rates than passive QT during the recent episode. They also find that the cumulative impact of QT announcements since 2021 has equaled at most two or three rate hikes in some countries, thus contributing moderately to a tighter policy stance.[3]

However, QT may have larger effects, especially if conducted more rapidly or on a larger scale. When reducing its balance sheet size, a central bank withdraws reserves from the banking system.

The author of this box is Thomas Kroen.

[1]QT can occur passively when a central bank does not reinvest assets that mature or when it actively sells assets (Du, Forbes, and Luzzetti 2024).

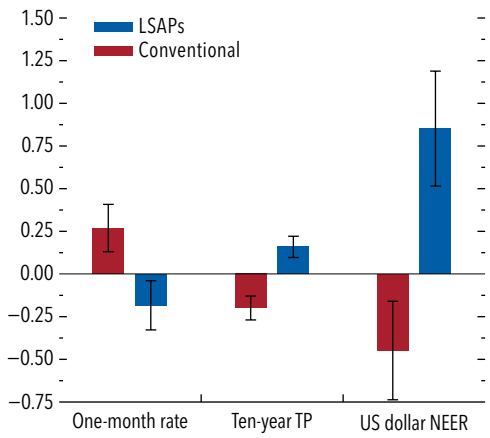
[2]The peak impact on inflation from a one-standard-deviation QT and a similar-sized policy rate shocks is estimated to be comparable in Erceg and others (2024a).

[3]Overall, QT has not been used as an explicit tool to tighten policy, instead largely working in the background. Moreover, because experience with QT started only in 2021, the external validity of these estimates in a macroeconomic environment very different from the postpandemic recovery remains an open empirical question (Du, Forbes, and Luzzetti 2024).

Box 2.1 *(continued)*

Although there was excess liquidity during the pandemic, QT may have stronger effects once reserves become scarce, as witnessed in the United States in 2019 (Du, Forbes, and Luzzetti 2024). Financial stability risks could also come to the fore: US commercial banks became more liquidity dependent through higher issuance of credit lines and increased financing via uninsured deposits, which raised the risk of sudden deposit withdrawals, as took place in March 2023 (Acharya and others 2023). Finally, advanced economies' QT strengthens their currencies (through higher term premiums) more than conventional tightening (through the short-term policy rate). Hence, there is more pressure on the currencies of emerging market and developing economies (Figure 2.1.2). This worsens inflation-output tradeoffs in those economies, especially in those with a fixed exchange rate that must raise rates sharply to maintain their pegs (Erceg and others 2024a). In contrast, conventional tightening can achieve similar macroeconomic outcomes with smaller adverse international spillovers (Erceg and others 2024a).

Figure 2.1.2. Estimated Impact of Monetary Policy and LSAP Tightening
(Percent)



Sources: Erceg and others 2024a; and IMF staff calculations.

Note: Monetary policy shocks are from Lewis (2023). The figure reports median quarterly impulse responses from estimation as in Erceg and others (2024a), along with 68 percent error bands for the United States. Shocks are scaled to a one-standard-deviation shock. LSAPs = large-scale asset purchases; NEER = nominal effective exchange rate; TP = term premium.

Box 2.2. The Role of Price-Suppressing Policies

Countries have frequently resorted to tools other than monetary policy to combat inflation. The recent inflationary episode was no exception. This box takes stock of inflation stabilization policies implemented historically and in the postpandemic recovery and discusses their rationale and limitations.

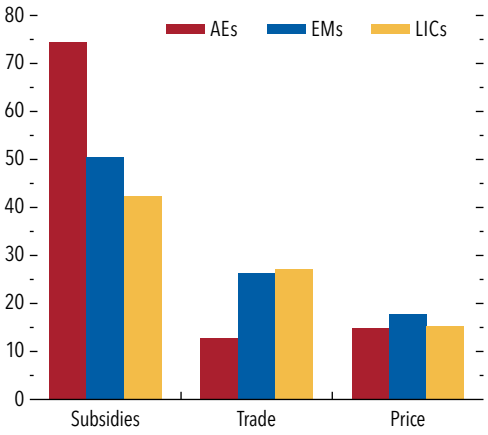
Energy and consumption subsidies. Subsidies have historically been used to maintain lower prices, especially for energy (Black and others 2023). During the pandemic, most governments subsidized fuel and electricity and reduced value-added taxes, sales taxes, and excises on essential goods (Figure 2.2.1). Subsidies work by absorbing increases in costs, thus limiting the pass-through to prices. They can tame inflation driven by temporary cost-push shocks. Dao and others (2023) find that energy subsidies played a significant role in stabilizing inflation in the euro area (Figure 2.2.2) in the recent episode. However, subsidies have substantial fiscal costs, do not align with climate-change-related goals, and often fail to target the vulnerable. They also distort relative prices, leading to overconsumption of subsidized goods, which fuels further price rises (Erceg and others 2024b).

Import tax reductions and export restrictions. Following the pandemic, many countries resorted to reducing import taxes and imposing export restrictions to stabilize domestic prices, especially in emerging markets and low-income countries (Figure 2.2.1). Import tax cuts lower imported goods prices and increase domestic supply, whereas export restrictions can ease domestic inflationary pressures. However, tax cuts have fiscal costs, and both policies induce adverse international spillovers by reducing global supply or increasing global demand, thereby contributing to further price increases (Giordani, Rocha, and Ruta 2016).

Price and wage controls. Historically, price and wage freezes have been used to curb inflation, in the United States and Europe in the 1960s and 1970s, among other instances. They have been used again to some degree since the pandemic, particularly in emerging markets and low-income countries, primarily on essential food items (Figure 2.2.1). In specific contexts, such as when dealing with monopsony (for example, minimum wage) or monopoly (for example, electricity pricing) power, these controls can be justified. However, they often lead to adverse outcomes, such as the emergence of black markets and shortages, and prevent adjustment in relative prices.

The author of this box is Damien Capelle.

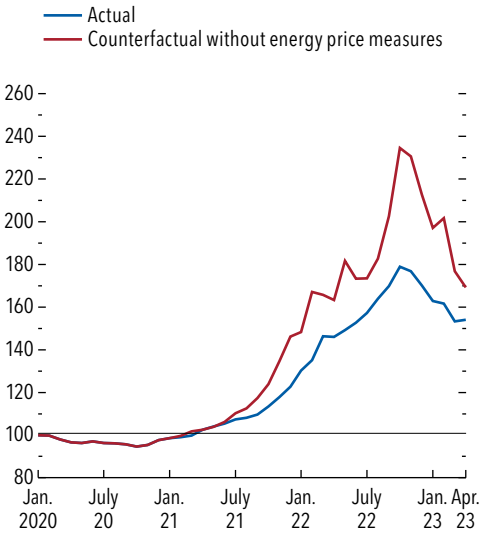
Figure 2.2.1. Discretionary Inflation Stabilization Policies during the Pandemic
(Percent of countries)



Sources: Amaglobeli and others 2023; IMF, Database of Energy and Food Price Actions.

Note: Based on surveys of 174 countries conducted from March to July 2022. AEs = advanced economies; EMs = emerging markets; LICs = low-income countries.

Figure 2.2.2. Euro Area Actual and Counterfactual Energy Price Levels
(Index; January 2020 = 100)



Sources: Dao and others 2023; and IMF staff calculations.

Note: "Actual" indicates the electricity, gas, and other fuels series of the harmonised index of consumer prices.

Box 2.2 *(continued)*

Other policies. Government-led negotiations have been historically employed in many countries to coordinate wage and price setting, during the pandemic as well as at other times. Although they can be instrumental in managing wage-price spirals and anchoring expectations, they can also distort relative prices. Finally, tax on inflation policies, which involve taxes proportional to a firm's increase in prices, was widely discussed and implemented in several advanced and emerging market economies in the 1970s and 1990s. Capelle and Liu (2023) show that by providing firms with incentives to moderate their price increases, tax on inflation policies can offer substantial stabilization gains under certain conditions. Although these policies are useful for addressing inflation coming from cost-push shocks and shifts in inflation expectations, their practical implementation needs to be clarified, and monetary policy is a better instrument for bringing down inflation arising from excessive aggregate demand.

To conclude, countries have employed additional tools to stabilize inflation when monetary policy is limited, such as during cost-push shocks or under an exchange rate peg. However, monetary policy remains the primary tool for managing demand-driven inflation. The use of alternative tools requires careful assessment of their effectiveness and trade-offs to minimize potential adverse side effects.

References

Acharya, Viral, Rahul Chauhan, Rajan Raghuram, and Sascha Steffen. 2023. "Liquidity Dependence and the Waxing and Waning of Central Bank Balance Sheets." NBER Working Paper 31050, National Bureau of Economic Research, Cambridge, MA. https://www.nber.org/papers/w31050.

Adrian, Tobias. 2023. "The Role of Inflation Expectations in Monetary Policy." Remarks delivered at the Institut für Bank and Finanzgschichte/Deutsche Bundesbank Symposium, May 15. https://www.imf.org/en/News/Articles/2023/05/15/sp-role-inflation-expectations-monetary-policy-tobias-adrian.

Afrouzi, Hassan, Saroj Bhattarai, and Edson Wu. 2024. "Relative-Price Changes as Aggregate Supply Shocks Revisited: Theory and Evidence." *Journal of Monetary Economics,* ahead of print, August 8, 2024. https://doi.org/10.1016/j.jmoneco.2024.103650.

Ahn, JaeBin. 2024. "Greenflation or Greensulation? The Case of Fuel Excise Taxes and Oil Price Passthrough." IMF Working Paper 24/153, International Monetary Fund, Washington, DC.

Alvarez, Jorge, John Bluedorn, Niels-Jakob Hansen, Youyou Huang, Evgenia Pugacheva, and Alexandre Sollaci. 2024. "Wage-Price Spirals: What Is the Historical Evidence?." *Economica* 91 (364).

Alvarez, Jorge, and Allan Dizioli. 2023. "How Costly Will Reining in Inflation Be? It Depends on How Rational We Are." IMF Working Paper 23/021, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2023/03/24/Policy-Responses-to-High-Energy-and-Food-Prices-531343.

Amaglobeli, David, Mengfei Gu, Emine Hanedar, Gee Hee Hong, and Céline Thévenot. 2023. "Policy Responses to High Energy and Food Prices." IMF Working Paper 23/074, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2023/03/24/Policy-Responses-to-High-Energy-and-Food-Prices-531343.

Ari, Anil, Daniel Garcia-Macia, and Shruti Mishra. 2023. "Has the Phillips Curve Become Steeper?." IMF Working Paper 23/100, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2023/05/12/Has-the-Phillips-Curve-Become-Steeper-533315.

Ari, Anil, Carlos Mulas-Granados, Victor Mylonas, Lev Ratnovski, and Wei Zhao. 2023. "100 Inflation Shocks: Seven Stylized Facts." IMF Working Paper 23/190, International Monetary Fund, Washington, DC.

Auclert, Adrien, Hugo Monnery, Matthew Rognlie, and Ludwig Straub. 2023. "Managing an Energy Shock: Fiscal and Monetary Policy." Unpublished, Stanford University, Stanford, CA.

Ball, Laurence M., Daniel Leigh, and Prachi Mishra. 2022. "Understanding US Inflation during the Covid Era." NBER Working Paper 30613, National Bureau of Economic Research, Cambridge, MA.

Bank of England. 2024. "Response of the Bank of England to the Bernanke Review of Forecasting for Monetary Policy Making and Communication at the Bank of England." London. https://www.bankofengland.co.uk/independent-evaluation-office/forecasting-for-monetary-policy-making-and-communication-at-the-bank-of-england-a-review/response-forecasting-for-monetary-policy-making-and-communication-at-the-bank-of-england-a-review.

Barnichon, Regis, and Adam Hale Shapiro. 2024. "Phillips Meets Beveridge." Working Paper 2024-22, Federal Reserve Bank of San Francisco. https://doi.org/10.24148/wp2024-22.

Benigno, Pierpaolo, and Gauti B. Eggertsson. 2023. "It's Baaack: The Surge in Inflation in the 2020s and the Return of the Non-linear Phillips Curve." NBER Working Paper 31197, National Bureau of Economic Research, Cambridge, MA. https://www.nber.org/papers/w31197.

Bernanke, Ben S., and Olivier Blanchard. 2024. "An Analysis of Pandemic-Era Inflation in 11 Economies." Peterson Institute for International Economics Working Paper 24-11, Washington, DC. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4834622#.

Bernanke, Ben S., Mark Gertler, and Mark W. Watson. 1997. "Systematic Monetary Policy and the Effects of Oil Price Shocks." *Brookings Papers on Economic Activity* 1997 (1): 91–157.

Black, Simon, Antung A. Liu, Ian Parry, and Nate Vernon. 2023. "IMF Fossil Fuel Subsidies Data: 2023 Update." IMF Working Paper 23/169, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281.

Blanchard, Olivier. 2016. "The Phillips Curve: Back to the '60s?." *American Economic Review* 106 (5): 31–34.

Blanchard, Olivier, and Jordi Galí. 2007a. "Real Wage Rigidities and the New Keynesian Model." *Journal of Money, Credit and Banking* 39 (S1): 35–65.

Blanchard, Olivier, and Jordi Galí. 2007b. "The Macroeconomic Effects of Oil Price Shocks: Why Are the 2000s So Different from the 1970s?." In *International Dimensions of Monetary Policy,* edited by Jordi Galí and Mark Gertler, 373–421. Chicago, IL: University of Chicago Press.

Brandão-Marques, Luis, Gaston Gelos, David J. Hofman, Julia Otten, Gurnain Kaur Pasricha, and Zoe Strauss. 2023. "Do Household Expectations Help Predict Inflation?." IMF Working Paper 23/224, International Monetary Fund, Washington, DC.

Capelle, Damien, and Yang Liu. 2023. "Optimal Taxation of Inflation." IMF Working Paper 23/254, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2023/12/08/Optimal-Taxation-of-Inflation-542215.

Carvalho, Carlos, Stefano Eusepi, Emanuel Moench, and Bruce Preston. 2023. "Anchored Inflation Expectations." *American Economic Journal: Macroeconomics* 15 (1): 1–47. https://www.doi.org/10.1257/mac.20200080.

Cavallo, Alberto, Francesco Lippi, and Ken Miyahara. 2023. "Large Shocks Travel Fast." NBER Working Paper 31659, National Bureau of Economic Research, Cambridge, MA. https://www.nber.org/papers/w31659.

Choi, Sangyup, Davide Furceri, Prakash Loungani, Saurabh Mishra, and Marcos Poplawski-Ribeiro. 2018. "Oil Prices and Inflation Dynamics: Evidence from Advanced and Developing Economies." *Journal of International Money and Finance* 82 (April): 71–96. https://doi.org/10.1016/j.jimonfin.2017.12.004.

Choi, Woon Gyu, Taesu Kang, Geun-Young Kim, and Byongju Lee. 2017. "Global Liquidity Transmission to Emerging Market Economies, and Their Policy Responses." *Journal of International Economics* 109 (November): 153–66. https://doi.org/10.1016/j.jinteco.2017.08.001.

Comin, Diego A., Robert C. Johnson, and Callum J. Jones. 2023. "Supply Chain Constraints and Inflation." NBER Working Paper 31179, National Bureau of Economic Research, Cambridge, MA. https://www.nber.org/papers/w31179.

Dao, Mai Chi, Alan Dizioli, Chris Jackson, Pierre-Olivier Gourinchas, and Daniel Leigh. 2023. "Unconventional Fiscal Policy in Times of High Inflation." IMF Working Paper 23/178, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2023/08/31/Unconventional-Fiscal-Policy-in-Times-of-High-Inflation-537454.

Dao, Mai Chi, Pierre-Olivier Gourinchas, Daniel Leigh, and Prachi Mishra. 2024. "Understanding the International Rise and Fall of Inflation since 2020." *Journal of Monetary Economics,* ahead of print, August 13, 2024. https://doi.org/10.1016/j.jmoneco.2024.103658.

Deb, Pragyan, Davide Furceri, Jonathan D. Ostry, Nour Tawk, and Naihan Yang. 2024. "The Effects of Fiscal Measures during COVID-19." *Journal of Money, Credit and Banking,* ahead of print, April 25, 2024. https://doi.org/10.1111/jmcb.13154.

Del Negro, Marco, Michele Lenza, Giorgia E. Primiceri, and Andrea Tambalotti. 2020. "What's Up with the Phillips Curve?" NBER Working Paper 27003, National Bureau of Economic Research, Cambridge, MA. https://www.nber.org/papers/w27003.

Du, Wenxin, Kristin Forbes, and Matthew Luzzetti. 2024. "Quantitative Tightening around the Globe: What Have We Learned?" NBER Working Paper 32321, National Bureau of Economic Research, Cambridge, MA. https://www.nber.org/papers/w32321.

Dupraz, Stephane. 2024. "A Kinked-Demand Theory of Price Rigidity." *Journal of Money, Credit and Banking* 56 (2–3): 325–63.

Erceg, Chris, Marcin Kolasa, Jesper Lindé, Haroon Mumtaz, and Pawel Zabczyk. 2024a. "Central Bank Exit Strategies: Domestic Transmission and International Spillovers." IMF Working Paper 24/73, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2024/03/29/Central-Bank-Exit-Strategies-Domestic-Transmission-and-International-Spillovers-546938.

Erceg, Chris, Marcin Kolasa, Jesper Lindé, and Andrea Pescatori. 2024b. "Can Energy Subsidies Help Slay Inflation?." IMF Working Paper 24/81, International Monetary Fund, Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2024/04/05/Can-Energy-Subsidies-Help-Slay-Inflation-547366.

Erceg, Chris, Jesper Lindé, and Mathias Trabandt. 2024. "Monetary Policy and Inflation Scares." Unpublished, International Monetary Fund, Washington, DC.

Giordani, Paolo, Nadia Rocha, and Michele Ruta. 2016. "Food Prices and the Multiplier Effect of Trade Policy." *Journal of International Economics* 101: 102–22.

Gopinath, Gita. 2022. "How Will the Pandemic and War Shape Future Monetary Policy?." Presentation, Jackson Hole Economic Policy Symposium, Jackson Hole, WY, August 25.

Gopinath, Gita. 2024. "Navigating Fragmentation, Conflict, and Large Shocks." Remarks, Eighth Joint NBU [National Bank of Ukraine]–NBP [Narodowy Bank Polski] Annual Research Conference, Kyiv, June 20–21.

Gudmundsson, Tryggvi, Chris Jackson, and Rafael Portillo. 2024. "The Shifting and Steepening of Phillips Curves during the Pandemic Recovery: International Evidence and Some Theory." IMF Working Paper 24/007, International Monetary Fund, Washington, DC.

Guerrieri, Veronica, Guido Lorenzoni, Ludwig Straub, and Iván Werning. 2021. "Monetary Policy in Times of Structural Reallocation." Working Paper 2021-111, Becker Friedman Institute for Economics, University of Chicago, Chicago, IL.

Guerrieri, Veronica, Michala Marcussen, Lucrezia Reichlin, and Silvana Tenreyro. 2023. *The Art and Science of Patience. Relative Prices and Inflation*. Geneva Report on the World Economy 26. Paris: CEPR Press.

Harding, Martín, Jesper Lindé, and Mathias Trabandt. 2022. "Resolving the Missing Deflation Puzzle." *Journal of Monetary Economics* 126: 15–34. https://doi.org/10.1016/j.jmoneco.2021.09.003.

Harding, Martín, Jesper Lindé, and Mathias Trabandt. 2023. "Understanding Post-Covid Inflation Dynamics." *Journal of Monetary Economics* 140: 101–18. https://doi.org/10.1016/j.jmoneco.2023.05.012.

Hazell, Jonathon, Juan Herreño, Emi Nakamura, and Jón Steinsson. 2022. "The Slope of the Phillips Curve: Evidence from US States." *Quarterly Journal of Economics* 137 (3): 1299–344. https://doi.org/10.1093/qje/qjac010.

Hooper, Peter, Frederic S. Mishkin, and Amir Sufi. 2020. "Prospects for Inflation in a High Pressure Economy: Is the Phillips Curve Dead or Is It Just Hibernating?." *Research in Economics* 74 (1): 26–62. https://doi.org/10.1016/j.rie.2019.11.00.

Ilut, Cosmin, Rosen Valchev, and Nicolas Vincent. 2020. "Paralyzed by Fear: Rigid and Discrete Pricing under Demand Uncertainty." *Econometrica* 88 (5): 1899–938. https://www.jstor.org/stable/48597206.

Inoue, Atsushi, Barbara Rossi, and Yiru Wang. 2024. "Has the Phillips Curve Flattened?." Discussion Paper 18846, Centre for Economic Policy Research, London. https://cepr.org/publications/dp18846.

Karadi, Peter, Anton Nakov, Galo Nuño, Ernesto Pasten, and Dominik Thaler. 2024. "Strike while the Iron Is Hot: Optimal Monetary Policy with a Nonlinear Phillips Curve." Discussion Paper 19339, Centre for Economic Policy Research, London. https://cepr.org/publications/dp19339.

Koch, Christoffer, and Diaa Noureldin. 2024. "How We Missed the Inflation Surge: An Anatomy of Post-2020 Inflation Forecast Errors." *Journal of Forecasting* 43 (4): 852–70.

Lewis, Daniel J. 2023. "Announcement-Specific Decompositions of Unconventional Monetary Policy Shocks and Their Effects." *Review of Economics and Statistics* 1–46. https://doi.org/10.1162/rest_a_01315.

McLeay, Michael, and Silvana Tenreyro. 2020. "Optimal Inflation and the Identification of the Phillips Curve." *NBER Macroeconomics Annual* 34 (1): 199–255. https://doi.org/10.1086/707181.

Minton, Robert, and Brian Wheaton. 2022. "Hidden Inflation in Supply Chains: Theory and Evidence." Unpublished, Harvard University, Cambridge, MA, and University of California at Los Angeles.

Natal, Jean-Marc. 2012. "Monetary Policy Response to Oil Price Shocks." *Journal of Money, Credit and Banking* 44 (1): 53–101. https://doi.org/10.1111/j.1538-4616.2011.00469.

Rubbo, Elisa. 2023. "Networks, Phillips Curves, and Monetary Policy." *Econometrica* 91 (4): 1417–55.

Task Force of the Monetary Policy Committee of the ESCB. 2010. "Energy Markets and the Euro Area Macroeconomy." Occasional Paper 113, European Central Bank, Frankfurt am Main.

CHAPTER 3

UNDERSTANDING THE SOCIAL ACCEPTABILITY OF STRUCTURAL REFORMS

As the world grapples with a prolonged period of economic weakness, demographic shifts, and the imperative of navigating the green transition and technological upheavals, the urgency for structural reforms is clearer than ever. Policymakers are being urged to implement measures that foster competition, facilitate resource allocation to emerging sectors, and bolster labor supply amid aging populations. However, despite the clear need for action, securing broad social acceptability for policy changes has often been a significant obstacle, with reform efforts waning since the global financial crisis amid rising public resistance. This chapter explores the factors that shape public attitudes toward structural reforms and assesses the effectiveness of various strategies for increasing the social acceptability of policy changes. It finds that resistance to reforms often transcends economic self-interest and instead is deeply rooted in behavioral factors that include perceptions, misinformation, and trust deficits. Information strategies that raise awareness of the need for reform and correct misinformation about policies and misperceptions about how they work can significantly boost reform support. However, effective strategies require more than just better communication. They must be backed by a strong institutional framework that fosters trust and a two-way dialogue from the early stages of policy design. Thorough consultation with all stakeholders and the public is essential for identifying mitigating measures to address the personal and societal concerns that undercut support for reform. This chapter underscores the potential of informed, inclusive, and trust-based approaches not only to enhance the quality of policies but also to significantly increase the likelihood of implementing and sustaining structural reforms that are critical for boosting productivity, employment, and growth.

The authors of this chapter are Silvia Albrizio (co-lead), Hippolyte Balima, Pragyan Deb, Bertrand Gruss (co-lead), Eric Huang, Colombe Ladreit, and Yu Shi, with support from Yaniv Cohen, Shrihari Ramachandra, and Isaac Warren. Tohid Atashbar, Max Yarmolinsky, and Arash Sheikholeslam provided computational and technical assistance. Christopher Roth was an external consultant. The chapter benefited from comments by Santiago Levy and internal seminar participants and reviewers.

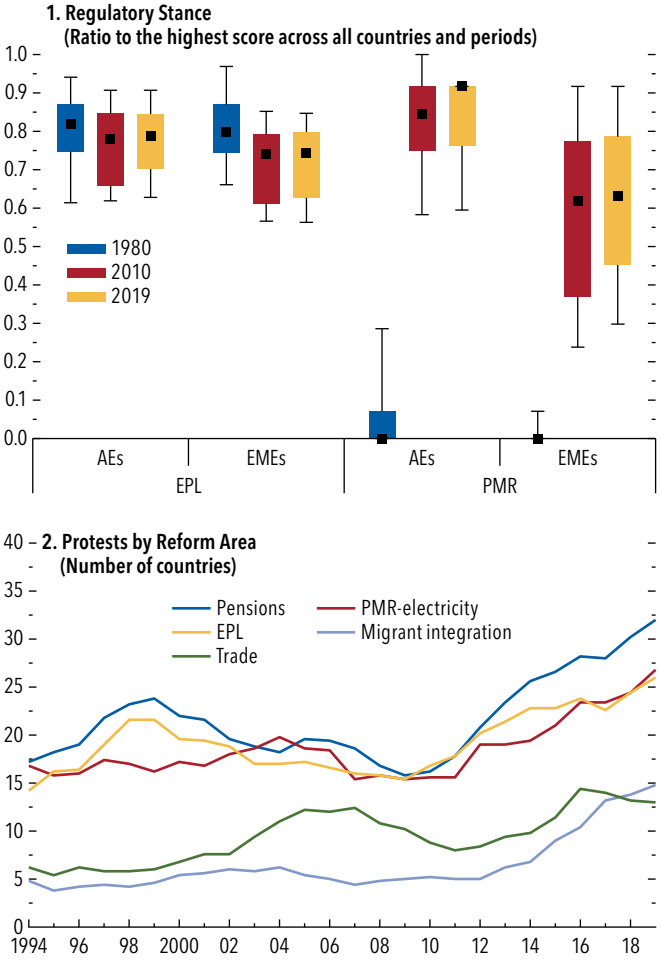
Introduction

The global economy has been enduring a prolonged period of structural weakness, and medium-term prospects under current policies remain bleak. The slowdown in global growth is attributed largely to aging populations, weak investment, and structural frictions that hinder the reallocation of capital and labor toward productive firms (see Chapter 3 of the April 2024 *World Economic Outlook* [WEO]). This is especially concerning because demographic pressures are expected to continue, and structural transformations related to the green transition and technological changes will require significant investment and resource reallocation.

In this context, policymakers are urged to advance structural reforms—that is, to update the rules and policies that shape how an economy operates—to boost productivity, employment, and growth. Key priorities include easing entry barriers and fostering competition in product markets to facilitate the reallocation of resources across sectors, thus helping countries harness the potential benefits of new technologies. Similarly, reforms to encourage workers to work longer and to facilitate the integration and improve the skill matching of foreign-born workers can help counterbalance the labor supply challenges posed by aging populations.

However, progress on progrowth structural reforms has historically been slow and uneven across countries and policy areas (Figure 3.1, panel 1). Although compromises regarding noneconomic goals may play a role (for instance, prioritizing state control in certain sectors for national security reasons), securing social acceptability for policy changes is often a major challenge (Figure 3.1, panel 2). A large body of literature on the political economy of reforms has emphasized that weak acceptability and slow progress reflect the uneven distribution of the costs and benefits they entail, across the economy and over time (for example, Boeri and Navaretti 2006). There is mounting awareness, however, that resistance to policy changes is often rooted in behavioral aspects that may dwarf the economic self-interest and equity considerations that have traditionally

Figure 3.1. Structural Reforms: Uneven Convergence amid Public Resistance



Sources: IMF, Structural Reforms Database; Mass Mobilization Project; and IMF staff calculations.

Note: Panel 1 shows the cross-country distribution of product and labor market reform indices–where higher values denote looser regulatory stance–expressed as a ratio to the highest score across all countries and periods in the sample. The marker inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles; and the black markers denote the top and bottom deciles. Panel 2 shows the five-year moving averages of the number of countries facing protests, with *x*-axis labels indicating the final year of the rolling window. AEs = advanced economies; EMEs = emerging market economies; EPL = employment protection legislation; PMR = product market regulation.

underpinned public economics analysis. Among various behavioral factors influencing reform acceptability, misinformation about the problems tackled by the reform and misperceptions about how policies work can be critical deterrents to support (for example, Douenne and Fabre 2022; Duval and others 2024).

Motivated by the urgent need to move forward on inclusive growth reform agendas, this chapter pursues two intertwined objectives: (1) to shed light on factors that influence the social acceptability of structural reforms, and (2) to identify strategies, tools, and institutions that can enhance the acceptability of policies, with the ultimate objective of passing reforms that closely align with desired plans, end up being implemented, endure over time, and pave the way for advancing broader agendas. To achieve these objectives, the chapter seeks to address the following questions:

- *Historical overview of reform episodes.* How difficult has it been to implement structural reforms? How common is the reliance on active communication and consultation strategies, as well as the use of complementary or compensatory mitigating measures, to garner consensus, and how effective are these strategies in practice?
- *Drivers of social acceptability.* What drives individuals' attitudes toward reforms? To what extent do individual characteristics and economic self-interest determine support? What is the role of perceptions, information, and other beliefs in driving policy preferences?
- *Policy toolkit for consensus and reform sustainability.* Can information strategies correct misperceptions about reforms, notably regarding the need for and the effect of policy changes, and influence attitudes toward reforms? What other tools, strategies, and institutions can help policymakers forge consensus, improve the policy design process, and ensure that reforms not only are implemented but also endure?

To answer these questions, the chapter focuses on a set of product and labor market reforms. It begins by leveraging a novel narrative database to uncover key facts surrounding reform attempts since the mid-1990s to ease product market regulation (PMR) and increase competition in the electricity sector, provide incentives for the labor supply of elder workers, and integrate foreign-born workers into the labor market. The chapter then collects new evidence from surveys of individuals to (1) investigate how beliefs and, in particular, misinformation and misperceptions about policies affect support for reforms and (2) test whether providing information—for instance, on how policies work or complementing reforms with measures that address specific concerns—can increase support. Finally, the chapter conducts an in-depth review of 11 labor market reform episodes to contextualize lessons from the survey analysis and identify a broader set of strategies and tools that have helped policymakers build consensus and sustain reform efforts.

The chapter's main findings are as follows:

- *Passing structural reforms has typically been challenging, but the use of strategies to garner consensus is associated with higher chances of implementation.* A historical overview of reform episodes shows that the pace of reform efforts has more than halved since the global financial crisis of 2008–09. Moreover, a substantial fraction of reforms that are attempted are never implemented—nearly 20 percent of policies aimed at increasing competition in the electricity sector and almost 50 percent of those providing incentives for workers to work longer—or get passed only after being diluted amid resistance. The macroeconomic or political context in which reforms are attempted can sometimes matter, but it does not seem determinant. Instead, the use of communication and consultation strategies and mitigating measures are more reliable predictors of reform implementation.
- *Beliefs and perceptions are key determinants of attitudes toward structural reforms.* Socioeconomic characteristics underlying individuals' economic self-interest do influence policy views but, for instance, in the surveys conducted for this chapter they account for only 6 percent of individuals' support for reforms to increase competition in network sectors and 11 percent for policies to integrate foreign-born workers. Instead, individuals' beliefs and perceptions explain about 80 percent of reform support, and misinformation about policies and misperceptions about how they work account for about half that support.
- *Communication and information strategies, as well as complementary and compensatory measures, can shift policy views, especially when forged in a context of trust.* Randomized survey experiments on different policy areas and in countries at different stages of development show that providing information to populations can correct misperceptions about policies and increase support for reforms. Raising awareness regarding the need for reform can often help, and explaining the effect of policies and how they work appears critical to increasing social acceptability for reforms. For instance, in the surveys conducted for this chapter, additional support for migrant integration policies in the group that received information about how those policies work was equivalent to more than 40 percent of the share of those in the control group who were opposed. Survey analyses also show that tailored mitigating measures (complementary policies and compensatory measures) that address not only self-interest, but also distributional and other societal concerns, can improve acceptability. However, lack of trust in the parties involved in the reform and in governments' ability to adequately implement policies and mitigating measures can still undermine social acceptability.
- *An expanded toolkit and a strong institutional setting fostering a two-way dialogue with stakeholders and the population at large can help policymakers garner support for implementing and sustaining reforms.* Effective strategies require far more than enhancing communication. The chapter's review of country cases confirms the importance of trust in both the message and the messenger. Conducting and diffusing policy research by independent, nonpartisan institutions has often been key to raising awareness about the need for reform and building consensus. A strong institutional setting that facilitated consultations with stakeholders, including in the policy design stage, helped cement trust in policymaking and move forward reforms that also endured. Instead, attempts to pass reforms that were not tailored to domestic conditions or that were pushed along with multiple other major reforms often faced major implementation challenges or were eventually reversed.

The chapter's findings and their implications for boosting the chances of reform implementation come with some caveats. *First*, social acceptability is not the only factor that matters for implementation success. For instance, vested interests can influence decision-making bodies and affect the course of reform attempts, regardless of whether the population broadly agrees with the proposed reform. *Second*, the strategies underscored in this chapter to cement social acceptability are not a substitute for sound policy design. The findings underscore that a poor understanding of policy mechanisms undermines public support, but a better understanding will not (and should not) help policymakers pass policies that are ill designed. *Third*, public resistance can reflect justifiable concerns about inappropriately designed reforms. In the same vein, social acceptability should not be viewed as an end in itself. Some inconsistent, counterproductive, or welfare-detrimental reform attempts may encounter little social resistance, and yet the reforms they are advocating should not be passed. This underscores the importance of the chapter's finding on the role of

knowledge and understanding of policies. A sustained effort to make independent and trustworthy policy analysis widely available can help protect societies from opportunistic populist proposals that hide costs and undesirable outcomes. *Finally*, understanding country- and policy-area-specific conditions is critical. However, with appropriate caveats, the broad principles drawn in this chapter from different policy fields and countries at various stages of development can still help policymakers navigate the challenges of implementing and sustaining reforms.

Social Acceptability of Reforms: A Primer

In essence, structural reforms are policy changes that modify acquired rights and economic rents with the aim of improving the allocation of resources in the economy. As such, they inevitably create winners (the beneficiaries from efficiency gains) and losers (those whose rents or acquired rights the reforms affect negatively).[1] For instance, reforms to foster competition can boost output and reduce prices, benefiting workers and consumers throughout the economy, but the immediate targets are the rents of the few firms with market power under existing rules and the workers in those firms.

The implications for the acceptability of reforms are, however, less straightforward than simply identifying winners and losers and eventually offsetting losses. Gains and losses from reforms are unevenly distributed not only across society, but also over time (Blanchard and Giavazzi 2003). Costs are often more evident in the short term and concentrated in a few well-organized and easily mobilized groups, whereas gains are diffused and mostly accrue slowly over time. This dynamic makes the status quo appealing, as its costs are not immediately apparent and the materialization of payoffs is uncertain (Fernandez and Rodrik 1991; Tompson 2009).

Securing social acceptability for reforms can be challenging, even when they are designed to balance increasing overall welfare with fairly compensating those who are adversely affected. A growing body of literature has pointed out that public resistance is not based solely on objective economic self-interest grounded in individuals' socioeconomic characteristics, such as employment status, age, and education level. Individuals' views on policies—and consequently, the social acceptability of reforms—are also significantly influenced by their beliefs and perceptions, including those regarding the effects of policies and the willingness or ability of policymakers to implement them as promised.

For instance, lack of trust in plans to compensate those affected by policy changes has either derailed tax and subsidy reforms or required the use of earmarking schemes and other commitment solutions at the cost of efficiency considerations (Guillaume, Zytek, and Farzin 2011; Douenne and Fabre 2022; Kanbur and Levy 2022). Similarly, if potential winners do not comprehend how a policy change will benefit them, they may not trust or support it (Stantcheva 2021; Dechezleprêtre and others 2022; Alfaro, Chen, and Chor 2023; Dabla-Norris and others 2023; Duval and others 2024).

With these considerations in mind, the rest of the chapter investigates how policymakers can enhance the social acceptability of policies, with the ultimate objective of implementing and sustaining structural reforms. It focuses on policies that have been previously identified as critical to facilitating the reallocation of resources across sectors and boosting labor supply amid aging populations (for example, Ostry, Prati, and Spilimbergo 2009; Chapter 3 of the April 2016 WEO; Chapter 3 of the October 2019 WEO; Chapter 4 of the April 2020 WEO; Budina and others 2023; Chapter 3 of the April 2024 WEO) but does not explore their macroeconomic effects—or what constitutes solid policy design—since this has been covered extensively.

The Challenge of Implementing Structural Reforms: Key Facts

Despite the well-recognized challenges of passing structural reforms, there is a surprising lack of cross-country data documenting both successful and unsuccessful reform attempts. To fill this void, this chapter constructs a new database that tracks product and labor market reform episodes during 1996–2023 (Online Annex 3.2).[2] The documented reforms aimed to (1) ease product market regulation to increase competition in the electricity sector (*PMR-electricity* hereafter), (2) provide incentives for labor participation among elder workers (*elder LP* hereafter), and

[1]See, for instance, Boeri and Navaretti (2006), Tompson (2009), and Alesina and others (2023) for discussions on the political economy of structural reforms.

[2]All online annexes are available at www.imf.org/en/Publications/WEO.

(3) increase the integration of foreign-born workers into labor markets (*migrant integration* hereafter). The database is constructed using text analysis of quarterly country reports from the Economist Intelligence Unit (EIU) spanning 26 advanced economies, 36 emerging market economies, and 14 low-income countries. For each policy area covered, it allows each country-year observation to be classified into one of three categories: (1) no relevant reform was under discussion, (2) a reform was under discussion but was not yet implemented, or (3) a reform was implemented.[3] Validation tests confirm that the data set accurately captures reform information from the EIU reports.

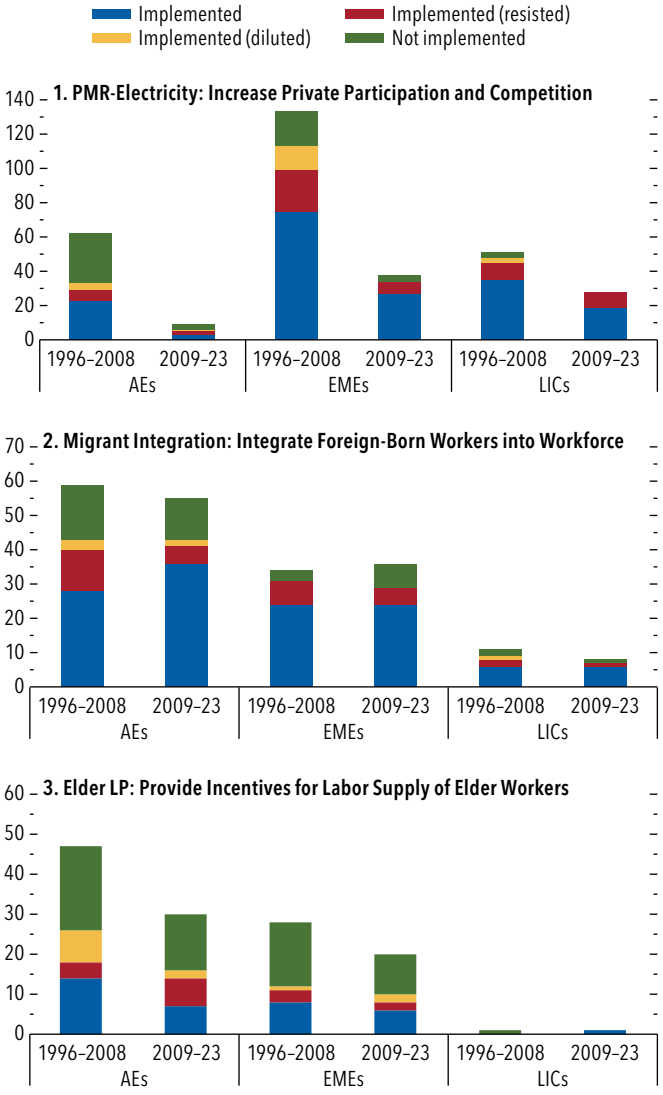
A first notable observation is that the number of reform episodes, including those when policy changes were discussed but not implemented, has declined over time in almost all policy fields and country groups (Figure 3.2). Splitting the sample in half around the time of the global financial crisis shows a particularly sharp drop in *PMR-electricity* reform episodes—despite still-large cross-country heterogeneity in regulatory stances. The pace of *elder LP* reforms in advanced economies and emerging market economies has also slowed in recent years, notwithstanding rising longevity.[4] The reduction in reform intensity could reflect shrinking scope for reforms in some policy areas and countries, such as PMR in network sectors in advanced economies. However, it has coincided with a documented increase in social discontent, notably since the global financial crisis, as captured by episodes of civil unrest, as well as distrust in public institutions, dissatisfaction with democracy, and lower voter turnout (OECD 2021). This suggests that less appetite for policy change among the public may have deterred policymakers from even attempting needed reforms.

The data also reveal how difficult it has been historically to pass reforms. Only about 50 percent of all *PMR-electricity* and *elder LP* reforms that have been discussed in advanced economies over the past three decades were eventually implemented. The implementation rate for *elder LP* reforms in emerging market economies is comparable, whereas for *PMR-electricity* reform episodes, the share of implemented reforms is 90 percent for emerging market economies and for low-income countries. The implementation rate for *migrant integration* reform episodes is comparable across country groups, at about 80 percent.

In addition, in a significant fraction of episodes that did end in reform implementation, the reform

Figure 3.2. Reform Episodes by Implementation Outcome
(Total number of reform episodes)

The intensity of reform efforts has declined over time, and a substantial share of reform attempts are either dropped or implemented amid resistance and diluted.



Source: IMF staff calculations.

Note: The figure shows the shares of reform episodes across reform areas by implementation outcome: implemented (not resisted); implemented but resisted; implemented but resisted and diluted; and not implemented. AEs = advanced economies; EMEs = emerging market economies; LICs = low-income countries; LP = labor participation; PMR = product market regulation.

[3]The first category can include both cases in which a reform was not needed and those in which it was needed but was not being considered. Earlier structural reform databases (for instance, Alesina and others 2023) identify only implemented reforms, with no-reform observations including both categories (1) and (2).

[4]There have been barely any attempts to undertake *elder LP* reforms in low-income countries, which is not surprising, because most are still benefiting from a youthful and growing working-age population or have incipient pension programs.

was nonetheless resisted by the public, as evidenced by strikes, protests, or riots: roughly 22 percent of *migrant integration* episodes, 30 percent in the case of *PMR-electricity* episodes, and as many as 40 percent for *elder LP* reform episodes. In many of those episodes, policymakers had to scale down the scope of the reform to secure its implementation (for instance, this occurred in nearly 40 percent of resisted *elder LP* reform episodes and in as many as 45 percent of episodes in the second half of the sample). Moreover, public resistance need not always preclude implementation, but it may affect the sustainability of a reform. Indeed, additional analysis reveals that among reforms that were enacted but later reversed, a higher share had faced resistance when implemented (Online Annex Figure 3.2.1).

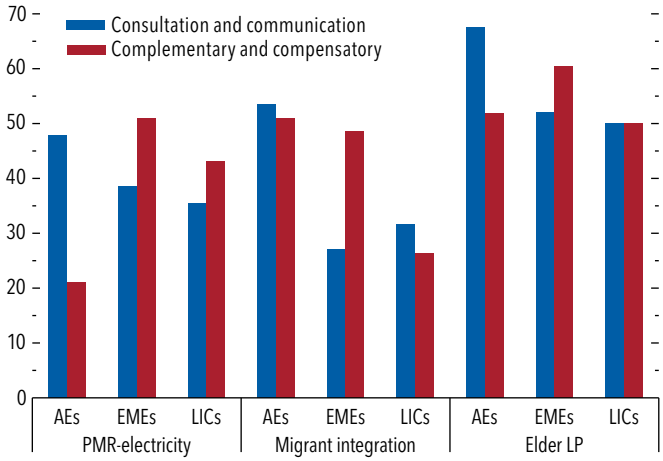
Strategies for Building Consensus for Structural Reforms

Earlier studies argue that communication and consultation efforts aimed at informing voters and stakeholders of both the need for and the goals of reform have often played a key role in securing implementation and reducing the chances of policy reversals (for example, Tompson 2009; OECD 2010). Besides early engagement with all stakeholders, those studies also underscore the role that mitigation measures have played in securing consensus. However, the evidence on the use of these strategies is drawn largely from case studies covering a handful of mostly advanced economies. To shed light on how extensively used these strategies are and what role they may have played for securing implementation, this section shows evidence based on two new indicators (see details in Online Annex 3.2):

- *Use of consultation and communication strategies.* An indicator variable records whether policymakers resorted to any of several tools—such as consultations, hearings, referendums, or independent communication agencies—to communicate, engage, and negotiate with various stakeholders at any point within a reform episode.
- *Complementary and compensatory measures.* Analogously, an indicator variable captures whether the authorities considered any of various mitigating measures—such as job training programs, temporary job protections, price subsidies, or grandfathering clauses—aimed at compensating those negatively affected by reforms or to offset transition costs.

Figure 3.3. Strategies for Building Consensus for Reform
(Share of reform episodes using each strategy, percent)

The use of consensus-building strategies has varied widely across episodes, reform areas, and income groups.



Source: IMF staff calculations.

Note: The figure shows the shares of reform episodes using each strategy by reform and country income group. AEs = advanced economies; EMEs = emerging market economies; LICs = low-income countries; LP = labor participation; PMR = product market regulation.

Although countries in all income groups have used both sets of strategies across reform areas, in a significant share of reform episodes (close to half, on average), the use was not prominent enough to be captured in the data (Figure 3.3). Advanced economies appear to have resorted more often to consultation and communication strategies, compared with their use of complementary and compensatory measures, although the share of reform episodes in which they used these mitigating measures has picked up significantly since the global financial crisis. In contrast, emerging market economies and low-income countries seem to have relied more on complementary and compensatory measures, particularly in *PMR-electricity* reform episodes, in which subsidies or price controls were frequently part of the policy packages.

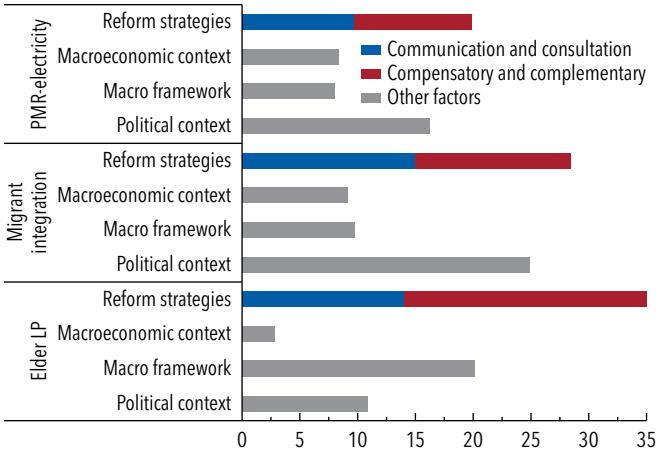
The heterogeneity in both the use of strategies to secure consensus and the implementation outcome across reform episodes raises a natural question: Has the use of these strategies helped overcome the challenges of passing reforms? Although causal effects cannot be convincingly tested with these aggregate data, an exploration of historical correlations based on multinomial logit regressions suggests that these strategies are associated with a more than 6 percentage point

increase, on average, in the likelihood of implementing proposed reforms across policy areas, with stronger effects for attempts facing resistance (Online Annex Figure 3.2.2). Indeed, in reform episodes that are met with public resistance, reaching implementation is more likely when explicit efforts to consult or communicate with social stakeholders are used than when they are not used. Also, the use of compensatory and complementary measures is generally associated with a higher likelihood of implementing reform proposals in the case of both resisted and less resisted episodes, with some differences across reform areas.

This does not mean that the use of these strategies is the only factor determining reform outcomes. The analysis also finds that the macroeconomic and political contexts in which reforms are attempted (for instance, whether a reform is proposed in good times or after a severe crisis, or at the beginning of a new administration versus closer to the next elections) can somewhat influence the likelihood of reform proposals being implemented. However, the correlations are not always consistent, with the role and significance of individual variables varying across reform areas (Online Annex Table 3.2.3).[5] In addition, when the importance of reform strategies is compared with that of other factors for predicting the implementation of reform proposals, reform strategies jointly explain about 28 percent of the implementation likelihood, on average, across different policy areas (Figure 3.4). This is relatively large: by comparison, the variables capturing the macroeconomic context or the political context explain 16 percent and 22 percent, respectively, on average. Taken together, this suggests that active use of consultation, communication, and mitigating strategies is a more robust predictor of implementation success than the context in which reforms are attempted.

Figure 3.4. Relative Importance of Reform Strategies for Predicting Reform Implementation
(Share of implementation likelihood explained, percent)

Consensus-building strategies significantly boost chances of implementing reforms.



Source: IMF staff calculations.

Note: The figure shows the relative predictive power of each set of factors for the implementation of reform proposals across different areas. Estimates are obtained through dominance analysis based on a multinomial logistic regression (Online Annex 3.2). PMR = product market regulation; LP = labor participation.

Attitudes toward Reforms: Evidence from Surveys

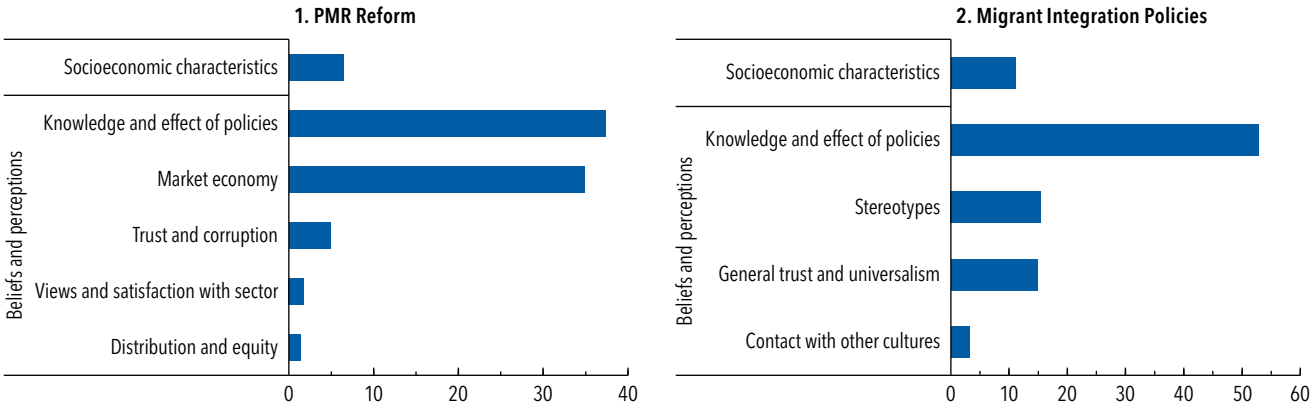
The role of reform design strategies documented in the previous section highlights the importance of understanding what drives individuals' skepticism regarding policy change and how policymakers can incorporate their concerns when designing reforms. To shed light on this matter, the chapter uses surveys of 12,600 individuals from six countries covering two different policy areas (Online Annex 3.3; Albrizio and others 2024a, 2024b):

- *PMR reforms* to enhance private participation and foster competition in the electricity and telecommunications sectors in emerging market and developing economies (the survey is conducted in Mexico, Morocco, and South Africa). Attracting private investment is critical to narrowing infrastructure gaps that can affect the ability of these economies to harness benefits from digitalization and artificial intelligence technologies (for example, Balza and others 2020; Devine and others 2021; Cazzaniga and others 2024). Public attitudes toward these policies, however, have been notably negative in the past (for example, Fay and Morrison 2007; Andrés, Schwartz, and Guasch 2013).
- *Migrant integration policies* to integrate foreign-born workers into labor markets in advanced economies (the survey covers Canada, Italy, and the United Kingdom), such as improving the recognition of immigrants' qualifications and experiences, offering free language courses and professional training, and

[5]Earlier studies have also documented ambiguous relationships between the likelihood of reform implementation (with respect to nonreforming, without distinguishing reform discussions from other nonreform observations) and potential drivers related to cyclical conditions, macroeconomic policies, and political factors (see discussion in Duval, Furceri, and Miethe 2020).

Figure 3.5. Drivers of Reform Support
(Share of support explained, percent)

Individuals' reform support is driven primarily by beliefs and perceptions, especially about the effect of policies.



Source: IMF staff calculations based on IMF-YouGov survey.

Note: The figure shows the results of a dominance analysis that quantifies the share of variance in support for reforms or policies explained by individuals' socioeconomic characteristics and different sets of beliefs and perceptions based on an ordinary least squares regression (Online Annex 3.3.1). The regression controls for country fixed effects and treatment indicators, whose contributions are not shown. PMR = product market regulation.

providing job placement programs that connect immigrants with employers looking for their specific expertise. These policies can boost labor supply and productivity amid aging populations (for example, Aiyar and others 2016; Mitaritonna, Orefice, and Peri 2017; Chapter 4 of the April 2020 WEO) but are often resisted on account of various concerns (for example, Dennison and Dražanová 2018; Grigorieff, Roth, and Ubfal 2020; Alesina and Tabellini 2024).

Predicting Policy Support: The Role of Beliefs

What drives individuals' attitudes toward reforms? Policy preferences can be determined, first, by people's socioeconomic characteristics (such as age, education level, employment, income level, and geographic location), which underpin their economic self-interest. They can also be influenced by a wide range of perceptions and beliefs, including those regarding policies (that is, how much individuals know about policies and how they think policies may affect outcomes they care about, such as jobs, prices, and crime rates).

The results from both surveys reveal that individual characteristics do play a role but account for only 6 percent of individuals' support for *PMR reforms* and 11 percent of support for *migrant integration policies* (Figure 3.5; Online Annex Figure 3.3.2). Instead, policy views are driven primarily by individuals' beliefs and (mis)perceptions, some of which can be affected by the design of reforms (Online Annex 3.3.1):

- Not surprisingly, those who believe that productive activities should be handled primarily by private firms and that the government should not intervene in price-setting decisions support *PMR reforms*, and overall, market-oriented beliefs account for a substantial share (35 percent) of policy views. Respondents who perceive the distribution of income in their country as unfair are less supportive. And distributional concerns, together with trust and perceptions on corruption, weigh as much as individual characteristics in explaining support.
- Stereotypes about immigrants play a key role in explaining individuals' support for *migrant integration policies*. Respondents who have a positive view of immigrants (for example, that they are hardworking), associate immigrants with refugees, or think that immigration can have a positive economic and cultural effect are more likely to support these policies, whereas the opposite is true for those who associate immigrants with illegal workers or a negative economic or cultural outcome.
- Importantly, knowledge about and perceptions of the effect of policies explain more than 50 percent of support for *migrant integration policies*. Respondents who correctly identify policies for better integrating foreign-born workers or who believe that integrating immigrants can be beneficial for the

Table 3.1. Hypotheses to Boost Policy Support

Survey	Treatment: Information Provided	Hypothesis
PMR Reform	***Status quo:*** Factual evidence on the cost, quality, and access to electricity or telecommunications services.	Status quo
	Status quo + effects of policies: Adds research-based evidence on the effect of policies to foster competition in network sectors on cost, quality, and access to electricity and telecommunications services.	Effect of policies
Migrant Integration Policies	***Effect of policies:*** Research-based evidence on the effect of policies to integrate foreign workers on labor market outcomes for native workers, public finances, and immigrants' crime rates. ***Effect of policies + mechanisms:*** Adds detailed information explaining the mechanisms through which immigration policies lead to those outcomes.	
	Immigrants' stories: Three stories sourced from newspaper articles about immigrants' struggles in the labor market, their perseverance, and their success.	Empathy

Source: IMF staff compilation.
Note: PMR = product market regulation.

economy are more likely to support such policies. Knowledge and perceptions of policies also explain the lion's share (37 percent) of support for *PMR reforms*. Individuals are more likely to support the reform if they believe that private firms competing in the sector will lead to lower prices, higher quality, or broader access to electricity or telecommunications services.

The importance of beliefs in shaping policy support extends beyond the areas included in this study. For example, Duval and others (2024) find that beliefs play a bigger role in explaining attitudes toward employment protection legislation than individual socioeconomic characteristics (such as employment status or education level). Dechezleprêtre and others (2022) and Dabla-Norris and others (2023) find similar results for climate policies.

Information Strategies to Boost Reform Acceptability

Because knowledge and perceptions of policies strongly influence individuals' attitudes toward structural reforms, this section uses an experimental setup to investigate how providing information about policies affects support for reforms. Survey respondents are randomly assigned at the country level to different groups before their perceptions of and views about policies are elicited in order to test three hypotheses, reported in Table 3.1, regarding the role of information strategies in boosting policy support: (1) providing information on the costs of not reforming (*status quo hypothesis*), (2) explaining the effect of policies (*effect-of-policies hypothesis*), and (3) providing a real-life narrative of immigrants' experiences (*empathy hypothesis*). Comparing responses on policy support by individuals who receive an information treatment at random with responses of those who do not makes it possible to causally test these hypotheses.[6]

Testing the *status quo hypothesis* is particularly relevant for *PMR reforms*, because these often entail opportunity costs (for example, a missed opportunity to improve competitiveness), which individuals find harder to visualize than actual costs of not reforming, as in the case of unsustainable pension programs (Tompson 2009). The results show that raising awareness of the need for reform has a positive impact on support for *PMR reforms* in the electricity sector (Figure 3.6). Compared with that in the control group, support increases by 4.5 percentage points for respondents who receive the *status quo* treatment.[7] The effect is also positive, but not statistically significant, for the telecommunications sector. This may reflect that, on average, respondents perceive private participation as higher in the telecommunications sector, so simply informing them that there is room for improvement does not necessarily change their views on allowing private firms to operate in the sector.

However, when information about the need for reform is complemented with research-based evidence on the effect that *PMR reforms* have had on

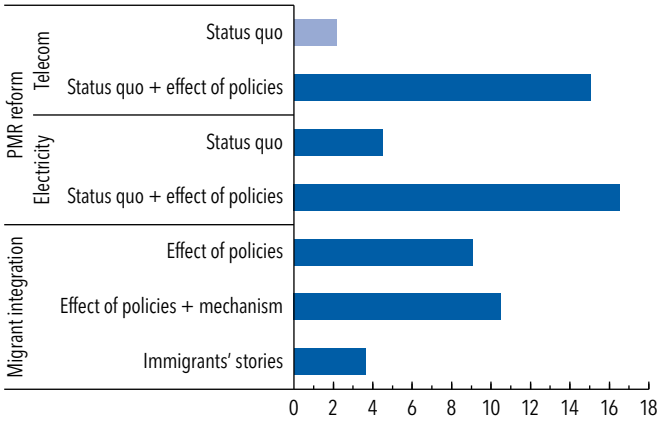
[6]The analysis controls for a rich set of individual characteristics, beliefs and perceptions, and country fixed effects (Online Annex 3.3.2). Moreover, although the survey questions can elicit individuals' policy support directly, one concern is that self-reported preferences may not match real behavior. Several studies have nonetheless shown that when both survey responses and real-world behaviors can be measured, they tend to correlate (for example, Fehr, Epper, and Senn 2021). Although the setting here does not allow real-world behavior to be measured, the survey includes real-stakes questions (for example, gathering willingness to sign a petition) that can serve as a proxy. The results are reported in Online Annex 3.3.2.

[7]In all treatments, respondents are given the sources for the evidence on the effect of policies and links to the relevant publications. Examples of treatments are reported in Online Annex 3.3.2.

Figure 3.6. Effect of Information Strategies on Reform Support

(Additional support relative to the control group, percentage points)

Information strategies that raise awareness about the need for reform and correct misperceptions about how policies work can significantly boost reform support.



Source: IMF staff calculations based on IMF-YouGov survey.

Note: The figure shows the difference in support shares between each treatment group and the control group. Dark-blue bars denote that the difference is statistically significant at the 90 percent confidence level according to the regression analyses in Online Annexes 3.3.1 and 3.3.2. PMR = product market regulation.

price, quality, and access to electricity and telecommunications services in other countries, the effect is stronger and statistically significant in regard to both sectors (the *status quo* + *effect of policies* treatment in Figure 3.6), lending support to the *effect-of-policies hypothesis*. The share of respondents who would support *PMR reforms* increases by almost 16 percentage points, on average, across sectors, from 41.4 percent in the control group to 57.1 percent among those who receive the treatment.[8] This additional support is equivalent to 46.7 percent of the share of respondents who oppose *PMR reforms* in the control group.

Similarly, the share of respondents who would support *migrant integration policies* increases by about 9 percentage points between the control group and those who receive the *effect-of-policies* treatment (and the effect is statistically significant).[9] The treatment effect is also equivalent to 30 percent of the share of respondents who oppose *migrant integration policies* in the control group. Moreover, the effect on reform support is even larger (10.5 percentage points) when respondents are given an explanation of the mechanisms underlying the policy effects under the *effect of policies* + *mechanism* treatment (equivalent to about 42 percent of the share opposed in the control group). Importantly, heterogeneous analysis shows that explaining how policies work is particularly effective in shifting support among respondents with negative stereotypes of immigrants and politically right-leaning respondents (Online Annex Table 3.3.2).

Additional results confirm that the information treatment in both surveys influences reform support by addressing individuals' misperceptions about the effect of policies. It has a statistically significant and large effect on the share of respondents in the PMR survey who perceive competition in the provision of electricity and telecommunications services as beneficial for consumers (Online Annex Table 3.3.1). Similarly, respondents who receive either of the two treatments on the effects of policies are significantly more likely to believe that policies to integrate immigrant workers can have a positive effect on natives' jobs, public finances, and crime rates (Online Annex Table 3.3.2). The effect is stronger in particular for crime rates, suggesting that misperceptions about foreign-born workers and crime are a key channel for support for policies related to migrants.

The *empathy hypothesis* is particularly relevant in the context of immigration, in which negative attitudes are often driven by concerns about cultural and work ethic differences (Dennison and Dražanová 2018; Alesina, Miano, and Stantcheva 2023). The treatment evaluates whether appealing to empathy, by highlighting real-life examples of policy-related obstacles faced by immigrants in entering the labor market, has a different impact than providing information on the benefits of integration policies. The treatment is indeed effective in increasing support for *migrant integration policies*, but with a less pronounced effect than for the *effect-of-policies* treatment.

Taken together, the survey experiments show that beliefs not only play a key role in driving reform support but can also be shaped by policy interventions. Providing clear information on the impact of policies is particularly effective in increasing support for reforms.[10]

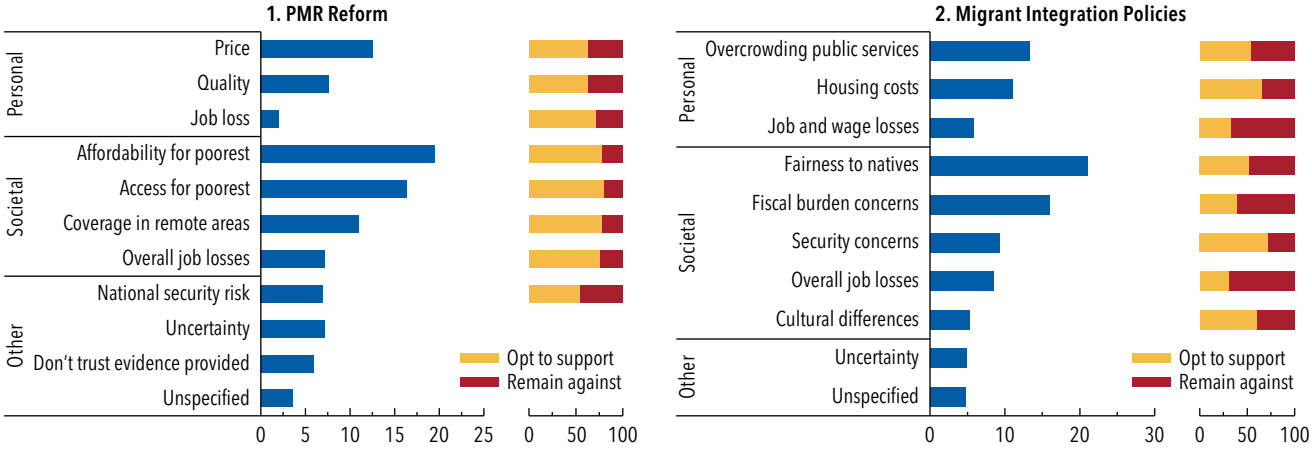
[8]Providing information about the benefits of easing regulation has also been found to increase support for labor market reforms (see Duval and others 2024).

[9]The *effect-of-policies* treatment is designed to address four potential misperceptions related to key drivers of attitudes toward immigration identified in the literature: labor market concerns, welfare concerns, security concerns, and cultural concerns (Alesina and Tabellini 2024; Dustmann and Preston 2007; Dennison and Dražanová 2018; Dražanová 2020; Haaland and Roth 2020).

[10]Although misinformation campaigns can induce misperceptions and decrease policy support (for instance, Di Tella, Galiani, and Schargrodsky 2012; Alesina and Tabellini 2024), this does not lessen the case for enhancing information efforts by policymakers seeking reform.

Figure 3.7. Reasons for Nonsupport and the Role of Compensatory and Complementary Measures
(Share of responses, percent)

Concerns about the effects of reforms on others, especially the vulnerable, are key obstacles for reform, but adequate mitigating measures can boost support.



Source: IMF staff calculations based on IMF-YouGov survey.

Note: The blue bars show the distribution of respondents' reasons for not supporting the reform (control group only). The yellow (red) bars display the proportion of these respondents that would opt to support (remain against) policies if offered mitigating measures (Online Annex 3.3.3). PMR = product market regulation.

Understanding Individuals' Concerns to Improve Policy Design

Merely explaining the need to reform and how policies can improve outcomes is not enough to secure comprehensive support. Addressing distributional concerns, unintended side effects, and the short-term costs of reforms requires additional strategies, as reflected by the evidence that compensatory or complementary measures have often helped tilt the balance toward securing reform implementation. To shed light on these strategies, the surveys zoom in on individuals who say they would not support policy change. This helps to (1) identify the main reasons for nonsupport and (2) test whether complementing reforms with mitigating measures would change their support.

When responses are grouped according to whether individuals are concerned that policy changes would hurt them directly (personal concerns) or would hurt their communities (societal concerns), the results from the two surveys indicate that societal concerns play a much larger role (Figure 3.7).

- The two most cited concerns against *PMR reforms* are consequences for the poorest households in terms of service affordability and access if private companies are permitted to manage the sector. Taken together, all societal concerns account for more than half of total responses. In turn, self-interest or personal concerns about the price or quality of services or the possibility of losing one's job represent 22 percent of responses.
- The primary reasons for not supporting *migrant integration policies* are concerns about fairness—specifically, the belief that it is unfair to assist immigrants when many locals struggle to find jobs—followed by worries that public services like hospitals, schools, and public transport may become overcrowded. Self-interest concerns account for 30 percent of responses, with access to public services or housing featuring more prominently than jobs.

Importantly, the results indicate that, irrespective of the concerns raised by respondents, offering tailored complementary and compensatory measures can significantly foster support for reforms (Online Annex 3.3.3). Although results should be interpreted as indicative rather than causal evidence, 50–80 percent of respondents in the control group initially opposed to *PMR reforms* indicate they would change their stance toward support if mitigating measures were taken to address their concerns—for example, respondents who express concerns about the cost and quality of utility services following *PMR reforms* are asked if they would change their support, assuming the government committed to creating an independent regulatory agency (Figure 3.7, panel 1). Further analysis

shows that mitigating measures play an important role in boosting support from individuals who may fear job losses from *PMR reforms*, such as workers in public utility companies or individuals with close connections to them.

The share of respondents who would change their stance varies more across specific concerns and is generally somewhat lower for those initially against *migrant integration policies*, but still sizable, at about 50 percent, on average (Figure 3.7, panel 2). One of the complementary policies that would significantly increase support is international coordination and cooperation. The EU Temporary Protection Directive, enacted in response to the massive inflow of immigrants during the war in Ukraine, is a good example of a cross-country agreement that, together with member states' policies aimed at removing barriers to accessing labor markets, has helped achieve high employment rates for foreign-born workers in record time (Box 3.1).

Individuals who say they would still oppose reforms mostly cite reasons related to trust in the parties involved and doubts about institutions' ability to implement reforms or mitigating measures effectively (Online Annex Table 3.3.3). This is in line with results in OECD (2024) showing that, on average, only 39 percent of the population in a country finds it likely that the government will clearly explain how individuals will be affected by a reform, with lower shares in countries where trust in government is weaker. These findings highlight the importance of designing mechanisms that build trust in the reform process. Examples of such mechanisms include the use of crowdsourcing or participatory budgeting to allow collective understanding, design, and oversight of the reform and compensatory measures (OECD 2022), or the use of pilot cases, as discussed in the next section. The findings also underscore that strengthening trust in public institutions through reforms to address governance and corruption vulnerabilities, as advocated in IMF engagement with member countries (see IMF 1997, 2018), can also pave the way for the successful implementation of labor and product market reforms.

Tools and Strategies for Sustainably Advancing Reform Agendas: Lessons from 11 Country Cases

A historical overview of product and labor market reform attempts suggests that strategies to build consensus are associated with higher chances of implementation. Survey analysis presented earlier in the chapter confirms that effective communication of the need for reform and how policies work can shift individuals' attitudes toward reforms. It also highlights the need to complement reforms with additional measures to address concerns. But how have these strategies been deployed in practice? And what other tools and institutions have helped policymakers sustain reform efforts? To shed light on these questions, this section examines 11 reform episodes in countries of different income levels (Table 3.2; Online Annex 3.4). To facilitate comparability, the analysis focuses on one policy field, employment protection legislation (EPL), in which it has proved particularly difficult to enact reforms over the past four decades. It is also a policy area in which intertemporal trade-offs can lead to strong resistance and political gridlock: the benefits of deregulation accrue only gradually over time, whereas deregulation can lead to higher unemployment and lower wages in the short term (Blanchard and Giavazzi 2003). Understanding what has helped to build consensus and overcome political resistance in this context can be particularly useful for other reform areas that entail similar trade-offs.

Table 3.2. Historical Employment Protection Legislation Reform Episodes

Country Cases	Country Classification at Reform	Reform Status
Bolivia (1985)	LIC	Reversed in 2006
Brazil (2017)	EME	Implemented with some resistance
Denmark (1990s)	AE	Implemented and sustained
France (2015–17)	AE	Implemented with some resistance
Georgia (2006)	LIC	Reversed in 2013
Germany (2003–05)	AE	Implemented with some resistance
India (2014–2020)	EME	Legislated in 2020 but not yet fully implemented
Korea (2016)	AE	Largely withdrawn as a result of resistance
Mexico (2012)	EME	Implemented and sustained
Peru (2008)	EME	Implemented with adjustments
Vietnam (2012)	LIC	New labor code enacted in 2012 and sustained

Source: IMF staff compilation.
Note: AE = advanced economy; EME = emerging market economy; LIC = low-income country.

Building Consensus for Reform

Despite varying outcomes in terms of implementation status, a commonality among the majority of the successfully legislated reforms has been the achievement of some level of consensus prior to legislation.

In some instances, the necessity for reform was demonstrated by economic crises, such as *Bolivia*'s hyperinflation crisis in the 1980s or high unemployment rates in countries such as *Denmark* (early 1990s), *Germany* (early 2000s), and *France* (after the euro area crisis). These situations made it clear that the status quo was unsustainable and changes were needed to revive the labor market and the economy. However, the macroeconomic context alone was neither a sufficient nor a necessary condition for the reforms. Governments needed to employ multiple approaches to successfully garner consensus:

- *Securing explicit electoral mandates for reform.* A strong electoral mandate for policy changes, underpinned by effective communication and far-reaching efforts to convince voters and stakeholders of the need for reform during an electoral campaign, was instrumental in several instances for EPL reform success (Tompson 2009). For example, the economic policy agenda that President Emmanuel Macron proposed for the 2017 *French* presidential election included a labor reform aimed at introducing flexibility in hours worked and collective bargaining, with the goal of reducing unemployment to 7 percent by 2022. In *India*'s 2014 elections, the Bharatiya Janata Party campaigned on the "Gujarat model" for growth and development, featuring business-friendly policies with simplified regulatory frameworks and relatively flexible labor laws to attract industries. Successful election outcomes may have signaled some public buy-in of the new government's economic policy agenda. Strong electoral campaigns also helped in regard to reforms in *Georgia*, *Mexico*, and *Peru*.
- *Extensive communication with key stakeholders.* Engaging early with key stakeholders, such as trade unions and business associations, has also been an effective approach toward communicating the need for EPL reforms. In *Denmark*, continuous social dialogue and tripartite negotiations involving workers, employers, and the government have been a long-standing practice with respect to labor market issues (Petersen 1998). In *France*, the 2007 Larcher Act mandated national-level negotiations between the government and social partners regarding labor law matters, but the 2016 El Khomri law was adopted without prior negotiations and was followed by protests (Gazier 2019).
- *Pilot cases.* Using pilot cases, with key measures usually deployed first in only a few regions, can help demonstrate the benefits of reforms and build public confidence, particularly for EPL reforms, which often involve substantial up-front costs with delayed and indirect benefits. For instance, pilot projects and evaluations have commonly been employed in *Denmark* when introducing new labor market measures, such as paid leave arrangements (Madsen 1999) and public employment services (Hendeliowitz and Woollhead 2007). Similarly, in *India*, key principles deployed in the states of Gujarat and Rajasthan, which pioneered more flexible labor laws, skill development initiatives, and job creation strategies, were later adopted for national labor law reforms.
- *Policy research and international comparisons.* In *Bolivia* and *Brazil*, for instance, policy analysis by independent researchers helped raise awareness about how much more rigid these countries' labor markets were compared with those of peers and how deregulation could enhance productivity growth and competitiveness. International financial institutions also played a crucial role in some cases by raising awareness and providing analysis that local authorities could leverage. For example, the IMF stressed the importance of easing restrictive labor laws in *India* during bilateral consultations (see IMF 2012, 2013, 2014). Similarly, the IMF identified labor market rigidities as the most challenging structural problem in *Germany* (IMF 2001) in the early 2000s, and the Organisation for Economic Co-operation and Development identified comprehensive labor reform in *Germany* (OECD 2001) and *France* (OECD 2015) as top priorities.

No single approach has been sufficient on its own to build a strong case for reforms. In nearly all episodes, governments have had to adopt multiple strategies to build consensus, especially when facing strong resistance. This has been particularly evident when trade unions were politically influential yet fragmented—with each representing a small fraction of the labor force and thus hesitant to support any reform that did not directly benefit its own members, even if beneficial for the broader workforce—as in *Bolivia* and *India*, or when achieving consensus required agreements at multiple levels. For example, in *India*, full implementation of new labor codes required both federal and state-level agreements. And sometimes reform adoption has built on numerous previous reform attempts across different administrations, as in *Brazil*, where attempts to increase labor market flexibility can be traced back to the 1990s (de Oliveira 2018).

Carefully Crafted Policy Design

The case studies reviewed indicate that, besides securing strong consensus, a well-articulated policy design that balances the needs of different social interest groups is critical to implementing sustainable reforms. One particularly effective approach is to involve social partners in negotiations during the policy design stage. In *Denmark*, for instance, key policy changes have often been the result of tripartite negotiations among business associations, trade unions, and the government. Similarly, key principles in *Mexico*'s 2012 labor reform were based on extensive parliamentary negotiations among political parties representing diverse social interest groups.

To ease the negative effect of less stringent employment protection on workers, several countries have supplemented flexibility-enhancing reforms with compensatory measures, such as improved social security and unemployment benefits (Online Annex Table 3.4.1). Examples include *Brazil*, *Denmark*, *France*, *Germany*, and *Korea*. Complementary measures to facilitate the reallocation of workers, such as enhanced active labor market policies and training programs, have been included in episodes in *Denmark*, *France*, *Germany*, and *Vietnam*. These measures have often helped garner support for EPL reforms.

Independent research institutes and think tanks can also play a crucial role in facilitating better policy design and communicating the benefits of labor reforms to the public. For instance, during *Germany*'s Hartz reforms, the economic research institutes RWI and ZEW were commissioned to develop a conceptual framework for evaluating draft policies (Hopp 2019). In *France*, independent institutions such as France Stratégie and the CESE not only conduct labor market analyses and policy evaluation but also advise the government and facilitate dialogue with various sectors of society.

Incremental Implementation

Incremental rollout of reform measures, starting with focused areas that do not immediately threaten core benefits of several social groups, is often associated with stronger sustainability of reforms. For instance, an important focus of *Brazil*'s reform was on reducing excessive labor litigation costs, *India*'s labor reform efforts began with consolidating and standardizing minimum wage regulations across all sectors, and *France* started with simplifying collective bargaining. In *Denmark*, although the first wave of labor reforms occurred in the early to mid-1990s, subsequent reforms, including measures targeting youth and long-term unemployment, extended into the 2010s. Conversely, when governments have pursued multiple substantial market-oriented reforms simultaneously (Online Annex Table 3.4.1), reform implementation has usually been less successful: in *Bolivia* and *Georgia*, for instance, some of the reforms that were enacted were eventually reversed. This could reflect the fact that negotiating extensively in several reform areas at the same time eventually exhausts governments' political capital or that fast-track implementation of multiple substantial reforms does not allow governments to adequately balance social interests.

Conclusions and Policy Implications

Policymakers worldwide are under pressure to revive improvements in living standards and ensure their economies flourish amid ongoing structural changes that present both opportunities and challenges. In this context, it is critical to implement policies and reforms that boost labor participation and facilitate the reallocation of labor and capital to high-productivity firms and growing sectors. Historically, gaining the necessary social and political support to enact and sustain these policies and reforms has been a formidable challenge. This chapter presents several strategies that policymakers can employ to navigate this challenge, enhance the social acceptability of their reform agendas, and thereby increase the chances of successful implementation.

Although the context in which reforms are attempted can sometimes influence the outcomes, it is by no means determinant. Historical evidence shows that active use of multipronged strategies to build consensus is a more reliable predictor of implementation success. These strategies include consultation and communication efforts and mitigating measures to compensate those affected by reforms. However, whether individuals see themselves as winners or losers with regard to prospective policy changes is not determined solely by objective socioeconomic characteristics—such as employment status, education level, or income. Individuals' views on policies—and thus the social acceptability of reforms—are driven largely by beliefs such as trust in government and institutions, distributional concerns, and perceptions about the effects of policies on themselves and their communities (for example, the overall availability of jobs, access to public services for the neediest, and national security).

Importantly, the chapter's analysis, based on randomized survey experiments, shows that certain communication interventions can shift individuals' perceptions and policy views. First, informing them about the cost of not

undertaking necessary structural reforms raises awareness of the need for the reforms and increases support for policy change. Second, trustworthy communication on the economic effects of policies is effective in correcting misperceptions. For instance, providing research-based evidence on the impact on crime rates of granting work permits to foreign-born workers significantly boosts support for policies to facilitate these workers' integration into labor markets. Although the survey experiments conducted for this chapter focus on specific policies, the consistency of results across distinct policy fields and countries at different stages of development lends support to the general applicability of their policy implications.

The lessons from the chapter's survey analysis and review of country-specific reform episodes extend far beyond simply improving communication or marketing reforms. An effective communication strategy must be supported by a strong institutional framework that fosters trust among all stakeholders and the general population. For instance, the chapter's review of historical cases underscores the importance of independent policy research to build awareness of the need for reform and to achieve consensus. Establishing credible and independent public bodies—such as the CPB Netherlands Bureau for Economic Policy Analysis, the Productivity Commission in Australia, or the Conseil d'orientation des retraites in France—that conduct and validate policy analysis can be particularly helpful (Tompson 2009).

At the same time, dialogue needs to take place in both directions. For instance, the case studies examined in the chapter indicate that not only consultation with stakeholders, but also their involvement in the reform design stage, plays a key role for reform sustainability. Policymakers across the globe are appropriately scaling up their toolkits to incorporate citizens' views into the policy design process. Examples of tools deployed to foster an effective two-way dialogue include large-scale surveys (Blanchard and Tirole 2021), scenario planning (Volkery and Ribeiro 2009), participatory budgeting (OECD 2022; Nicol and Burn-Murdoch 2024), laboratories to evaluate policies through focus groups and pilots (such as the Avalua·lab in Valencia), and open town hall meetings (such as the Grand débat national organized in response to the Yellow Vest movement in France). New civic technologies, such as digital community engagement platforms, are also opening the potential to improve representation and citizen participation processes (see further discussion and examples in Stankova 2019 and OECD 2022). These tools can help identify individuals' concerns and find mitigating measures that increase reforms' acceptability. As the chapter's survey results show, these measures do not always involve compensating those who lose out, which needs to be balanced against fiscal constraints. Sometimes they entail providing the necessary institutional framework and participatory mechanisms to build trust regarding a reform, which can be achieved even in a fiscally constrained environment.

Finally, the chapter's findings underscore how lack of trust can drive resistance to policy change, even when the benefits of reforms are explained and mitigating measures are considered. For instance, in the context of the experimental surveys discussed in the chapter, the main reason cited by respondents for ultimately not supporting policy change is lack of trust in the parties involved in the reform and, notably, skepticism about governments' ability to implement an adequate reform or deliver mitigating measures. Some mechanism designs have proved useful for reducing mistrust in the context of specific reforms. For instance, the Islamic Republic of Iran handed out cash transfers ahead of phasing out subsidies in a 2010 reform (Guillaume, Zytek, and Farzin 2011). Although funds from the transfers could not be withdrawn until the reform was implemented, the fact that individuals could see the deposits in their accounts raised confidence regarding the compensation plan. However, changing deep-rooted values, like trust, is not an easy task and takes time (Tabellini 2008). Countries that manage to leverage early engagement and effective communication to unlock reform support typically have a high degree of mutual trust rooted in many decades of dialogue among social partners.

Previous IMF studies have underscored the importance of "first-generation" governance reforms—such as enhancing the rule of law, controlling corruption, and establishing an impartial public administration—for economic growth (see Chapter 3 of the October 2019 WEO; and Budina and others 2023). The findings in this chapter indicate that strengthening governance can also be critical to successful passage of second-generation reforms in product and labor markets. The importance of carefully designing policy changes and advancing governance reforms to overcome trust deficits also needs to be reflected in IMF program design.

In summary, effective reform design should involve thorough consultation and communication. Expanding policymaking toolkits to enable a more participative reform process not only strengthens public understanding of reform proposals but also reinforces trust in public institutions, leading to greater social acceptance and successful implementation of policies.

Box 3.1. Policies to Facilitate the Integration of Ukrainian Refugees into the European Labor Market: Early Evidence

The integration of immigrants into the EU labor market during 2022–23 was significantly faster than in the past. Following a slump in global migration as the pandemic shut down borders, immigration into the EU reached a historic high in 2022—driven by more than 4 million refugees from Ukraine—and remained above prepandemic levels in 2023. About two-thirds of jobs created between the end of 2019 and the end of 2023 were filled by non-EU citizens, even as the unemployment rate for EU citizens remained at record lows.[1] Available data suggest that Ukrainian refugees integrated into EU labor markets noticeably faster than previous waves of refugees. Several countries have already estimated employment rates among Ukrainian refugees at about or above 50 percent, which is usually achieved only five or more years after arrival (OECD 2023). Migrants have helped meet unprecedented labor demand during this period.

Among other factors, the EU Temporary Protection Directive (TPD), along with member states' efforts, played a crucial role in the swift integration of foreign-born workers in the recent episode. The TPD provided immediate protection and rights across countries, including residency rights, access to housing and social welfare assistance, medical or other assistance, and means of subsistence. At the same time, many EU member states removed barriers to ensure access to the labor market.[2] For instance, they simplified entry requirements for certain regulated professions and provided a range of measures to facilitate access to the labor market, including language courses, skills validation and recognition of qualifications, skills mapping, financial incentives for employers to recruit TPD beneficiaries, and on-the-job training (EMN 2024). Other factors also facilitated swift labor market integration during the recent episode. First, survey data show that individuals displaced from Ukraine are highly educated, with most having a tertiary education (Caselli and others 2024). Second, a tight labor market in many EU countries also supported fast integration. Nevertheless, as is common in regard to immigrants, there is evidence of widespread worker overqualification and skills mismatches (EMN 2024), which points to further room for improvement in immigrant integration policies.

The recent experience offers important policy lessons. Granting asylum seekers early access to private and public sector labor markets and self-employment, as the current TPD has done for Ukrainian refugees, is a key prerequisite for their speedy integration into workforces (Aiyar and others 2016). The availability of language courses is also crucial to enabling immigrants to overcome one of the most important barriers to obtaining a job. Finally, simplified entry requirements for certain regulated professions, skills validation, and recognition of qualifications are also important elements for successful integration of refugees.

The authors of this box are Francesca Caselli and Frederik Toscani.

[1]It is still too early to assess the effect of the recent immigration wave on native workers' wages.

[2]For specific country examples, see EMN (2024) and Caselli and others (2024).

References

Aiyar, Shekhar, Bergljot Barkbu, Nicoletta Batini, Helge Berger, Enrica Detragiache, Allan Dizioli, Christian Ebeke, and others. 2016. "The Refugee Surge in Europe: Economic Challenges." IMF Staff Discussion Note 16/02, International Monetary Fund, Washington, DC.

Albrizio, Silvia, Hippolyte Balima, Bertrand Gruss, Eric Huang, and Colombe Ladreit. 2024a. "Private Participation and its Discontents: Insights from Large-Scale Surveys." IMF Working Paper 24/216, International Monetary Fund, Washington, DC.

Albrizio, Silvia, Hippolyte Balima, Bertrand Gruss, Eric Huang, and Colombe Ladreit. 2024b. "Shifting Perceptions: Unpacking Public Support for Immigrant Workers Integration in the Labor Market." IMF Working Paper 24/217, International Monetary Fund, Washington, DC.

Alesina, Alberto, Davide Furceri, Jonathan D. Ostry, Chris Papageorgiou, and Dennis P. Quinn. 2023. "Structural Reforms and Elections: Evidence from a World-Wide New Dataset." *Journal of the European Economic Association* 22 (4): 1936–80. https://doi.org/10.1093/jeea/jvad075.

Alesina, Alberto, Armando Miano, and Stefanie Stantcheva. 2023. "Immigration and Redistribution." *Review of Economic Studies* 90 (1): 1–39.

Alesina, Alberto, and Marco Tabellini. 2024. "The Political Effects of Immigration: Culture or Economics?." *Journal of Economic Literature* 62 (1): 5–46.

Alfaro, Laura, Maggie Chen, and Davin Chor. 2023. "Can Evidence-Based Information Shift Preferences towards Trade Policy?" NBER Working Paper 31240, National Bureau of Economic Research, Cambridge, MA.

Andrés, Luis A., Jordan Schwartz, and J. Luis Guasch. 2013. *Uncovering the Drivers of Utility Performance: Lessons from Latin America and the Caribbean on the Role of the Private Sector, Regulation, and Governance in the Power, Water, and Telecommunication Sectors.* Directions in Development. Washington, DC: World Bank. https://hdl.handle.net/10986/1577.

Balza, Lenin H., Raul Jimenez Mori, Demian Macedo, and Jorge Mercado. 2020. "Revisiting Private Participation, Governance and Electricity Sector Performance in Latin America." *Electricity Journal* 33: 106798.

Blanchard, Olivier, and Francesco Giavazzi. 2003. "Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets." *Quarterly Journal of Economics* 118 (3): 879–907.

Blanchard, Olivier, and Jean Tirole. 2021. "The Major Future Economic Challenges." Article, France Stratégie, June 23. https://www.strategie.gouv.fr/english-articles/major-future-economic-challenges-olivier-blanchard-and-jean-tirole.

Boeri, Tito, and Giorgio Barba Navaretti, eds. 2006. *Structural Reforms without Prejudices.* Oxford: Oxford University Press.

Budina, Nina, Christian H. Ebeke, Florence Jaumotte, Andrea Medici, Augustus J. Panton, Marina M. Tavares, and Bella Yao. 2023. "Structural Reforms to Accelerate Growth, Ease Policy Trade-Offs, and Support the Green Transition in Emerging Market and Developing Economies." IMF Staff Discussion Note 23/07, International Monetary Fund, Washington, DC.

Caselli, Francesca, Huidan Lin, Frederik Toscani, and Jiaxiong Yao. 2024. "Migration into the EU: Stocktaking of Recent Developments and Macroeconomic Implications." IMF Working Paper 24/211, International Monetary Fund, Washington, DC.

Cazzaniga, Mauro, Florence Jaumotte, Longji Li, Giovanni Melina, Augustus J. Panton, Carlo Pizzinelli, Emma J. Rockall, and others. 2024. "Gen-AI: Artificial Intelligence and the Future of Work." IMF Staff Discussion Note 24/01, International Monetary Fund, Washington, DC.

Dabla-Norris, Era, Thomas Helbling, Salma Khalid, Hibah Khan, Giacomo Magistretti, Alexandre Sollaci, and Krishna Srinivasan. 2023. "Public Perceptions of Climate Mitigation Policies: Evidence from Cross-Country Surveys." IMF Staff Discussion Note 23/02, International Monetary Fund, Washington, DC.

de Oliveira, Roberto Véras. 2018. "Brazilian Labour Reform in Historical Perspective." *Global Labour Journal* 9 (3): 319–38.

Dechezleprêtre, Antoine, Adrien Fabre, Tobias Kruse, Bluebery Planterose, Ana Sanchez Chico, and Stefanie Stantcheva. 2022. "Fighting Climate Change: International Attitudes toward Climate Policies." NBER Working Paper 30265, National Bureau of Economic Research, Cambridge, MA.

Dennison, James, and Lenka Dražanová. 2018. *Public Attitudes on Migration: Rethinking How People Perceive Migration; An Analysis of Existing Opinion Polls in the Euro-Mediterranean Region.* Fiesole, Italy: European University Institute.

Devine, Hilary, Adrian Peralta Alva, Hoda Selim, Preya Sharma, Ludger Wocken, and Luc Eyraud. 2021. "Private Finance for Development: Wishful Thinking or Thinking Out of the Box?." IMF Departmental Paper 21/11, International Monetary Fund, Washington, DC.

Di Tella, Rafael, Sebastian Galiani, and Ernesto Schargrodsky. 2012. "Reality versus Propaganda in the Formation of Beliefs about Privatization." *Journal of Public Economics* 96 (5–6): 553–67.

Douenne, Thomas, and Adrien Fabre. 2022. "Yellow Vests, Pessimistic Beliefs, and Carbon Tax Aversion." *American Economic Journal: Economic Policy* 14 (1): 81–110.

Dražanová, Lenka. 2020. "What Factors Determine Attitudes to Immigration? A Meta-analysis of Political Science Research on Immigration Attitudes (2009–2019)." Research Paper RSCAS 86, Robert Schuman Centre for Advanced Studies, European University Institute, Fiesole, Italy.

Dustmann, Christian, and Ian P. Preston. 2007. "Racial and Economic Factors in Attitudes to Immigration." *BE Journal of Economic Analysis and Policy* 7 (1). https://doi.org/10.2202/1935-1682.1655.

Duval, Romain, Davide Furceri, and Jakob Miethe. 2020. "Robust Political Economy Correlates of Major Product and Labor Market Reforms in Advanced Economies: Evidence

from BAMLE for Logit Models." *Journal of Applied Econometrics* 36 (1): 98–124.

Duval, Romain, Yi Ji, Chris Papageorgiou, Ippei Shibata, and Antonio Spilimbergo. 2024. "Preferences for Labor Regulation: Endowments vs. Beliefs." *Economic Policy* 39 (119): 549–606.

European Migration Network (EMN). 2024. "Labour Market Integration of Beneficiaries of Temporary Protection from Ukraine." European Migration Network–OECD Joint Inform, Brussels. https://home-affairs.ec.europa.eu/document/download/dabaf5d4-e785-4218-8ef9-f49c6294dd4b_en?filename=EMN_OECD_INFORM_Labour%20market%20integration_2024_0.pdf.

Fay, Marianne, and Mary Morrison. 2007. *Infrastructure in Latin America and the Caribbean: Recent Developments and Key Challenges.* Washington, DC: World Bank.

Fehr, Ernst, Thomas Epper, and Julien Senn. 2021. "Other-Regarding Preferences and Redistributive Politics." Working Paper 339, Department of Economics, University of Zurich.

Fernandez, Raquel, and Dani Rodrik. 1991. "Resistance to Reform: Status Quo Bias in the Presence of Individual-Specific Uncertainty." *American Economic Review* 81 (5): 1146–55.

Gazier, Bernard. 2019. "Opportunities or Tensions: Assessing French Labour Market Reforms from 2012 to 2018." *International Journal of Comparative Labour Law and Industrial Relations* 35 (3): 331–54.

Grigorieff, Alexis, Christopher Roth, and Diego Ubfal. 2020. "Does Information Change Attitudes toward Immigrants?" *Demography* 57: 1117–43. https://doi.org/10.1007/s13524-020-00882-8.

Guillaume, Dominique M., Roman Zytek, and Mohammad Reza Farzin. 2011. "Iran: The Chronicles of the Subsidy Reform." IMF Working Paper 11/167, International Monetary Fund, Washington, DC.

Haaland, Ingar, and Christopher Roth. 2020. "Labor Market Concerns and Support for Immigration." *Journal of Public Economics* 191: 104256.

Hendeliowitz, Jan, and Carina Bastlund Woollhead. 2007. "Employment Policy in Denmark—High Levels of Employment, Flexibility and Welfare Security." In *Local Governance for Promoting Employment: Comparing the Performance of Japan and Seven Countries,* edited by Sylvain Giguère and Yoshio Higuchi, 121–38. Tokyo: Japan Institute for Labour Policy and Training.

Hopp, Johanna. 2019. "The Hartz Employment Reforms in Germany." Case Study, Center for Public Impact, London. https://www.centreforpublicimpact.org/case-study/hartz-employment-reforms-germany.

International Monetary Fund (IMF). 1997. "The Role of the Fund in Governance Issues." Guidance Note 97/197, International Monetary Fund, Washington, DC.

International Monetary Fund (IMF). 2001. "Germany: Staff Report for the 2001 Article IV Consultation." Country Report 01/202, International Monetary Fund, Washington, DC.

International Monetary Fund (IMF). 2012. "India: Staff Report for the 2012 Article IV Consultation." Country Report 12/96, International Monetary Fund, Washington, DC.

International Monetary Fund (IMF). 2013. "India: Staff Report for the 2013 Article IV Consultation." Country Report 13/37, International Monetary Fund, Washington, DC.

International Monetary Fund (IMF). 2014. "India: Staff Report for the 2014 Article IV Consultation." Country Report 14/57, International Monetary Fund, Washington, DC.

International Monetary Fund (IMF). 2018. "Review of 1997 Guidance Note on Governance—A Proposed Framework for Enhancing Fund Engagement." IMF Policy Paper 18/142, International Monetary Fund, Washington, DC.

Kanbur, Ravi, and Santiago Levy. 2022. "Social Acceptability of Tax and Transfer Schemes." *Policy Review* 2 (4): 3.

Madsen, Per Kongshøj. 1999. "Denmark: Flexibility, Security and Labour Market Success." Employment and Training Paper 53, International Labour Organization, Geneva.

Mitaritonna, Cristina, Gianluca Orefice, and Giovanni Peri. 2017. "Immigrants and Firms' Outcomes: Evidence from France." *European Economic Review* 96: 62–82.

Nicol, Scherie, and Ailsa Burn-Murdoch. 2024. "Empowering Public Understanding: Citizen Dialogue in Budgeting." GOV/SBO(2024)17, Public Governance Directorate, Committee of Senior Budget Officials, Organisation for Economic Co-operation and Development, Paris.

Organisation for Economic Co-operation and Development (OECD). 2001. "OECD Economic Surveys: Germany 2001." OECD Publishing, Paris. https://doi.org/10.1787/eco_surveys-deu-2001-en.

Organisation for Economic Co-operation and Development (OECD). 2010. "Making Reform Happen: Lessons from OECD Countries." OECD Publishing, Paris. https://doi.org/10.1787/9789264086296-en.

Organisation for Economic Co-operation and Development (OECD). 2015. "OECD Economic Surveys: France 2015." OECD Publishing, Paris. https://doi.org/10.1787/eco_surveys-fra-2015-en.

Organisation for Economic Co-operation and Development (OECD). 2021. "Perspectives on Global Development 2021: From Protest to Progress?." OECD Publishing, Paris.

Organisation for Economic Co-operation and Development (OECD). 2022. "OECD Guidelines for Citizen Participation Processes." OECD Public Governance Review, OECD Publishing, Paris. https://doi.org/10.1787/f765caf6-en.

Organisation for Economic Co-operation and Development (OECD). 2023. "What Are the Integration Challenges of Ukrainian Refugee Women?." OECD Publishing, Paris.

Organisation for Economic Co-operation and Development (OECD). 2024. "Survey on Drivers of Trust in Public Institutions—2024 Results: Building Trust in a Complex Political Environment." OECD Publishing, Paris.

Ostry, Jonathan David, Alessandro Prati, and Antonio Spilimbergo. 2009. "Structural Reforms and Economic Performance in Advanced and Developing Countries." IMF Occasional Paper 09/03, International Monetary Fund, Washington, DC.

Petersen, Kåre F. V. 1998. "Tripartite Agreement Reached on Content of New Labour Market Reform." Article, Eurofound, October 27. https://www.eurofound.europa.eu/en/resources/article/1998/tripartite-agreement-reached-content-new-labour-market-reform.

Stankova, Olga Ilinichna. 2019. "Frontiers of Economic Policy Communications." IMF Departmental Paper 19/08, International Monetary Fund, Washington, DC.

Stantcheva, Stefanie. 2021. "Understanding Tax Policy: How Do People Reason?." *Quarterly Journal of Economics* 136 (4): 2309–69.

Tabellini, Guido. 2008. "Institutions and Culture: Presidential Address." *Journal of the European Economic Association* 6 (2–3): 255–94.

Tompson, William. 2009. *The Political Economy of Reform: Lessons from Pensions, Product Markets and Labour Markets in Ten OECD Countries.* Paris: OECD Publishing.

Volkery, Axel, and Teresa Ribeiro. 2009. "Scenario Planning in Public Policy: Understanding Use, Impacts and the Role of Institutional Context Factors." *Technological Forecasting and Social Change* 76 (9): 1198–207.