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Facing Spillovers from Trade and Manufacturing

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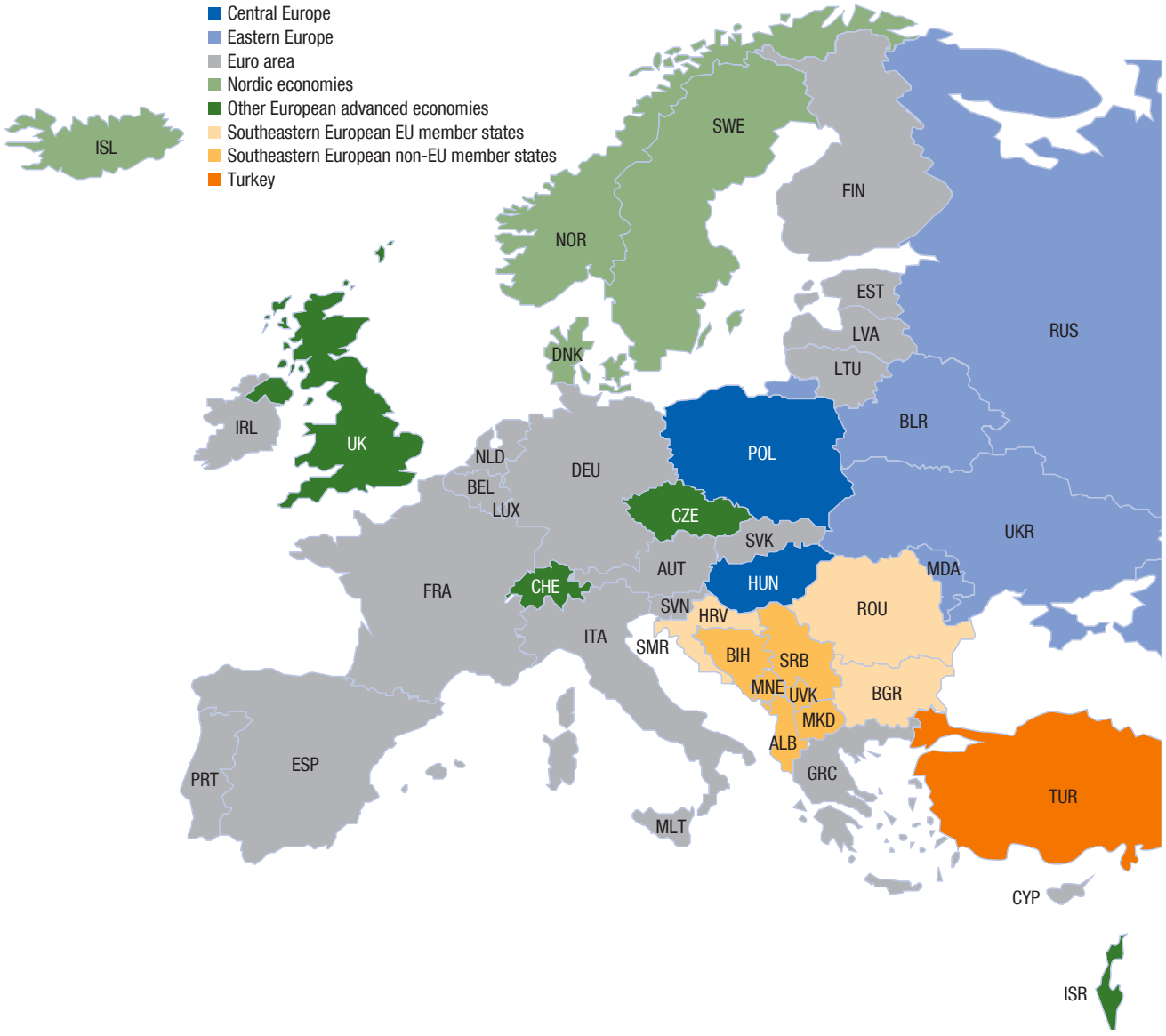


Note: The boundaries, colors, denominations, and any other information shown on the maps do not imply, on the part of the International Monetary Fund, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries. In this report, statistical data on Crimea and the city of Sevastopol are included as part of the data for Russia. EU = European Union.

Executive Summary

Economic activity in Europe has slowed on the back of weakness in trade and manufacturing. For most of the region, the slowdown remains externally driven. However, some signs of softer domestic demand have started to appear, especially in investment. Services and domestic consumption have been buoyant so far, but their resilience is tightly linked to labor market conditions, which, despite some easing, remain robust. Expansionary fiscal policy in many countries and looser financial conditions have also supported domestic demand.

On balance, Europe's growth is projected to decline from 2.3 percent in 2018 to 1.4 percent in 2019. A modest recovery is forecast for 2020, with growth reaching 1.8 percent, as global trade is expected to pick up and some economies recover from past stresses. This projection, broadly unchanged from the April 2019 *World Economic Outlook*, masks significant differences between advanced and emerging Europe. Growth in advanced Europe has been revised down by 0.1 percentage point to 1.3 percent in 2019, while growth in emerging Europe has been revised up by 0.5 percentage point to 1.8 percent.

Amid high uncertainty, risks remain to the downside, with a no-deal Brexit the key risk in the near term, which could have a sizeable negative impact on the economies in the region. An intensification of trade tensions and related uncertainty could also dampen investment. More broadly, the weakness in trade and manufacturing could spread to other sectors—notably services—faster and to a greater extent than currently envisaged. Other risks stem from abrupt declines in risk appetite, financial vulnerabilities, the re-emergence of deflationary pressures in advanced economies, and geopolitics.

Subdued inflationary pressures and slowing economic activity in many European countries call for monetary policy to remain accommodative. Wage growth has risen above productivity gains, especially in the European Union's newer member states, but, as discussed in Chapter 2, the pickup in wage growth is likely to have a more muted impact on inflation than in the past. Historically, wage growth has been an important determinant of price developments in Europe. However, the analysis suggests that the passthrough from wages to prices is weaker when inflation and inflation expectations are low, corporate profitability is high, and firms are exposed to greater competition—all characteristics of the current economic environment in most of Europe. At the same time, extending loose monetary policy for longer calls for heightened monitoring of financial sector vulnerabilities—such as rising house prices—and the active use of macroprudential measures as needed.

Given that unemployment rates are projected to remain close to or below levels reached during the pre-crisis boom, countries' fiscal stances should generally remain guided by medium-term objectives. At the same time, overall fiscal balances should be allowed to absorb cyclical fluctuations in activity. Countries with ample fiscal space should take measures to boost potential output, while countries with elevated debt and deficit levels should generally proceed with fiscal consolidation. This would also help address external imbalances. Given elevated downside risks, contingency plans should be at the ready for implementation in case these risks materialize, not least because the scope for effective monetary policy action has diminished. A synchronized fiscal response, albeit appropriately differentiated across countries, could become suitable. Reinvigorating structural reforms, including by raising labor force participation, enhancing human capital and infrastructure, and strengthening governance, remains vital to raise economic growth and address long-term challenges, such as adverse demographic trends.

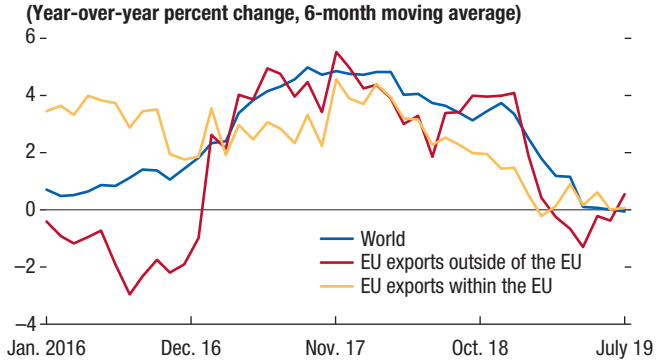
1. Facing Spillovers from Trade and Manufacturing

Global trade and manufacturing have weakened and so have these sectors in Europe. The evolution of European growth depends on two forces. On the one hand, European exports are softening and prospects for a recovery in global trade are not as strong as they were six months ago. On the other hand, easier financial conditions, expansionary fiscal policy in many countries, and still-strong labor markets are supporting domestic demand. This support is stronger in the newer European Union (EU) Member States (NMS). On balance, near-term growth in Europe is projected to moderate from 2.3 percent in 2018 to 1.4 percent in 2019—the lowest growth rate since 2013—and rebound to 1.8 percent in 2020. This forecast, broadly unchanged from the April 2019 World Economic Outlook, reflects differences between advanced Europe, where growth has been revised down by 0.1 percentage point to 1.3 percent and 1.5 percent in 2019 and 2020, respectively, and emerging Europe, where growth has been revised up by 0.5 and 0.2 percentage point to 1.8 percent and 2.5 percent in 2019 and 2020, respectively. Amid high uncertainty, risks to the outlook remain to the downside, with a no-deal Brexit the key risk in the near term. Monetary policy should remain accommodative where inflationary pressures are still subdued, which is the case in most European economies. The potential side effects from such policy on financial stability should be carefully monitored. Fiscal policy should continue to be guided by medium-term objectives. But plans for stimulus in case of a sharper downturn should be at the ready, not least because the scope for effective monetary action has diminished. Countries with ample fiscal space should implement fiscal measures that boost potential growth. Reinvigorating structural reforms remains vital to raise subdued potential output growth and address long-term challenges, such as demographics.

This chapter was prepared by Raju Huidrom and Svitlana Maslova with input from Vizhdan Boranova and Nemanja Jovanovic, under the supervision of Jörg Decressin and the guidance of Emil Stavrev and Laura Papi. Petia Topalova provided useful advice and comments. Nomelie Veluz provided administrative support. This chapter reflects data and developments as of October 25, 2019.

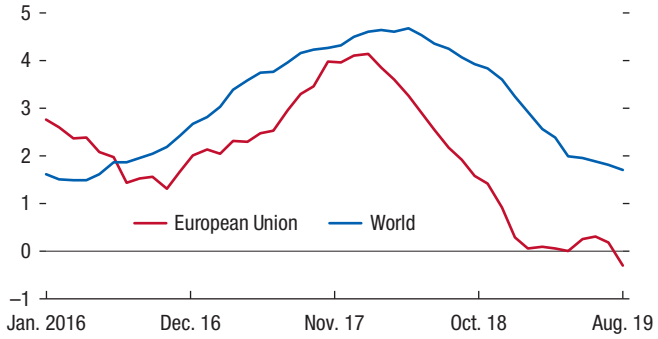
Figure 1.1. Global Trade and Manufacturing

1. Export Volume
(Year-over-year percent change, 6-month moving average)



Sources: CPB World Trade Monitor; Eurostat; and IMF staff calculations.
Note: EU = European Union.

2. Industrial Production
(Year-over-year percent change, 6-month moving average)

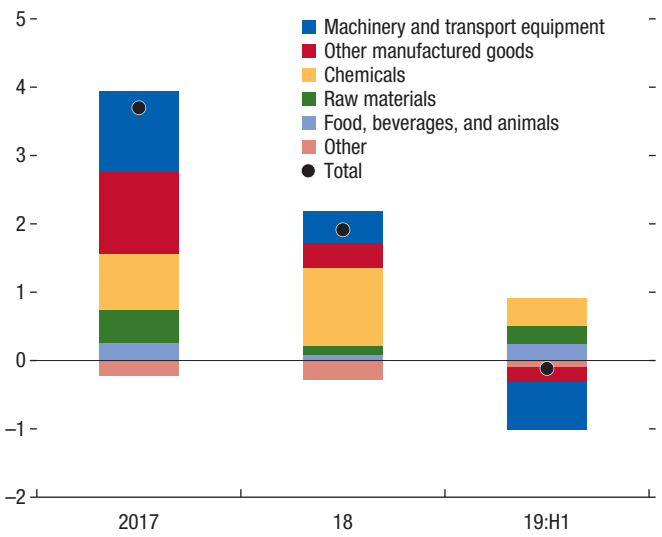


Sources: IMF, *Global Data Source*; and IMF staff calculations.

A Trade- and Industry-Driven Slowdown

The slowdown in global trade and industrial activity that began in early 2018 has continued (Figure 1.1). It came on the back of slower capital expenditure in Asia and sluggish production in the vehicle and technology sectors. Trade tensions have intensified, and Brexit-related uncertainty has continued, also weighing on trade. Growth in global export volumes has slowed significantly from about 4½ percent in 2017 to close to zero in the first half of 2019 (Figure 1.1, panel 1).

Figure 1.2. Contribution to Growth in European Union Export Volume: Product Composition
(Total in percent; contributions in percentage points)



Sources: Eurostat; and IMF staff calculations.

Industrial production is now expanding at a rate that is less than half of its early 2018 peak (Figure 1.1, panel 2).

European trade and industry have closely followed these global trends. Given Europe's deep integration into global trade,[1] European exports, both within and outside the region, stalled in the first half of 2019 after decelerating in 2018. The slowdown in European exports within the region is pronounced in intermediate goods, suggesting that the weakness in global trade has seeped into European supply chains. Overall, the slowdown in Europe's exports has mainly stemmed from softening exports of machinery and transport equipment, and other manufactured goods (Figure 1.2).

The sluggish demand for and production of cars have had an important effect on European activity, reflecting both structural factors (for example, tighter emissions standards) and sluggish world demand. Car production remains particularly weak in *Germany*, while it has held up among car producers in *Central Europe,* such as the *Czech Republic*, *Hungary*, and the *Slovak Republic* (see Box 1.1).

The weakness in European exports has meant that external surpluses in some advanced European economies have declined slightly but remain high, for example in *Germany* and the *Netherlands*. In the NMS and several Southeastern European non-EU countries, still-strong domestic demand generally led to a small deterioration in current account balances, though market shares generally held up well, suggesting no significant loss in competitiveness. *Turkey* saw a sharp current account improvement mainly on import compression. *Russia's* current account weakened on lower oil prices.

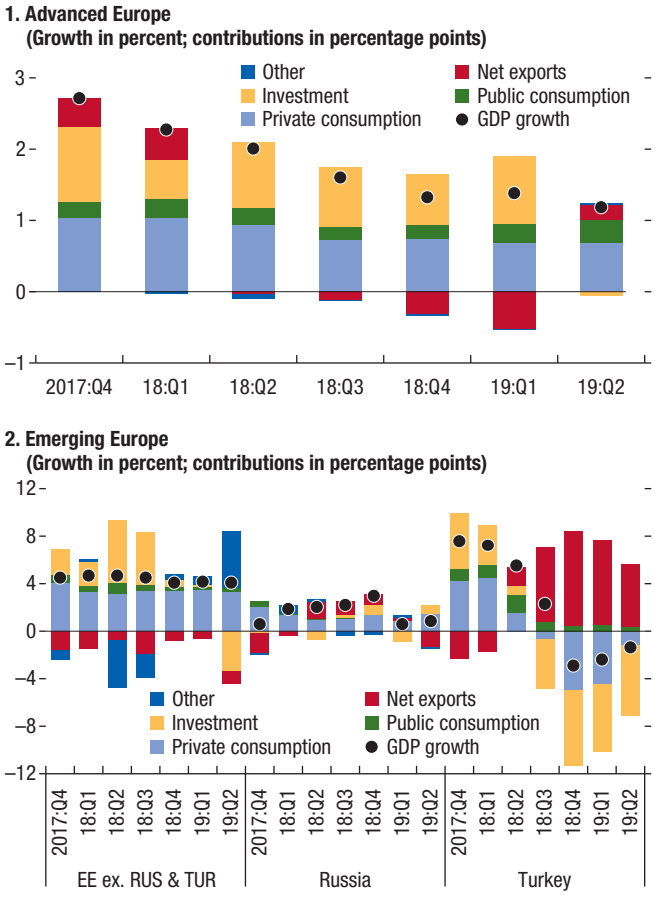
Amid weakening global demand, growth in *advanced Europe* slowed in the first half of 2019, despite an uptick in the first quarter due to Brexit-related stockpiling and one-off factors such as good weather in *Germany*. Net exports continued to be a drag on growth (Figure 1.3, panel 1). Slowing fixed investment has also started to weigh on growth in some of the *advanced European* countries.

Growth in *emerging Europe,* excluding *Russia* and *Turkey,* continued to hold up in the first half of 2019 thanks to robust private consumption, which is being driven by strong labor markets (Figure 1.3, panel 2). Further, a higher absorption of EU funds and resilient services exports (*Hungary*, *Poland*) also helped cushion the adverse effects of weakening manufacturing trade and elevated uncertainty. In *Russia*, growth continued to remain modest reflecting weaker domestic demand, in particular sluggish investment. In *Turkey*, growth resumed, buoyed by expansionary fiscal policy and rapid credit expansion by state-owned banks.

Consistent with weak activity, inflation has fallen in *advanced Europe*. In *emerging Europe*, inflation pressures remain relatively contained in most countries. With the effects of earlier shocks dissipating, inflation in *Russia* has moderated to close to the target. Inflation has also slowed in *Turkey*, in part due to negative base effects, but

[1]See Huidrom and others (2019) for an in depth discussion of Europe's integration into global trade and expected spillovers.

Figure 1.3. Real GDP Growth and Contributions



Sources: Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: Advanced Europe excludes Ireland due to volatility in investment data and San Marino due to lack of data. Emerging Europe excludes Moldova due to lack of data. EE = Emerging Europe; RUS = Russia; TUR = Turkey.

it is still well above the target. However, in some NMS (*Hungary*, *Romania*) core inflation has risen, partly due to domestic demand pressures.

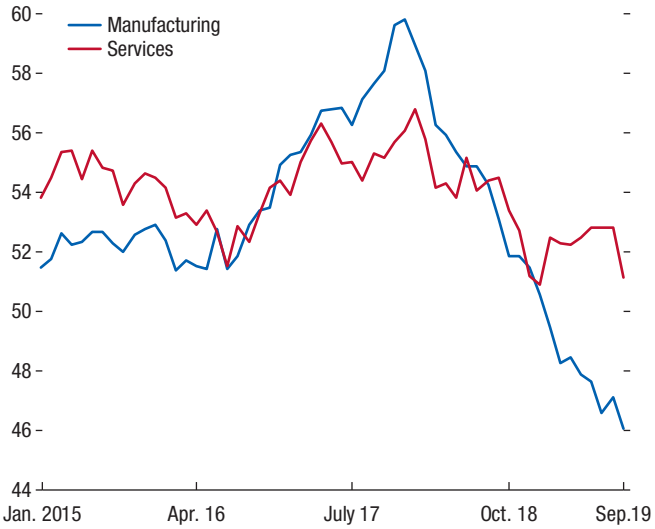
Will the Weakness in Trade and Manufacturing Spread?

The same forces that have slowed activity over the past year are likely to continue to do so going forward. Asia's capital expenditure and consumer durables slowdown will likely continue to weigh on Europe's exports and growth as the region is a large exporter of capital goods and transport equipment. Solid demand growth in the *United States*—a large trading partner for many European countries—has been a mitigating factor, but US growth is expected to ease from its strong pace. The vehicle sector may continue to be a drag on growth, given signs of saturation in *China*—the world's largest auto market—continued tightening of emission standards, and shifting preferences toward electric vehicles. The impact could be particularly sizable for countries where the vehicle sector accounts for a significant share of trade (for example, *Germany*, the *Slovak Republic*). While trade diversion effects from *US–China* trade tensions could help mitigate the slowdown in European exports, these effects have been estimated to be relatively small so far (World Bank 2019).

At the same time, the industry and trade slowdown, combined with trade- and Brexit-related uncertainty, has started to take a toll on fixed investment in several countries. Conversely, solid private consumption and a resilient services sector helped by strong labor markets may mitigate the weakness stemming from the deteriorating external environment. With labor markets still strong, consumer confidence has held up better than business confidence. The services Purchasing Managers' Index (PMI) still suggests expansion—albeit at a slower pace—contrary to the manufacturing PMI, which has plunged deeper into contractionary territory (Figure 1.4). The divergence, however, may be temporary. Services' value added in European manufacturing value added is estimated at about 30 percent, which is not trivial (Organisation for Economic Co-operation and Development Trade in Value Added database). Furthermore, there are already signs that firms are becoming more careful about hiring decisions (Figure 1.5), which could weaken consumer confidence and dampen consumption.

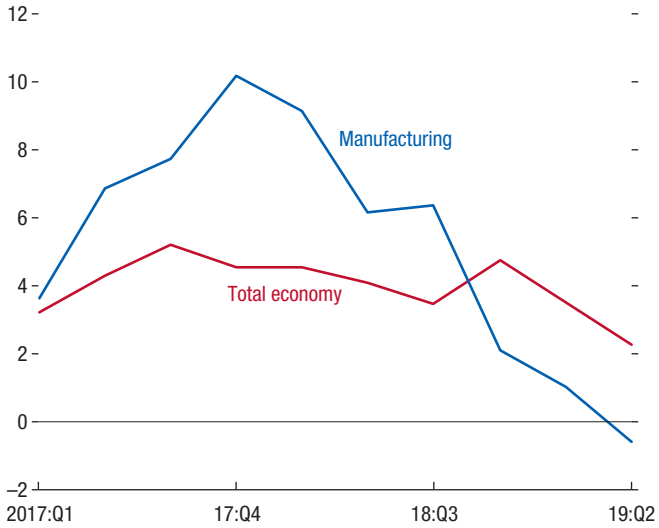
Macroeconomic policies could buffer activity. The stances of the European Central Bank and the US Federal Reserve have become more accommodative. In addition, some emerging European countries have loosened monetary policy (*Russia, Serbia, Turkey, Ukraine*). On the back

Figure 1.4. EU PMI: Services versus Manufacturing
(Index, seasonally adjusted, 50+ = Expansion)



Source: IHS Markit Purchasing Managers Survey.
Note: EU = European Union; PMI = Purchasing Managers' Index.

Figure 1.5. European Union Job Vacancies
(Quarter-over-quarter percent change)



Sources: Eurostat; and IMF staff calculations.

of the accommodative monetary stance, overall financial conditions have loosened. However, the impact might be limited as credit growth has been modest and most firms do not report availability of credit as a key constraint to their expansion. Many countries in the region are also conducting expansionary fiscal policy in 2019, albeit less so in 2020.

Overall, Europe's manufacturing and trade have weakened considerably, as in the rest of the world. Some signs of softness in domestic demand, particularly in investment, have appeared. Services and consumption have been resilient so far, but the extent of their continued resilience will depend on developments in labor markets.

Outlook: A Modest Recovery

Europe's real GDP growth is projected to moderate to 1.4 percent in 2019—the lowest rate since 2013—from 2.3 percent in 2018, before rebounding to 1.8 percent in 2020 (Annex Table 1.1). *Advanced Europe* is expected to recover only modestly from 1.3 percent in 2019 to 1.5 percent in 2020 on the back of an expected pickup in external demand, though prospects for a recovery in global trade are not as good as six months ago. *Turkey*'s growth is anticipated to recover from 0.2 percent in 2019 to 3.0 percent in 2020 as the economy continues to rebound from previous economic stresses. In *Russia*, growth is projected to pick up from 1.1 percent in 2019 to 1.9 percent in 2020, assuming the planned national projects are implemented effectively. Growth in other *emerging European economies* is forecast to moderate to 3.7 and 3.1 percent in 2019 and 2020, respectively, reflecting lagged spillovers from the ongoing slowdown in advanced Europe and growth converging to a more sustainable pace after some years of operating above capacity.

The growth projections for the entire region are broadly unchanged from the April 2019 *World Economic Outlook*. However, they mask differences across country groups and some large revisions. In *advanced Europe*, projections were downgraded by 0.1 percentage point both in 2019 and 2020, with generally larger revisions for those economies with greater exposure to manufacturing. In *emerging Europe*, growth projections were revised up by 0.5 and 0.2 percentage point in 2019 and 2020, respectively. In *Turkey*, the large upward growth

revisions reflect the better-than-expected outturn in the first half of the year. Growth in *Central European countries* and *Southeastern European EU member states* has also been upgraded for 2019–20, reflecting robust domestic demand. *Russia* saw one of the largest downward revisions for 2019 on the back of a weak outcome in the first half of the year and signs of softening domestic demand and export growth.

Relatively low energy prices, slowing output growth, and weaker passthrough from wage growth (Chapter 2) are expected to keep headline inflation contained. In *advanced Europe*, inflation is expected to fall from 1.8 percent in 2018 to 1.4 percent in 2019 and 1.5 percent in 2020 (0.1 percentage point lower in both 2019 and 2020, Annex Table 1.2). In *emerging Europe*, inflation is projected to temporarily pick up to 6.9 percent in 2019 from 6.3 percent in 2018 and to moderate to 5.7 percent in 2020. The downward revisions of 0.3 and 0.5 percentage point for 2019 and 2020 are largely driven by *Turkey* in 2019 and *Russia* in 2020. In *Turkey*, the 2019 inflation forecast has been revised down by 1.8 percentage points due to the more favorable market sentiment, which supported lira stability. However, the inflation outlook is highly uncertain over the medium term, as the central bank needs to strengthen monetary policy credibility and lower inflation expectations. In *Russia*, inflation, which picked up earlier in 2019, is expected to be below the target at the end of 2019 and in 2020, as effects of the January 2019 value-added tax rate hike and other one-off factors dissipate. In *emerging European* countries excluding *Russia* and *Turkey*, despite some upward revisions on the back of stronger-than-expected activity, inflation is generally expected to remain restrained as growth is expected to ease.

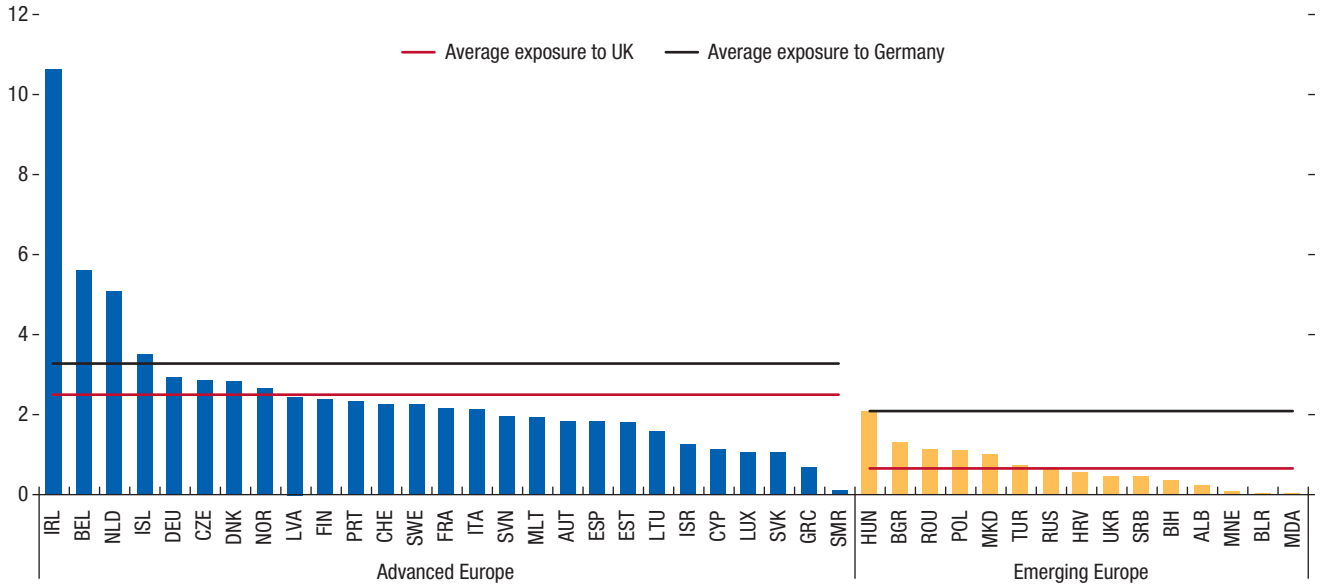
Amid High Uncertainty, Risks Tilted to the Downside

Amid high uncertainty, risks to the forecasts are to the downside. In the near term, the modalities of Brexit are key for the European outlook. A no-deal Brexit could have a sizable impact on activity in the *United Kingdom* and the *European Union*—with output lower by about 3½ and ½ percent in two years, respectively, relative to the April 2019 forecast (see Box 1.1 of the April 2019 *World Economic Outlook*). Value added trade exposure of European countries to the *United Kingdom*, though smaller than to *Germany*—the main European hub—is sizable (Figure 1.6). Further escalation of trade tensions and related uncertainty when combined with tighter financing conditions can weigh significantly on European investment and growth (Ebeke and Siminitz 2018; IMF 2018). More broadly, the weakness in manufacturing and trade could spread to other sectors—notably services—and could occur faster and to a greater extent than expected. Other risks include abrupt declines in risk appetite, a build-up of financial vulnerabilities, and the re-emergence of deflationary pressures in advanced economies. Country-specific factors (such as domestic weakness in some large euro area countries) and geopolitical tensions could exacerbate the effects from weak global trade and manufacturing. Delays in the implementation of structural reforms, demographic challenges, climate change, rising inequality, and declining trust in mainstream policies could also dampen growth in the medium to long term.

Policy Priorities

Monetary policy in many European countries should remain accommodative given muted inflationary pressures. As discussed in Chapter 2, strong wage growth is less likely to boost inflation than in the past due to rising competitive pressures faced by firms, still robust corporate profitability, and the generally low inflation environment. In *advanced Europe*, where inflation remains largely below target, monetary policy should continue to focus on supporting the gradual upward adjustment of inflation toward policy objectives. In *Russia*, monetary policy loosening could be considered given contained inflation and as inflationary pressures ease. However, in *Romania* and *Turkey*, monetary policy should be kept tight

Figure 1.6. Trade Exposure to the United Kingdom
(Percent of GDP)



Sources: EORA Multi-Regional Input-Output database; and IMF staff calculations.
Note: Lines refer to simple averages across countries in each region. The latest year available in EORA is 2013. Country list uses International Organization for Standardization (ISO) country codes.

to contain inflationary pressures and strengthen policy credibility. Most other e*merging European* countries can afford to keep monetary policy accommodative for now.

Nevertheless, loose monetary policy for longer calls for heightened monitoring of financial sector vulnerabilities and other possible adverse developments. Pockets of vulnerabilities in some countries should be closely watched and addressed with targeted macroprudential measures as needed. In the *euro area* and other countries with negative interest rates, the impact on the financial sector, in particular, on traditional business operations and profitability and on asset prices should be closely monitored. For example, house prices have strengthened in several countries and the vulnerability of other financial institutions has increased.[2] In *Turkey*, a comprehensive third-party assessment of bank balance sheets, and stress tests with follow-up measures, as needed, would help strengthen confidence in the sector. Countries have continued to implement new financial sector regulations and to reduce nonperforming loans. They should persevere in these efforts to strengthen the sector's resilience.

Regarding fiscal policy, given output above or close to full employment in most countries, and generally high debt levels in many European countries, the fiscal stance should remain anchored by countries' medium-term objectives, while allowing automatic stabilizers to work freely. In countries with ample fiscal space and human capital or infrastructure needs (*Germany, Netherlands*), a measured fiscal expansion should be considered to boost potential output—some measures have already been announced—and would also help reduce their external surpluses. Considering the precarious outlook, positive spillovers to less cyclically strong economies would be welcome. Those countries with still-elevated levels of public debt and deficit should proceed with fiscal consolidation to reduce economic vulnerabilities, except where private demand is already so weak that consolidation would push output growth far below potential. All countries should consider debt management operations that

[2]See IMF, *Global Financial Stability Report*, October 2019.

take advantage of currently low interest rates. If significant negative risks materialize, given limited monetary policy space, the fiscal stance will need to be more expansionary, while keeping in mind medium-term debt sustainability objectives. In this case, countries with a high deficit and public debt could consider a temporarily slower pace of fiscal consolidation or a temporary expansion, as long as debt sustainability is secured and market confidence is not undermined. Policymakers should prepare contingency plans for such an eventuality, focusing on growth-friendly and inclusive policies that deliver support in a timely manner. A synchronized fiscal response, albeit appropriately differentiated across countries, could become suitable.

Structural reforms remain essential to raise potential output, boost resilience, and strengthen inclusive growth. Product market reforms in many countries could improve competitiveness and increase productivity. Policies to increase labor force participation rates and enhance human capital (including shifting taxes away from labor, enhancing apprenticeship programs, and improving tailoring education to labor market needs) should be urgently implemented, given rising demographic challenges and technological developments in the region. Completing the *euro area's* architecture is critical to increase its resilience to shocks. The *European Union* would benefit from deepening the single market for services to increase efficiency. In many *emerging European countries*, structural reforms have achieved a dramatic transformation in the 30 years of transition. Still, strengthening governance and improving public sector efficiency remain imperative to sustain continued and equitable convergence of living standards to *advanced European* levels.[3]

[3]See IMF (2017); Richmond and others (2019).

Box 1.1 The Slowdown in Vehicles—A European Perspective

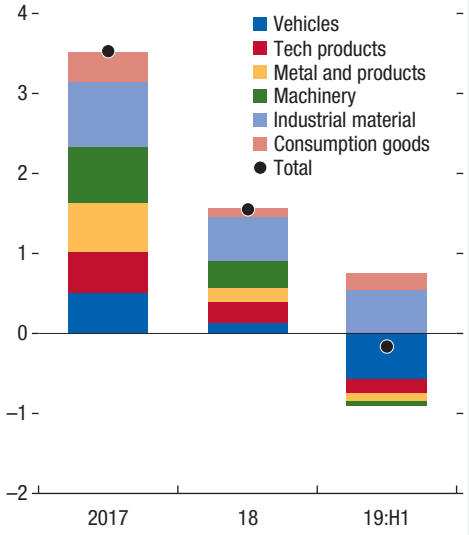
The vehicle sector is important in many European countries. In line with global trends, vehicle production has slowed in the region, but there is considerable heterogeneity across economies. The near-term outlook remains conservative, and potential supply chain reorganizations pose uncertainty in the medium term.

The vehicle sector is important in many European countries, for both the domestic economy and exports. For instance, in *Germany*—the largest vehicle producer in Europe—vehicles constitute about 20 percent of manufacturing and about 17 percent of exports. The sector is also significant for *Central and Eastern Europe* (CEE): for example, in the *Slovak Republic,* it comprises about one-third of manufacturing and more than a quarter of exports. Also, the auto industry constitutes one of the main supply chains in the region.

In line with global trends (Box 1.1 of the October 2019 *World Economic Outlook*), Europe's vehicle production has fallen and has been one of the main contributors to the industrial production slump in the European Union (EU) (Figure 1.1.1). Several structural and cyclical factors are behind the slowdown, such as the tighter EU emission standards, a shift in preferences from diesel toward gasoline and other alternative fuel vehicles, and weakening global demand, especially from *China*. After the emissions-related dip in 2018, car registrations—a demand indicator—have normalized.

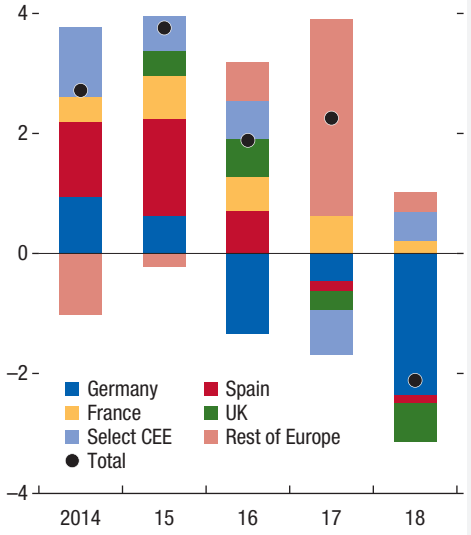
Nevertheless, there is a significant heterogeneity across European countries. The 2018 vehicle production contraction was led by *Germany* and to a lesser extent, the *United Kingdom* and *Spain* (Figure 1.1.2). Germany's production remained weak in the first half of 2019, dropping by about 12 percent versus the first half of 2018. Conversely, vehicle production held up in *CEE*.

Figure 1.1.1. Contributions to EU Manufacturing Growth
(Growth in percent; contributions in percentage points)



Sources: Eurostat; and IMF staff calculations.
Note: EU = European Union.

Figure 1.1.2. Contributions to Europe Vehicle Production
(Growth in percent; contributions in percentage points)



Sources: International Organization of Motor Vehicle Manufacturers (OICA); and IMF staff calculations.
Note: Select CEE = Czech Republic, Hungary, Slovak Republic; UK = United Kingdom.

Box 1.1 *(continued)*

Anecdotal evidence suggests that *CEE's* relatively robust car production could be attributed to the types of cars produced in the region, such as SUVs and utilitarian cars, whose demand remained more buoyant. Furthermore, industry reports suggest the vehicle slowdown in Germany has had a muted impact on *CEE* supply chains, in part because *CEE* suppliers have been able to adapt and re-orient to other models and plants outside of *Germany*.

Overall, the near-term outlook for Europe remains conservative on the back of falling demand for diesel cars, trade tensions, Brexit-related uncertainty, and additional tighter emission standards. Potential reorganizations of supply chains—related to the shift to alternative fuel vehicles—pose considerable uncertainty to the medium-term outlook. A sustained weakness in the vehicle sector could spill over to the broader economy and across borders via supply chains.

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Annex Table 1.1. GDP Growth

(Year-over-year percent change)

		October 2019 WEO			April 2019 WEO			Difference		
	2018	2019	2020	2021	2019	2020	2021	2019	2020	2021
Europe	2.3	1.4	1.8	1.9	1.3	1.8	1.8	0.1	0.0	0.0
Advanced European Economies	2.0	1.3	1.5	1.6	1.4	1.6	1.6	−0.1	−0.1	0.0
Euro Area	1.9	1.2	1.4	1.4	1.3	1.5	1.5	−0.1	−0.2	0.0
Austria	2.7	1.6	1.7	1.5	2.0	1.7	1.5	−0.4	0.0	0.0
Belgium	1.4	1.2	1.3	1.3	1.3	1.4	1.5	−0.1	−0.1	−0.2
Cyprus	3.9	3.1	2.9	2.7	3.5	3.3	2.9	−0.4	−0.5	−0.2
Estonia	4.8	3.2	2.9	2.8	3.0	2.9	2.8	0.2	0.0	0.0
Finland	1.7	1.2	1.5	1.5	1.9	1.7	1.4	−0.7	−0.3	0.1
France	1.7	1.2	1.3	1.3	1.3	1.4	1.5	0.0	−0.1	−0.1
Germany	1.5	0.5	1.2	1.4	0.8	1.7	1.5	−0.2	−0.5	−0.1
Greece	1.9	2.0	2.2	1.7	2.4	2.2	1.6	−0.4	0.1	0.1
Ireland	8.3	4.3	3.5	3.1	4.1	3.4	3.1	0.1	0.1	0.0
Italy	0.9	0.0	0.5	0.8	0.1	0.9	0.7	−0.1	−0.4	0.1
Latvia	4.8	2.8	2.8	2.9	3.2	3.1	3.1	−0.3	−0.4	−0.2
Lithuania	3.5	3.4	2.7	2.5	2.9	2.6	2.6	0.5	0.1	−0.2
Luxembourg	2.6	2.6	2.8	2.7	2.7	2.8	2.7	−0.1	0.0	0.0
Malta	6.8	5.1	4.3	3.7	5.2	4.4	3.8	−0.1	−0.1	0.0
Netherlands	2.6	1.8	1.6	1.5	1.8	1.7	1.5	0.0	0.0	0.0
Portugal	2.4	1.9	1.6	1.5	1.7	1.5	1.4	0.2	0.1	0.1
Slovak Republic	4.1	2.6	2.7	2.7	3.7	3.5	3.3	−1.1	−0.8	−0.5
Slovenia	4.1	2.9	2.9	2.7	3.4	2.8	2.7	−0.5	0.1	0.1
Spain	2.6	2.2	1.8	1.7	2.1	1.9	1.7	0.0	0.0	0.0
Nordic Economies	1.8	1.4	1.9	1.8	1.6	1.8	1.8	−0.1	0.1	0.0
Denmark	1.5	1.7	1.9	1.7	1.7	1.8	1.6	0.0	0.1	0.1
Iceland	4.8	0.8	1.6	2.0	1.7	2.9	2.7	−0.9	−1.3	−0.6
Norway	1.3	1.9	2.4	1.6	2.0	1.9	1.8	−0.1	0.6	−0.2
Sweden	2.3	0.9	1.5	2.1	1.2	1.8	1.9	−0.2	−0.3	0.2
Other European Advanced Economies	1.9	1.4	1.7	1.8	1.5	1.7	1.8	−0.1	0.0	0.0
Czech Republic	3.0	2.5	2.6	2.6	2.9	2.7	2.5	−0.4	−0.1	0.1
Israel	3.4	3.1	3.1	3.2	3.3	3.3	3.1	−0.2	−0.2	0.0
San Marino	1.1	0.8	0.7	0.6	0.8	0.7	0.6	0.0	0.0	0.0
Switzerland	2.8	0.8	1.3	1.6	1.1	1.5	1.6	−0.3	−0.3	0.0
United Kingdom	1.4	1.2	1.4	1.5	1.2	1.4	1.5	0.1	0.0	0.0
Emerging European Economies	3.1	1.8	2.5	2.5	1.2	2.3	2.4	0.5	0.2	0.1
Central Europe	5.1	4.1	3.1	2.7	3.7	3.0	2.7	0.4	0.1	0.0
Hungary	4.9	4.6	3.3	2.9	3.6	2.7	2.4	1.0	0.6	0.5
Poland	5.1	4.0	3.1	2.7	3.8	3.1	2.8	0.3	−0.1	−0.1
Eastern Europe	2.4	1.3	1.9	2.1	1.7	1.8	1.8	−0.5	0.1	0.3
Belarus	3.0	1.5	0.3	0.1	1.8	2.2	2.1	−0.2	−1.9	−2.0
Moldova	4.0	3.5	3.8	3.8	3.5	3.8	3.8	0.0	0.0	0.0
Russia	2.3	1.1	1.9	2.0	1.6	1.7	1.7	−0.5	0.2	0.4
Ukraine	3.3	3.0	3.0	3.1	2.7	3.0	3.1	0.3	0.0	0.1
Southeastern European EU Member States	3.7	3.8	3.3	2.9	3.1	2.9	2.9	0.7	0.4	0.1
Bulgaria	3.1	3.7	3.2	3.0	3.3	3.0	2.8	0.4	0.2	0.2
Croatia	2.6	3.0	2.7	2.5	2.6	2.5	2.4	0.4	0.2	0.1
Romania	4.1	4.0	3.5	3.0	3.1	3.0	3.0	0.9	0.5	0.0
Southeastern European Non-EU Member States	3.9	3.3	3.6	3.6	3.4	3.7	3.7	−0.1	−0.1	−0.1
Albania	4.1	3.0	4.0	4.0	3.7	3.9	3.9	−0.7	0.2	0.1
Bosnia and Herzegovina	3.6	2.8	2.6	2.6	3.1	3.2	3.3	−0.3	−0.6	−0.7
Kosovo	3.8	4.2	4.0	4.0	4.2	4.0	4.0	0.0	0.0	0.0
North Macedonia	2.7	3.2	3.4	3.2	3.0	3.1	3.2	0.2	0.3	0.0
Montenegro	4.9	3.0	2.5	2.9	2.8	2.5	2.9	0.2	0.0	0.0
Serbia	4.3	3.5	4.0	4.0	3.5	4.0	4.0	0.0	0.0	0.0
Turkey	2.8	0.2	3.0	3.0	−2.5	2.5	3.0	2.8	0.4	0.0
Memorandum										
World	3.6	3.0	3.4	3.6	3.3	3.6	3.6	−0.3	−0.2	−0.1
Advanced economies	2.3	1.7	1.7	1.6	1.8	1.7	1.7	−0.1	−0.1	−0.1
Emerging market and developing economies	4.5	3.9	4.6	4.8	4.4	4.8	4.9	−0.4	−0.3	−0.1
Emerging Europe ex. Russia and Turkey	4.3	3.7	3.1	2.8	3.3	3.0	2.9	0.4	0.0	−0.1
European Union	2.2	1.5	1.6	1.7	1.6	1.7	1.7	0.0	−0.1	0.0
United States	2.9	2.4	2.1	1.7	2.3	1.9	1.8	0.0	0.2	0.0
China	6.6	6.1	5.8	5.9	6.3	6.1	6.0	−0.1	−0.3	−0.1
Japan	0.8	0.9	0.5	0.5	1.0	0.5	0.5	−0.1	0.0	−0.1

Sources: IMF, *World Economic Outlook (WEO);* and IMF staff calculations.

Note: After the April 2019 WEO, the GDP definition for Germany has been switched to a working-day unadjusted basis from a seasonally and working-day adjusted basis. Table reports Germany data on a working-day unadjusted basis, including those for the April 2019 WEO, while retaining aggregates as in the April 2019 WEO.

Annex Table 1.2. Headline Inflation

(Year-over-year percent change)

		October 2019 WEO			April 2019 WEO			Difference		
	2018	2019	2020	2021	2019	2020	2021	2019	2020	2021
Europe	3.3	3.1	2.8	2.9	3.3	3.1	3.1	−0.1	−0.3	−0.1
Advanced European Economies	1.8	1.4	1.5	1.6	1.4	1.6	1.7	−0.1	−0.1	−0.1
Euro Area	1.8	1.2	1.4	1.5	1.3	1.6	1.7	−0.1	−0.2	−0.2
Austria	2.1	1.5	1.9	1.9	1.8	2.0	2.1	−0.2	−0.1	−0.2
Belgium	2.3	1.5	1.3	1.5	1.9	1.6	1.9	−0.4	−0.4	−0.4
Cyprus	0.8	0.7	1.6	1.8	0.5	1.6	1.7	0.2	0.0	0.1
Estonia	3.4	2.5	2.4	2.3	3.0	2.8	2.6	−0.5	−0.4	−0.3
Finland	1.2	1.2	1.3	1.5	1.3	1.5	1.8	−0.1	−0.2	−0.3
France	2.1	1.2	1.3	1.4	1.3	1.5	1.6	−0.2	−0.2	−0.2
Germany	1.9	1.5	1.7	1.7	1.3	1.7	1.9	0.1	0.0	−0.2
Greece	0.8	0.6	0.9	1.3	1.1	1.4	1.7	−0.4	−0.5	−0.4
Ireland	0.7	1.2	1.5	1.7	1.2	1.5	1.7	0.0	0.0	0.0
Italy	1.2	0.7	1.0	1.1	0.8	1.2	1.2	0.0	−0.2	−0.1
Latvia	2.6	3.0	2.6	2.3	2.4	2.4	2.1	0.6	0.2	0.2
Lithuania	2.5	2.3	2.2	2.2	2.3	2.3	2.4	0.1	−0.1	−0.1
Luxembourg	2.0	1.7	1.7	1.9	1.6	1.9	1.9	0.2	−0.1	0.0
Malta	1.7	1.7	1.8	1.9	1.8	1.9	2.0	−0.2	−0.1	0.0
Netherlands	1.6	2.5	1.6	1.7	2.3	1.6	1.7	0.2	0.0	0.0
Portugal	1.2	0.9	1.2	1.3	1.0	1.7	1.7	−0.1	−0.5	−0.4
Slovak Republic	2.5	2.6	2.1	2.1	2.4	2.2	2.1	0.2	−0.1	0.0
Slovenia	1.7	1.8	1.9	1.9	1.4	1.6	2.0	0.4	0.3	−0.1
Spain	1.7	0.7	1.0	1.4	1.2	1.6	1.7	−0.5	−0.6	−0.2
Nordic Economies	2.0	1.8	1.6	1.8	1.7	1.6	1.8	0.1	0.0	0.0
Denmark	0.7	1.3	1.5	1.8	1.1	1.3	1.5	0.2	0.2	0.3
Iceland	2.7	2.8	2.5	2.5	2.8	2.5	2.5	0.0	0.0	0.0
Norway	2.8	2.3	1.9	2.0	1.9	1.7	1.9	0.4	0.2	0.2
Sweden	2.0	1.7	1.5	1.6	1.9	1.7	1.9	−0.1	−0.2	−0.3
Other European Advanced Economies	2.1	1.7	1.8	1.8	1.7	1.8	1.9	0.0	−0.1	0.0
Czech Republic	2.2	2.6	2.3	2.0	2.3	2.0	2.0	0.2	0.3	0.0
Israel	0.8	1.0	1.3	1.8	0.9	1.7	2.0	0.2	−0.4	−0.2
San Marino	1.5	1.3	1.5	1.6	1.6	1.7	1.7	−0.4	−0.2	−0.2
Switzerland	0.9	0.6	0.6	0.9	0.8	0.9	1.0	−0.3	−0.3	−0.2
United Kingdom	2.5	1.8	1.9	2.0	1.8	2.0	2.0	0.0	−0.1	0.0
Emerging European Economies	6.3	6.9	5.7	5.7	7.2	6.2	5.8	−0.3	−0.5	−0.1
Central Europe	1.9	2.6	3.5	3.4	2.2	2.1	2.2	0.4	1.3	1.2
Hungary	2.8	3.4	3.4	3.3	3.2	3.1	3.0	0.1	0.3	0.3
Poland	1.6	2.4	3.5	3.4	2.0	1.9	2.0	0.4	1.6	1.4
Eastern Europe	3.6	5.0	3.8	4.0	5.2	4.7	4.3	−0.2	−0.9	−0.3
Belarus	4.9	5.4	4.8	4.6	5.0	5.0	4.0	0.4	−0.2	0.6
Moldova	3.1	4.9	5.7	5.0	3.3	5.1	5.0	1.6	0.5	0.0
Russia	2.9	4.7	3.5	3.9	5.0	4.5	4.2	−0.3	−1.0	−0.3
Ukraine	10.9	8.7	5.9	5.3	8.0	5.9	5.5	0.7	0.0	−0.2
Southeastern European EU Member States	3.8	3.4	2.8	2.5	2.9	2.6	2.5	0.5	0.2	0.0
Bulgaria	2.6	2.5	2.3	2.2	2.4	2.3	2.3	0.1	0.0	−0.1
Croatia	1.5	1.0	1.2	1.3	1.5	1.6	1.7	−0.5	−0.4	−0.4
Romania	4.6	4.2	3.3	2.9	3.3	3.0	2.8	0.9	0.3	0.1
Southeastern European Non-EU Member States	1.8	1.8	1.8	2.1	1.9	2.2	2.5	0.0	−0.4	−0.3
Albania	2.0	1.8	2.0	2.4	2.0	2.4	2.8	−0.2	−0.4	−0.4
Bosnia and Herzegovina	1.4	1.1	1.4	1.5	1.5	1.6	1.6	−0.4	−0.2	−0.2
Kosovo	1.1	2.8	1.5	1.7	2.2	1.3	1.8	0.6	0.1	−0.1
North Macedonia	1.5	1.3	1.7	2.0	1.8	2.0	2.2	−0.5	−0.3	−0.2
Montenegro	2.6	1.1	1.9	1.6	0.9	1.7	1.8	0.2	0.2	−0.2
Serbia	2.0	2.2	1.9	2.5	2.0	2.5	3.0	0.2	−0.6	−0.5
Turkey	16.3	15.7	12.6	12.4	17.5	14.1	13.4	−1.8	−1.5	−1.0
Memorandum										
World	3.6	3.4	3.6	3.5	3.6	3.6	3.5	−0.2	−0.1	0.0
Advanced economies	2.0	1.5	1.8	1.8	1.6	2.1	1.9	−0.1	−0.3	−0.1
Emerging market and developing economies	4.8	4.7	4.8	4.5	4.9	4.7	4.5	−0.2	0.1	0.0
Emerging Europe ex. Russia and Turkey	3.6	3.7	3.5	3.4	3.2	2.9	2.8	0.4	0.6	0.6
European Union	1.9	1.5	1.7	1.8	1.6	1.7	1.8	0.0	0.0	0.0
United States	2.4	1.8	2.3	2.4	2.0	2.7	2.3	−0.2	−0.5	0.2
China	2.1	2.3	2.4	2.8	2.3	2.5	2.8	0.0	−0.1	0.0
Japan	1.0	1.0	1.3	0.7	1.1	1.5	1.1	−0.1	−0.2	−0.5

Sources: IMF, *World Economic Outlook (WEO);* and IMF staff calculations.

2. Wage Growth and Inflation in Europe: A Puzzle?

Wages have been rising faster than productivity in many European countries, yet signs of underlying consumer price pressures remain limited. To shed light on this puzzle, this chapter examines the link between wage growth and inflation in Europe and the factors that influence the strength of the passthrough from labor costs to consumer prices. The chapter finds that, historically, wage growth leads to higher inflation, but the impact has weakened since 2009. The passthrough is significantly lower in periods of subdued inflation expectations, greater competitive pressures, and robust corporate profitability. These findings suggest that the recent pickup in wage growth is likely to have a more muted impact on inflation than in the past.

Labor market conditions have been improving in Europe since 2013, with strong job growth and unemployment falling to lower-than-precrisis levels in most economies. Yet, as discussed in Chapter 2 of the May 2018 *Regional Economic Outlook—Europe,* nominal wage growth remained subdued for many years (Figure 2.1, panels 1 and 2). This trend has recently started to reverse, especially in the *European Union's* newer member states (NMS).[1] Spurred by strong labor markets and accompanied by public sector and minimum wage increases in some countries, nominal wage

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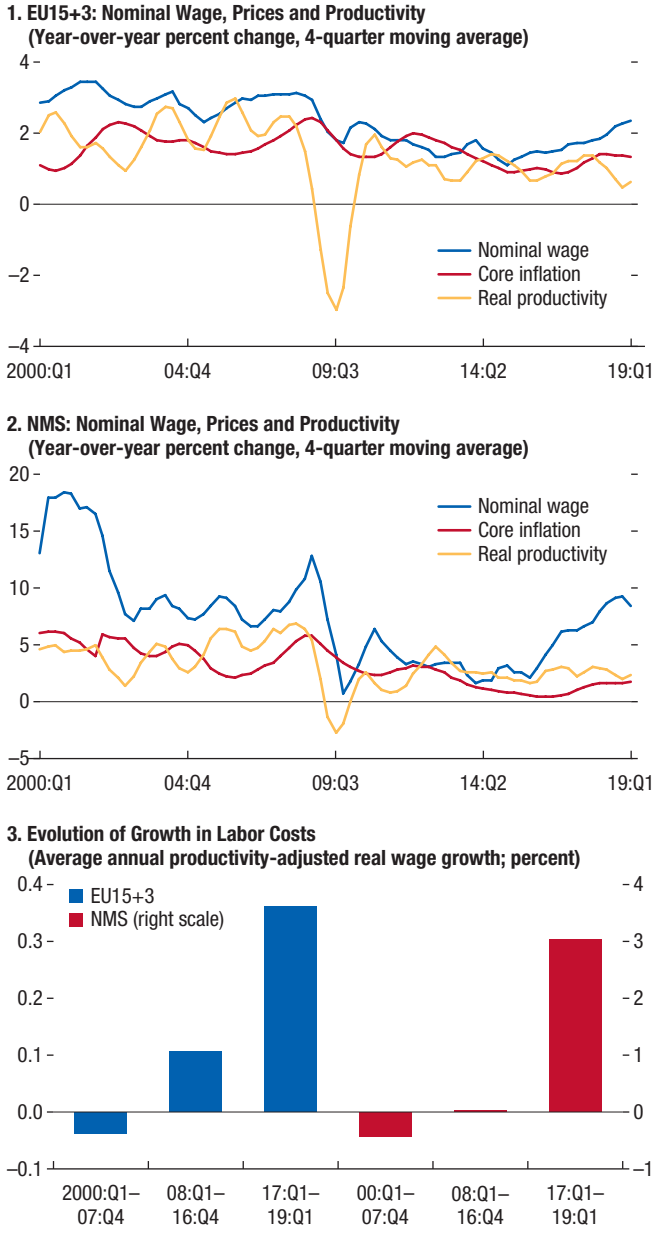
[1]This chapter makes a distinction between long-standing and newer EU member states, rather than between "advanced" and "emerging" European economies, to better capture the disparate wage developments in these two sets of countries. Newer EU members (NMS) include Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, the Slovak Republic, and Slovenia. The long-standing EU members are the countries that joined the European Union before May 1, 2004: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom (EU15). Cyprus, Ireland, Luxembourg, and Malta are not included in the analysis because their GDP data distort labor productivity numbers. Israel, Norway, and Switzerland are added to this group, hence the acronym EU15+3.

Figure 2.1. Wage Growth, Productivity, and Inflation



Sources: Eurostat; Haver Analytics; IMF, *World Economic Outlook Database*; and IMF staff calculations.
Note: NMS are newer EU members. EU15+3 are the long-standing EU members plus Israel, Norway, and Switzerland. Quarterly seasonally adjusted data are used and weighted by purchasing-power-parity GDP to aggregate across the two country groups. Real wage growth is measured as nominal wage growth minus the GDP deflator growth.

growth averaged nearly 8 percent in NMS since the first quarter of 2017, and 2 percent in other European countries (EU15+3). As discussed in Chapter 1 of this *Regional Economic Outlook,* the strengthening of wage growth has supported domestic demand, namely consumption, and has cushioned the drag from slowing global trade on aggregate activity in the region.[2] In contrast, core inflation remained, on average, below 2 percent in both groups of countries. In addition to rising faster than prices of goods and services, compensation costs have outpaced improvements in labor productivity, especially in NMS (Figure 2.1, panel 3). Productivity-adjusted wage growth in NMS has exceeded inflation by about 3 percentage points on average since early 2017, with even stronger growth in the *Czech Republic* and *Hungary*. In EU15+3, the gap between productivity-adjusted wage growth and inflation is smaller, at about 0.4 percentage point, but still sizeable compared to 2000–16. In several of these countries (for example, *Germany*, *Israel*, *Portugal*), annual real wage growth exceeded productivity gains by more than 1 percentage point since the beginning of 2017.

The apparent disconnect between wage and price developments in Europe in the last few years is puzzling. Economic theory suggests that if real wage growth exceeds productivity gains, the higher labor costs faced by businesses should eventually raise the prices of the products and services they provide. Labor costs constitute a large share of business expenses in Europe: almost 50 percent in NMS and 53 percent in EU15+3 countries. And yet, inflation has remained stubbornly below target in many countries, despite closing output gaps and rapid gains in productivity-adjusted wages in the past three years. A variety of factors may explain this puzzle. The lack of inflationary pressures may simply reflect delays in the transmission of wage developments to prices, suggesting a pickup in inflation may be imminent. However, there might have been structural changes to the way firms incorporate costs into their pricing decisions that has affected the relationship between wage growth and inflation. If firms and workers expect low inflation going forward, for example due to the improved credibility of the central bank, firms may be reluctant to raise their prices even when faced with higher wage costs as they expect increases in costs to be only temporary. In such a situation, the passthrough of higher wages to prices would be muted due to lower expected persistence of cost and price changes. Alternatively, the rise in competition, either domestically or from abroad, may have limited the ability of firms to pass cost increases to consumers for fear of losing market share. Another important consideration of a more cyclical nature is firms' profitability, which determines how much and how fast wage growth feeds into prices. To the extent that firms have buffers—comfortable profit margins—they may be able to absorb higher wage costs without increasing prices.

Understanding the extent to which these potential explanations are behind the recent disconnect between inflation and wage growth has important implications for the inflation outlook in Europe and the appropriate policy response.

With this backdrop in mind, this chapter examines the following key questions:

- How large is the passthrough of labor costs to inflation in Europe, and how long does it take for wage growth to feed into prices?
- Have there been notable changes in the extent of passthrough over time?
- What factors influence the extent of passthrough? How is the passthrough shaped by various country and sectoral characteristics?

Analytical Approach

This chapter examines the dynamic wage-price linkages while controlling for endogenous

[2]In NMS, in particular, labor shortages have significantly increased. In 2019, more than 40 percent of firms in NMS cited labor shortages as a major factor limiting production, up from only 10 percent in 2013. Estimated unemployment gaps also suggest that labor markets are notably tight in NMS. For previous analyses of drivers of wage growth, see Bonam and others (2019), Chapter 2 of the May 2018 *Regional Economic Outlook—Europe,* and Chapter 2 of the October 2017 *World Economic Outlook*, among others.

feedback effects of import prices and labor market slack to quantify the extent of passthrough from wages to prices. The historical empirical relationship between year-over-year nominal wage growth adjusted for trend productivity growth and core consumer price inflation is examined for a sample of 27 European countries since 1995 within a panel vector auto regression (PVAR) framework. The analysis estimates a four variable PVAR, comprising import price inflation, nominal wage growth adjusted for trend productivity growth, core consumer price inflation, and unemployment gap.[3] Overall, this empirical approach sheds light on the dynamic nature of the passthrough from wages to inflation, while embedding the traditional Philips curve dynamics between wage growth, inflation, and labor market slack; and capturing firms' labor and imported input costs (see also Peneva and Rudd 2017; Chapter 2 of the May 2018 *Regional Economic Outlook—Europe*; and Bobeica and others 2019). The baseline measure of wages is compensation per employee. Conceptually, compensation per hour worked may be more relevant for firms' pricing decisions if companies rely on temporary workers or are able to reduce hours and then pay only for hours worked. However, hours worked tend to be measured with more noise, and compensation per hours worked data are not available for all countries in the sample (OECD 2009).

To examine the role of various factors in shaping the extent of passthrough, the chapter uses an extension of the PVAR model known as the interacted-PVAR (IPVAR) model. The IPVAR specification allows the response of the variables of interest to shocks—that is, response of inflation to a wage shock—to vary depending on observable state variables (Towbin and Weber 2013). By using the full sample of countries and periods, the IPVAR approach has greater statistical power to detect differences in the degree of passthrough when country characteristics change over time. It is worth noting that the analysis examines the role of each factor separately. Quantifying the relative importance of different factors is difficult within the IPVAR framework, given the limited country sample and time-period covered, as it requires sufficient heterogeneity across factors. To the extent possible, the chapter attempts to examine whether these state-dependent differences also hold within the NMS subsample, where the disconnect between wage growth and inflation has been most pronounced. The link between wage growth and inflation in selected NMS at the sectoral level is also examined in Box 2.1.

When discussing the findings of the IPVAR analysis, the chapter reports the cumulative response of inflation to a wage growth shock after 12 quarters in the high versus low passthrough regime of the interacting variable, when the latter is a dummy (for example, pre- versus post-global financial crisis, or high versus low inflation environment), or at the 25th and 75th percentile of the interacting variable, when the latter is continuous (for example, inflation expectations anchoring, corporate profitability, labor share, and product market regulation).[4]

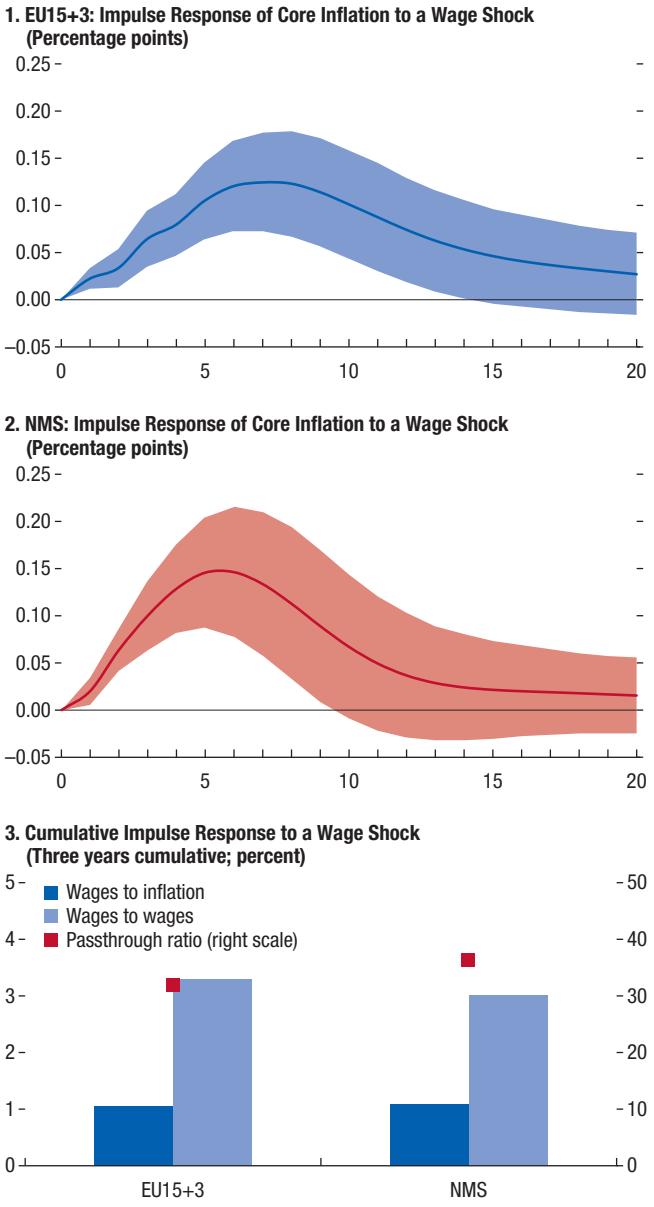
Wage Growth Leads to Higher Core Inflation

The analysis suggests that, historically, in the sample of European countries, wage growth leads to higher core inflation after several quarters. The initial impact of a wage shock on inflation is rather small, but it builds up over time, peaking after about six quarters before slowly dissipating (Figure 2.2, panels 1 and 2). After three years, the cumulative impact of a 1 percentage point increase

[3]The regressions use quarterly data, include four lags of each variable, and utilize Cholesky ordering, meaning that the variables are included in the model in the decreasing order of exogeneity. Import prices are assumed to be the most exogenous and the unemployment gap the most endogenous. Wage growth is assumed to have an immediate impact on inflation, but wages are assumed to take at least a quarter to respond to consumer price movements. The main results presented in this chapter are robust to alternative ordering of the variables within the PVAR and to measuring labor cost as compensation per hour worked instead of compensation per employee. Following Peneva and Rudd (2017), nominal wage growth is adjusted for trend productivity growth to minimize measurement errors associated with the estimation of actual productivity growth. See Online Annex 2.1 for technical details.

[4]Unless otherwise specified, the 25th and 75th percentiles of the interacting variables are taken from an unconditional distribution (that is, from all countries and all time periods).

Figure 2.2. Response of Core Inflation to a Wage Shock
(Quarters on the horizontal axis)



Sources: Eurostat; Haver Analytics; Organisation for Economic Co-operation and Development; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: NMS are newer EU members. EU15+3 are the long-standing EU members plus Israel, Norway, and Switzerland. In panels 1 and 2, $t = 1$ is the quarter of the shock. Shaded areas denote the two standard deviation confidence bands. Shocks represent an exogenous 1 percentage point increase in wages.

in wages is 1.1 percentage point higher inflation in NMS and 1 percentage point higher inflation in other European countries. Taking into account the dynamic response of wages to their own shock over this time period, the impact on inflation is a fraction of the impact on wages (Figure 2.2, panel 3). Overall, the passthrough ratio—defined as the ratio between the cumulative change in prices and the cumulative change in wages—is about a third.

The Passthrough Has Weakened in Recent Years

The passthrough of labor costs into core inflation seems to have weakened after the global financial crisis. The results obtained using the IPVAR framework indicate that after 2009, the cumulative impact of wage growth on European core inflation has decreased, with the passthrough ratio declining to less than 20 percent (Figure 2.3, panels 1 and 2, section A). These results corroborate recent empirical literature findings for the *United States* (Peneva and Rudd 2017) and several *Central, Eastern, and Southeastern European countries* (De Luigi and others 2019), but are in contrast to the results reported for the four largest *euro area* economies by Bobeica and others (2019; see the next section for discussion).

Why would the relationship between labor costs and inflation change over time? The next section examines the role of inflation and inflation expectations; domestic and foreign competition; corporate profitability; and workers' share of the value firms create in determining the size of the wage–inflation passthrough.[5]

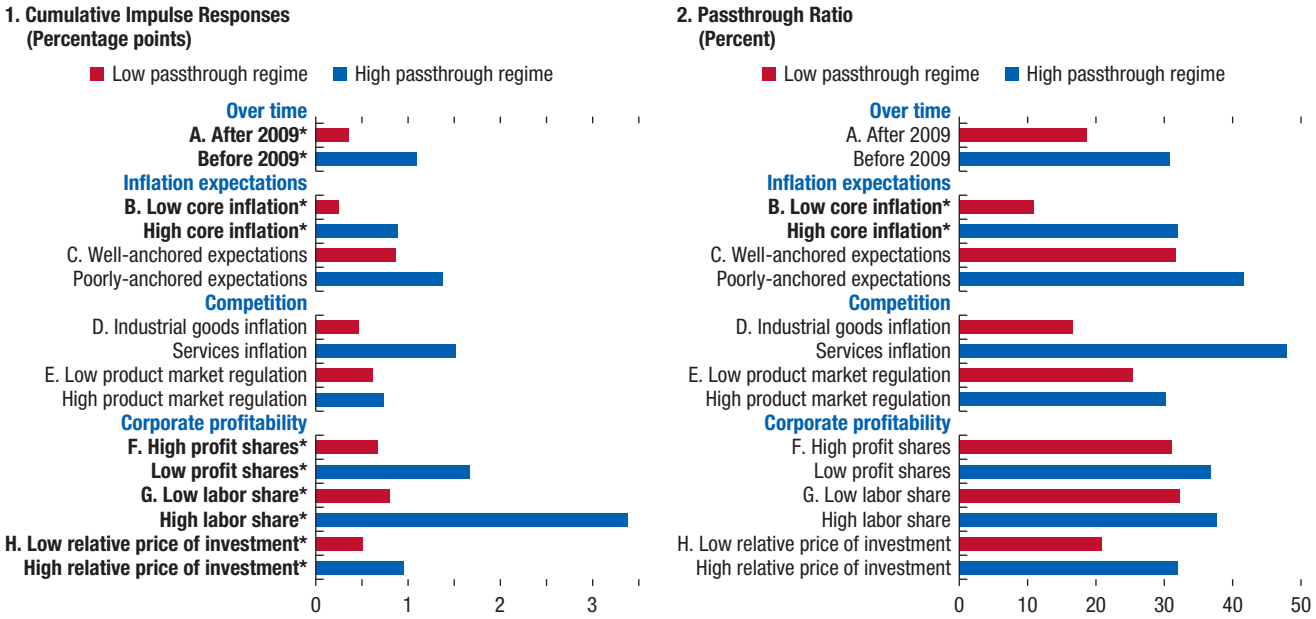
The Role of Various Factors

Inflation and Inflation Expectations[6]

The post-global financial crisis decline in the strength of the passthrough could potentially be due to the subdued inflationary environment that has characterized the last decade. If persistently low inflation since the 2008 global financial crisis

[5]For an alternative explanation of the weaker post-crisis passthrough from wage growth to inflation, which focuses on the role of the cumulative real wage gap, see Voinea (2019).
[6]This section draws on Huidrom and others (forthcoming).

Figure 2.3. Cumulative Response of Core Inflation to a Wage Shock after Three Years



Sources: Bems and others (2018); Eurostat; Haver Analytics; IMF, *World Economic Outlook*; Organisation for Economic Co-operation and Development, Product Market Regulation Indicators database; Penn World Table 9.1; and IMF staff calculations and estimates.
Note: Panel 1 reports the cumulative impulse responses of inflation to a 1 percent wage shock at the end of three years. Panel 2 reports the passthrough ratios of that shock at the end of three years. Estimates in section D are obtained from panel vector autoregressions (PVAR) that use industrial goods inflation and services inflation instead of core inflation. Other estimates are obtained from interacted PVAR (IPVAR). Statistically significant differences at the 95 percent level are denoted by starred and bolder labels.

reflects persistently lower inflation expectations in the *euro area* and *other advanced economies*, firms may have changed their price-setting behavior.

Intuitively, if firms expect low inflation, they are likely to perceive cost increases as transitory and may be reluctant to pass higher labor costs onto consumers since they expect their competitors to hike their prices only moderately (Taylor 2000). Thus, price stability, for example due to improved inflation expectations anchoring, is likely to reduce the sensitivity of inflation to wage growth.[7] Downward nominal wage rigidities also tend to be more binding in a low-inflation environment (Daly and Hobijn 2014). Conversely, cost increases are likely to be perceived as more persistent in countries with high inflation and higher inflation expectations, in which case wage growth and inflation would be more closely linked.

To shed light on this mechanism, the chapter performs two complementary exercises. First, it examines whether the link between wage growth and inflation depends on the prevailing inflation rate in the economy.[8] It then directly examines the role of inflation expectations anchoring in shaping the responsiveness of core inflation to wage growth.

The first analysis, which relies on the IPVAR empirical framework, uncovers a tight relationship between the prevailing inflation rate and the extent of passthrough from wages to core inflation: the impact of labor cost increases on prices

[7]Similarly, empirical literature has established that lower overall inflation and better-anchored inflation expectations limit the passthrough of currency depreciations to domestic prices. See Chapter 3 of the October 2018 *World Economic Outlook*, and references therein.

[8]Although the prevailing core inflation rate is a crude proxy of inflation expectations anchoring, the analysis allows for the largest possible estimation sample given its limited data requirements. See Chapter 3 of the October 2018 *World Economic Outlook* for a discussion of the role of improvements in inflation expectations anchoring in lowering inflation across emerging markets. The chapter also discusses policies that contributed to improved anchoring.

is systematically lower and slower in periods of below-average inflation. In a low-inflation environment, defined as periods during which core inflation is below the country average, a 1 percentage point wage increase raises inflation by a cumulative 0.3 percentage point over three years, with an estimated passthrough ratio of only 11 percent (Figure 2.3, panels 1 and 2, section B). In a high-inflation environment, defined as periods during which inflation is above the country average, the cumulative impact is three times higher, with a passthrough ratio of about 30 percent.

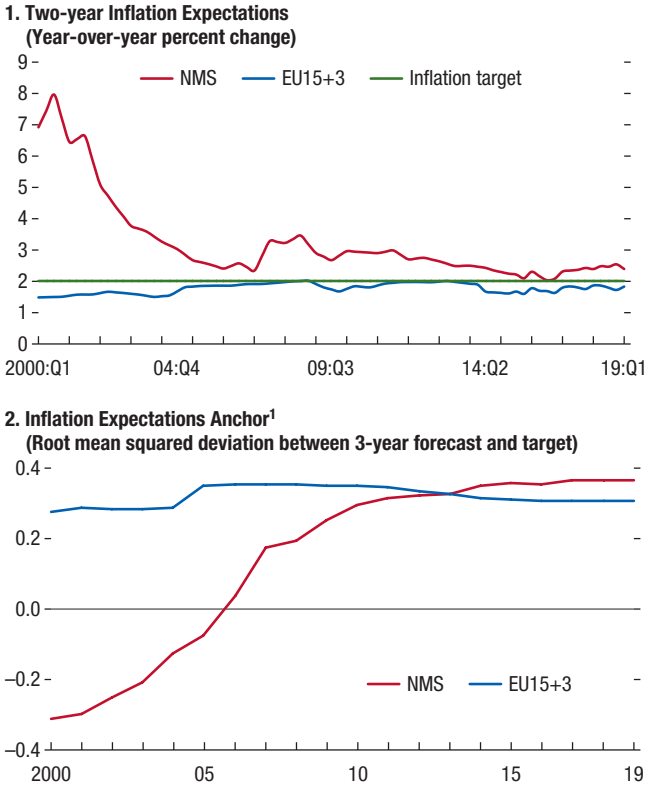
A similar pattern is revealed using a direct measure of the degree of inflation expectations anchoring. The analysis employs a newly constructed index of inflation expectations anchoring developed by Bems and others (2018; see also Chapter 3 of the October 2018 *World Economic Outlook*). The metric employed in this chapter measures the deviation of long-term inflation forecasts produced by professional analysts from the central bank's target.

Intuitively, if inflation expectations are well anchored, predictions of future inflation should be, on average, close to the target pursued by the central bank. According to this metric, long-term inflation expectations are generally well-anchored in Europe. While two-year inflation expectations are somehow higher in NMS than in other European countries (Figure 2.4, panel 1), anchoring has improved significantly during the past two decades, in line with trends observed in other emerging economies. In contrast, inflation expectations have been broadly stable in EU15+3 countries and, in fact, have remained stubbornly low in the *euro area*—below the European Central Bank's target—for several years after the global financial crisis, indicating some de-anchoring of expectations.[9]

The empirical results point to the wage-to-inflation passthrough being dependent on the anchoring of inflation expectations. Across all sample countries, labor cost increases have a more muted impact on inflation when inflation expectations are better anchored, as captured in the metric constructed by Bems and others (2018; see Figure 2.4, panel 2). A 1 percentage point wage increase raises inflation by a cumulative 0.9 percentage point during the three-year period when the impulse response is evaluated at the 75th percentile of the distribution of the measure of inflation expectations anchoring. This impact increases by about a half—to 1.4 percentage point—when inflation expectations are weakly anchored (that is, when the cumulative impulse response is evaluated at the 25th percentile of the distribution of inflation expectations anchoring). The passthrough ratio is also smaller

[9]The inflation anchoring metric treats the positive and negative deviations of inflation expectations from the target in the same way. Lack of sufficient data precludes analyzing the extent of passthrough when inflation expectations remain below the target.

Figure 2.4. Inflation Expectations and Anchoring



Sources: Bems and others (2018); Consensus Forecast; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: NMS are newer EU members. EU15+3 are the long-standing EU members plus Israel, Norway, and Switzerland. Data are weighted by purchasing-power-parity GDP to aggregate across the two country groups.
[1]Normalized indicator such that higher numbers indicate that inflation expectations are better anchored.

when expectations are anchored within a low range (Figure 2.3, panels 1 and 2, section C).

This finding is even stronger in the NMS subsample, where inflation expectations became significantly better anchored in the 2000s. In fact, the improved anchoring of inflation expectations may be an important reason why the passthrough has declined over time in the sample countries analyzed in this chapter, as well as in several *Central, Eastern, and Southeastern European countries* studied by De Luigi and others (2019). In contrast, in the four largest *euro area* countries studied by Bobeica and others (2019), the degree of anchoring of inflation expectations remained relatively unchanged (Figure 2.4, panel 2), with inflation expectations even drifting below target in recent years (Figure 2.4, panel 1).[10]

The Role of Competition

Firms' pricing strategies depend to a significant extent on their exposure to competition, either domestic or from abroad (Lamo and Smets 2009). In a more competitive environment, firms may be reluctant to pass cost increases onto consumers due to fear of losing market share to competitors or being driven out of the market (see, for example, Carney 2015, and Obstfeld 2019).[11] Three pieces of analysis in this chapter suggest the important role of competition in shaping the link between wage growth and inflation.

Europe is one of the world's regions most open to international trade and most deeply integrated in global supply chains (see Huidrom and others 2019). Yet, the numbers hide dramatic differences in exposure to foreign competition across sectors of the economy. Import penetration—measured as the ratio of final imports to sectoral gross value added—is about 60 percent in the manufacturing sector (Figure 2.5, panel 1). In contrast, in the services sector, the import penetration ratio is less than 5 percent. These patterns are consistent with higher barriers to trade in services, relative to the manufacturing sector, as discussed in Boz and others (2019). As a result of higher exposure to foreign competition, non-energy industrial goods prices tend to be closely correlated with producer prices in other countries (Carney 2017, Forbes 2019).[12] One would also expect a lower wage-to-inflation passthrough in this sector relative to services.

Indeed, the analysis confirms that higher economy-wide wage growth is more likely to lead to higher growth in services prices, relative to non-energy industrial goods' prices, which reflect mostly prices of manufactured goods (Figure 2.3, panels 1 and 2, section D; Figure 2.5, panel 2). PVAR regressions suggest that in EU15+3 countries, the extent to which economy-wide wage growth feeds into services inflation is nearly two times stronger than the impact of wage growth on non-energy industrial goods inflation. In NMS, prices of services are about four times more responsive to wage increases compared to manufacturing prices.

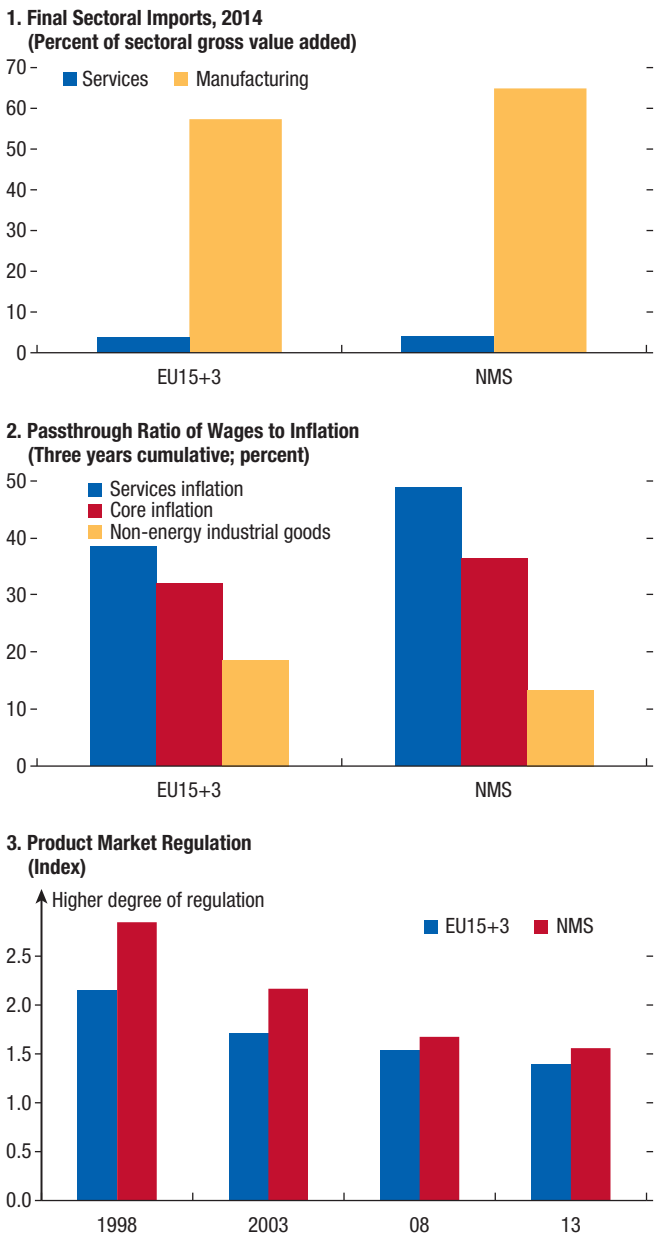
A more granular sectoral analysis confirms the potentially important influence of exposure to competitive pressures for the wage–price link. Using annual data on producer prices, productivity-adjusted wage growth, imports, and output across 55 sectors in 32 European countries during 2000–14 from the World Input Output Database (WIOD) and Johnson and Noguera (2017), panel regressions reveal that the correlation between sectoral wage growth and growth in sectoral value-added deflators is significantly higher in sectors that have lower import

[10]The difference could also be due to a long-term restriction imposed by Bobeica and others (2019) that the gap between productivity-adjusted nominal wage growth and price inflation must disappear in the long-term. The analyses in this chapter do not impose such a restriction.

[11]So far, there are limited signs of loss of competitiveness in the tradeable sector despite the faster growth in wages relative to productivity. In the NMS, still-strong domestic demand generally led to a small deterioration in current account balances, but market shares have generally held up well.

[12]The analysis examines the two key components of core inflation: services and non-energy industrial goods price inflation. The latter captures predominantly products of the manufacturing sector.

Figure 2.5. Foreign and Domestic Competition



Sources: Eurostat; Haver Analytics; Johnson and Noguera (2017) based on World Input-Output Database; IMF, *World Economic Outlook*; Organisation for Economic Co-operation and Development; and IMF staff calculations.
Note: NMS are newer EU members. EU15+3 are the long-standing EU members plus Israel, Norway, and Switzerland. Data are weighted by purchasing-power-parity GDP to aggregate across the two country groups. Higher product market regulation index indicates higher regulatory barriers.

penetration.[13] This pattern holds even when restricting the analysis to the 19 manufacturing sectors included in the WIOD. This finding is in line with Bobeica and others (2019), who examine differences in the passthrough of wage growth to inflation in three broad sectors (namely, construction, manufacturing, and services) in *Germany*, *France*, *Italy*, and *Spain*. Three out of those four economies have somewhat larger passthrough of wage growth to inflation in the less-traded services sectors. Box 2.1 documents a similar pattern for a subsample of NMS, and demonstrates that even within the subsamples of manufacturing and services sectors, higher foreign competition is associated with a lower responsiveness of producer prices to wages.

Finally, the chapter also finds some empirical evidence that more fierce domestic product market competition is associated with a somewhat lower passthrough of wage growth to inflation. Anecdotally, EU firms that participated in the European Central Bank's Wage Dynamics Network Surveys were more likely to indicate their preference to reduce other costs rather than increase prices in response to wage shocks when operating in a more competitive environment (Bertola and others 2012). IPVAR regressions based on OECD's product market regulation (PMR) indices (shown in Figure 2.5, panel 3) also suggest that more vibrant product market competition and fewer barriers to entry mute the sensitivity of consumer prices to wage increases. The passthrough of wage growth to inflation is marginally higher when evaluated at the 75th percentile of a country's PMR score (that is, in countries with higher regulatory barriers in product markets) than at the 25th percentile of the PMR index (Figure 2.3, panels 1 and 2, section E). At a sectoral level, Box 2.1 also finds that stronger domestic competition, as captured by the Lerner

[13]Due to the lower frequency and limited time coverage of the data, the analysis relies on panel regressions, which model growth in sectoral value-added deflators as a function of its lag and growth in productivity adjusted sectoral wage growth, controlling for country–sector and country–year fixed effects. The latter capture the effect of all country-specific time-varying shocks, such as changes in inflation expectations, economic slack, commodity price shocks, and the like. See Online Annex 2.2 for further details.

Index, weakens the link between wage growth and producer prices in the services sector.

The Role of Corporate Profitability

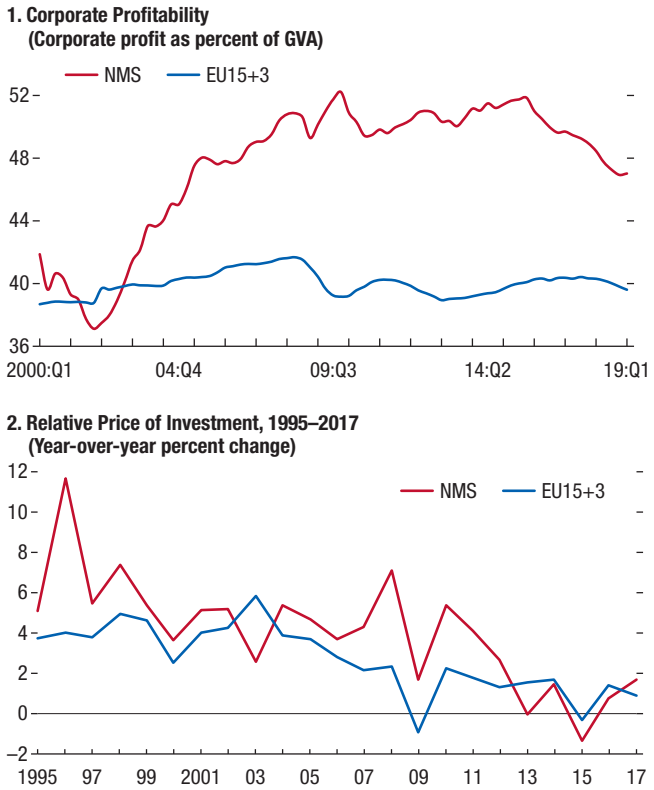
This final section examines the relationship between corporate profitability and the labor cost–inflation passthrough. Firms with higher profit margins have room to absorb a higher wage bill without passing the cost onto consumers, for example, to retain market share. Overall, economy-wide profit shares remain high in Europe, and in NMS in particular (Figure 2.6, panel 1). At the end of 2018, corporate profits amounted to 47 percent of gross value added in NMS and 40 percent in EU15+3 countries.[14] However, the recent increase in productivity-adjusted wages went hand-in-hand with a decline in corporate profit shares. Since the beginning of 2017, corporate profits declined each year by about 1 percent of gross value added in NMS economies and 0.3 percent in other European countries. This pattern suggests that firms are indeed using their profit buffers to absorb the faster wage growth, rather than passing the higher labor costs to their clients.[15]

The IPVAR analysis confirms the inverse association between the corporate profit share and the wage-to-inflation passthrough. In countries and periods when the economy-wide corporate sector profit share is relatively high, a significantly smaller share of wage growth finds its way into consumer price inflation (Figure 2.3, panels 1 and 2, section F). A 1 percentage point increase in labor costs leads to a cumulative increase in inflation of only 0.7 percentage point during the three-year period, when evaluated at the 75th percentile of the distribution of corporate profitability. When corporate profits are relatively thin (when profits are at the 25th percentile of the distribution of corporate profitability), the impact of wage growth on inflation is 2.5 times higher, with a somewhat stronger passthrough.

Rising corporate profit shares mirror the declining share of income that goes to workers. As highlighted in Chapter 3 of the April 2017 *World Economic Outlook*, the labor share of income has been on a downward trend in many countries since the 1990s. A low labor share means that wage developments matter less for inflation. The IPVAR regressions confirm this observation, with the cumulative impact of wage increases on inflation in a low labor share regime very similar to the high corporate profit regime (Figure 2.3, panels 1 and 2, section G).

Finally, enhanced access to relatively cheaper and potentially higher-quality inputs, for example investment goods, allows firms to pay higher

Figure 2.6. Corporate Profitability and Other Costs



Sources: Eurostat; Haver Analytics; IMF, *World Economic Outlook*; Penn World Table 9.1; and IMF staff calculations.
Note: NMS are newer EU members. EU15+3 are the long-standing EU members plus Israel, Norway, and Switzerland. Data are weighted by purchasing-power-parity GDP to aggregate across the two country groups. GVA = gross value added.

[14]In contrast, corporate profits account for only a third of gross value added in the United States.

[15]Admittedly, this pattern is to be expected: higher wages, unless accompanied by employment cuts, will have to translate into lower profits as a matter of accounting, absent any changes to the firm's production technology or other inputs' costs.

wages without raising prices (Andrews and others 2018). The relative prices of machinery and equipment have declined markedly since the 1990s (Figure 2.6, panel 2; and Chapter 3 of the April 2019 *World Economic Outlook*). This is also linked to a more muted wage growth–inflation passthrough (Figure 2.3, panels 1 and 2, section H). More broadly, as the exercise discussed above demonstrates, healthy aggregate corporate profitability and an increase in competition are not necessarily incompatible. Many factors may support corporate profits, even as wages rise, such as access to cheaper intermediate inputs, lower taxation or financing costs, the adoption of new technologies that may reduce the demand for labor, and the like.

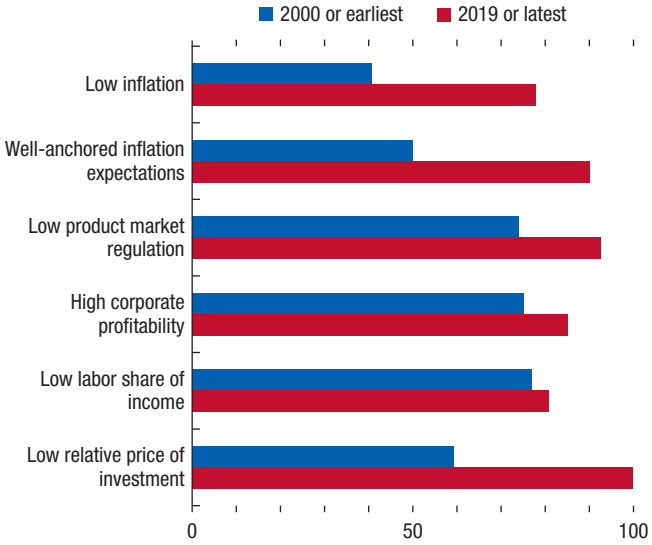
Conclusions and Policy Implications: Inflation to Remain Subdued

Labor markets remain strong in Europe, despite some recent softening discussed in Chapter 1. Wage growth has risen above productivity gains, especially in NMS, yet signs of underlying consumer price pressures remain limited. This chapter explored several factors that influence the strength of the passthrough of wage growth to inflation.

The evidence presented in this chapter suggests that, historically, wage growth has been an important determinant of price developments in Europe. The cumulative impact of a 1 percentage point increase in wages is 1.1 percentage point higher inflation in European countries at the end of three years. The overall passthrough ratio, which takes into account the response of wages to their own increases, is about a third.

However, there are several reasons to expect the recent pickup in wage growth to have a more muted impact on inflation than in the past. The chapter finds that the passthrough of wage growth to inflation is weaker when inflation and inflation expectations are subdued, corporate profitability is higher, and firms are exposed to fiercer competition.

Figure 2.7. Factors Pointing to Low Wage–Inflation Passthrough Ratio
(Percent of total countries)



Sources: Bems and others (2018); Eurostat; Haver Analytics; IMF, *World Economic Outlook*; Organisation for Economic Co-operation and Development; Penn World Table 9.1; and IMF staff calculations.
Note: The bars represent the share of European countries in the sample that have core inflation above the long-term country average; the metric of inflation expectations anchoring and corporate profitability in the top 75th percentile; and other variables in the bottom 25th percentile.

What do these findings mean for the inflation outlook and the appropriate policy response? As discussed above, a number of cyclical (for example, inflation, corporate profitability) and structural (such as the degree of competition) factors shape the responsiveness of inflation to wage developments. Currently, inflation and inflation expectations are near historical lows for three quarters of European economies (Figure 2.7). Corporate profitability is still healthy. In NMS, corporate profit shares have started to decline, consistent with firms letting their profit margins absorb the rise in labor costs, rather than passing these costs onto consumers. However, corporate profitability remains high from a historical perspective and significantly above that of EU15+3. Finally, firms continue to report very high levels of competition for their products. Despite the comfortable profit margins at the

aggregate level, more than two-thirds of firms report increased competitive pressures compared to the precrisis era according to the latest Wage Dynamics Network Survey. All of these factors suggest that it is unlikely that the recent increase in wage growth will meaningfully spur inflation in the near term. These findings support the need for monetary policy in many European countries to remain accommodative for longer in order to guard against a downshift in inflation expectations, as discussed in Chapter 1. However, as the prolonged period of accommodative financial conditions may have created an environment conducive to greater risk taking, policy makers need to remain vigilant and guard against further buildup of financial vulnerabilities and other undesirable side effects, as discussed in Chapter 1 of the October 2019 *Global Financial Stability Report*.

Box 2.1. Sectoral Dimension of the Link between Wage Growth and Inflation

Industry-based analysis reveals a strong link between sectoral wage growth and producer prices across 70 industries in eight of the European Union's newer member states (NMS) during 1995–2016.[1,2] This box presents estimates based on the Organisation for Economic Co-operation and Development's Structural Analysis (STAN) Database, which includes 22 industries in the manufacturing sector and 40 industries in the services sector. The impact of wage growth on producer prices at the sectoral level is estimated using error-correction mean-group autoregressive distributed lag regressions since the annual frequency of the available data does not provide sufficient time variation needed for the estimation of a panel vector auto regression (PVAR) model. Overall, a 1 percentage point increase in unit labor costs is found to increase producer prices by 0.9 percentage point after three years. This cumulative increase is the smallest in *Poland* and *Hungary* at about 0.5 percentage point, and the largest in *Latvia* at 1.3 percentage points.[3]

The transmission of wage increases to sectoral prices is stronger in the services sector compared to manufacturing industries, and in times of economy-wide excess demand. On average, the cumulative response of sectoral inflation to wage increases reaches 0.7 percentage point in manufacturing and is close to 1 percentage point in services. The impact of labor compensation on producer prices is much stronger when the economy-wide output gap is positive, and more so in services. When the economy operates above potential, the response of price inflation in the services sector to a 1 percentage point increase in wage growth exceeds 1. In times of excess supply, labor compensation's impact on prices is much more muted (Figure 2.1.1). This result mirrors the economy-wide finding of a significantly higher passthrough of wage growth to inflation in a high-inflation environment (Figure 2.3, panels 1 and 2, section B).

Greater exposure to competition is associated with a weaker link between wage hikes and sectoral inflation. The role of competition is examined in subsamples of country–industry groups exposed to either higher- or lower-than-average intensity of competition within each sector. Firms in the services sector with greater domestic market power, as captured by the Lerner Index, tend to fully pass the cost of higher wages onto their consumers. In contrast, firms with lower market power limit price increases to only two-thirds of wage hikes. In the manufacturing sector, the evidence on the role of domestic market power is less clear-cut. Exposure to foreign competition also affects the responsiveness of producer prices to wage growth. The passthrough appears smaller in sectors that are more exposed to foreign competition, as captured in the ratio of imports of goods or services for final consumption to sectoral gross output.

This box was prepared by Volodymyr Tulin.

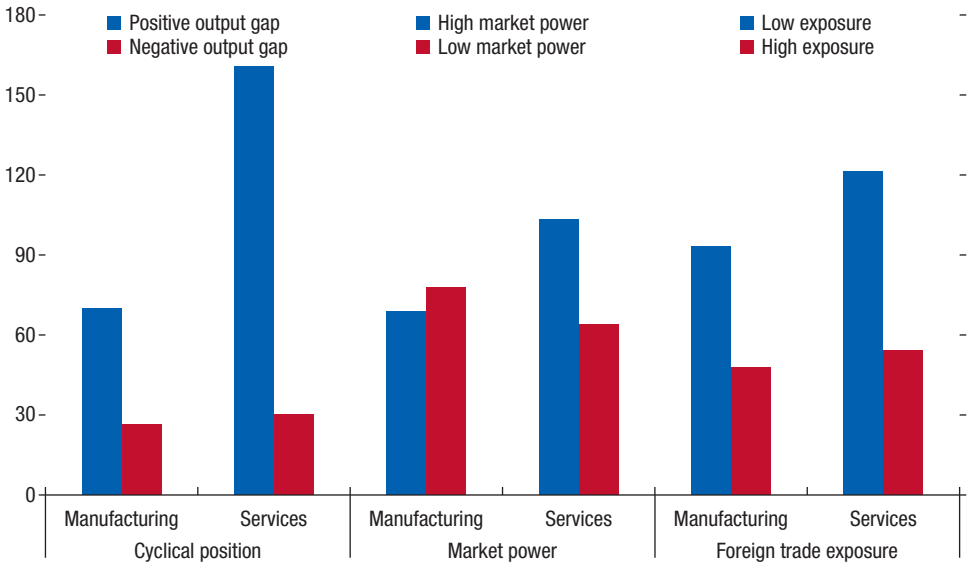
[1]The analysis is based on the following countries: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, and Slovenia. Bulgaria, Croatia, and Romania are excluded due to data limitations.

[2]For the Baltics, output volume is proxied by real value-added.

[3]This result is not fully comparable to the average economy-wide cumulative impact in NMS (Figure 2.2), since the regressions in this box do not account for the dynamic response of wages to either their own shock during the time period or their relationship with prices due to insufficient time variation in the annual data used in this analysis.

Box 2.1 *(continued)*

Figure 2.1.1. Cumulative Response of Producer Prices to Changes in Labor Costs
(Three-year cumulative; percent)



Sources: IMF, *World Economic Outlook*; Organisation for Economic Co-operation and Development, Structural Analysis Database; and IMF staff calculations.
Note: Firms' market power is measured using the Lerner Index, which is constructed as the price–cost margin (Roeger 1995). High market power is an indicator that takes the value of 1 when the Lerner Index exceeds the sectoral average. Firms' exposure to foreign trade is measured as the share of imports of goods and services used for final consumption relative to total gross output of the industry. Subsamples are partitioned into high or low regimes by median values within the two sectors in 2000, except for import of services, where a doubled threshold is chosen since median exposure is low.

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