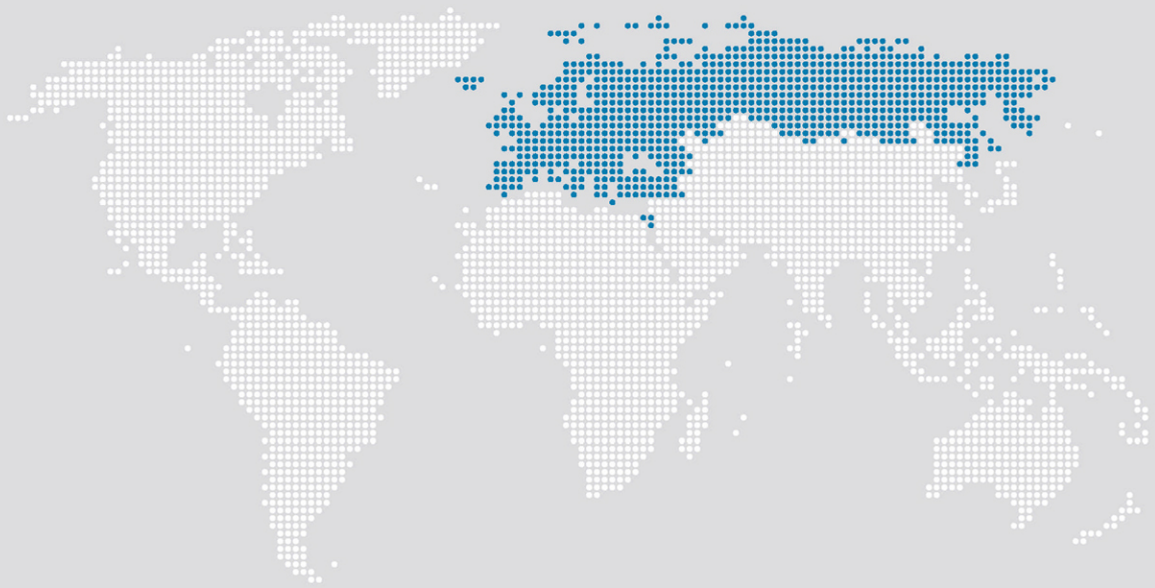
Regional Economic Outlook

Europe

Managing the Upswing in Uncertain Times

MAY 18



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Preface

The May 2018 *Regional Economic Outlook: Europe* was prepared by a staff of the IMF's European Department under the general guidance of Jörg Decressin. Chapter 1 was prepared by a staff team including Vizhdan Boranova, Raju Huidrom, Sylwia Nowak, Faezeh Raei, and Yan Sun and was led by Emil Stavrev. Chapter 2 was prepared by a staff team including Vizhdan Boranova, Jiaqian Chen, Dilyana Dimova, Christian Ebeke, Raju Huidrom, Nemanja Jovanovic, Li Lin, Aiko Mineshima, Jean-Marc Natal, Faezeh Raei, Tiberiu Scutaru, Jesse Siminitz, Yan Sun, Peichu Xie, and Sophia Zhang and was led by Craig Beaumont and Emil Stavrev. Laura Papi and the European Department country teams provided useful feedback on the report.

In addition, Phillip-Bastian Brutscher and Miroslav Kollar of the European Investment Bank contributed to Box 1.2 in Chapter 1. The chapter benefited from the exchange of views with the Central, Eastern, and Southeastern European authorities during the 2018 Spring Meetings of the International Monetary Fund and the World Bank in Washington, DC, and their subsequent comments.

Administrative support was provided by Lian Veluz. Colleagues of the Communications Department Marjorie Henriquez, Wiktor Krzyzanowski, David Pedroza, and Rhoda Weeks provided invaluable support, and Linda Long coordinated editing and production, with editing help from David Einhorn and Lucy Morales. Heidi Grauel performed layout services.

Approved by Poul M. Thomsen.

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Abbreviations

The following abbreviations are used:

ALB	Albania
AUT	Austria
BGR	Bulgaria
BiH	Bosnia and Herzegovina
BIS	Bank for International Settlements
BLR	Belarus
CE	Central Europe
CEE	Central and Eastern Europe
CESEE	Central, Eastern, and Southeastern Europe
CFC	Central fiscal capacity
CHE	Switzerland
CIS	Commonwealth of Independent States
CMU	Central Markets Union
CYP	Cyprus
CZE	Czech Republic
DEU	Germany
DNK	Denmark
EA	Euro area
ECB	European Central Bank
ECM	Error correction model
EIB	European Investment Bank
EM	Emerging market
ESP	Spain
EST	Estonia
EU	European Union
EU15	European Union-15
EMU	Economic and Monetary Union
FBiH	Federation of Bosnia and Herzegovina
FDI	Foreign direct investment
FIN	Finland
FRA	France
FSI	Financial soundness indicators
GBR	United Kingdom

GDP	Gross domestic product
GRC	Greece
GVC	Global value chain
HICP	Harmonized Index of Consumer Prices
HP filter	Hodrick-Prescott filter
HRV	Croatia
HUN	Hungary
IFS	International Financial Statistics
IMF	International Monetary Fund
IRL	Ireland
ISL	Iceland
ISO	Interational Organization for Standardization
ISR	Israel
ITA	Italy
LTU	Lithuania
LVA	Latvia
LUX	Luxembourg
MDA	Moldova
MKD	Former Yugoslav Republic of Macedonia
MLT	Malta
MNE	Montenegro
NAIRU	Nonaccelerating inflation rate of unemployment
NDL	Netherlands
NMS	New member states (newer EU members)
NOR	Norway
NPL	Nonperforming loan
OECD	Organisation for Economic Co-operation and Development
PMI	Purchasing managers' index
POL	Poland
PRT	Portugal
REER	Real effective exchange rate
ROU	Romania
RS	Republika Srpska
RUS	Russia
SA	Seasonally adjusted
SEE	Southeastern Europe
SEE-EU	Southeastern European EU member states
SEE-non-EU	Southeastern European non-EU member states
SMR	San Marino

SRB	Serbia
SVK	Slovak Republic
SVN	Slovenia
SWE	Sweden
TUR	Turkey
UKR	Ukraine
ULC	Unit labor cost
UVK	Kosovo
VAR	Vector autoregression
WEO	*World Economic Outlook*

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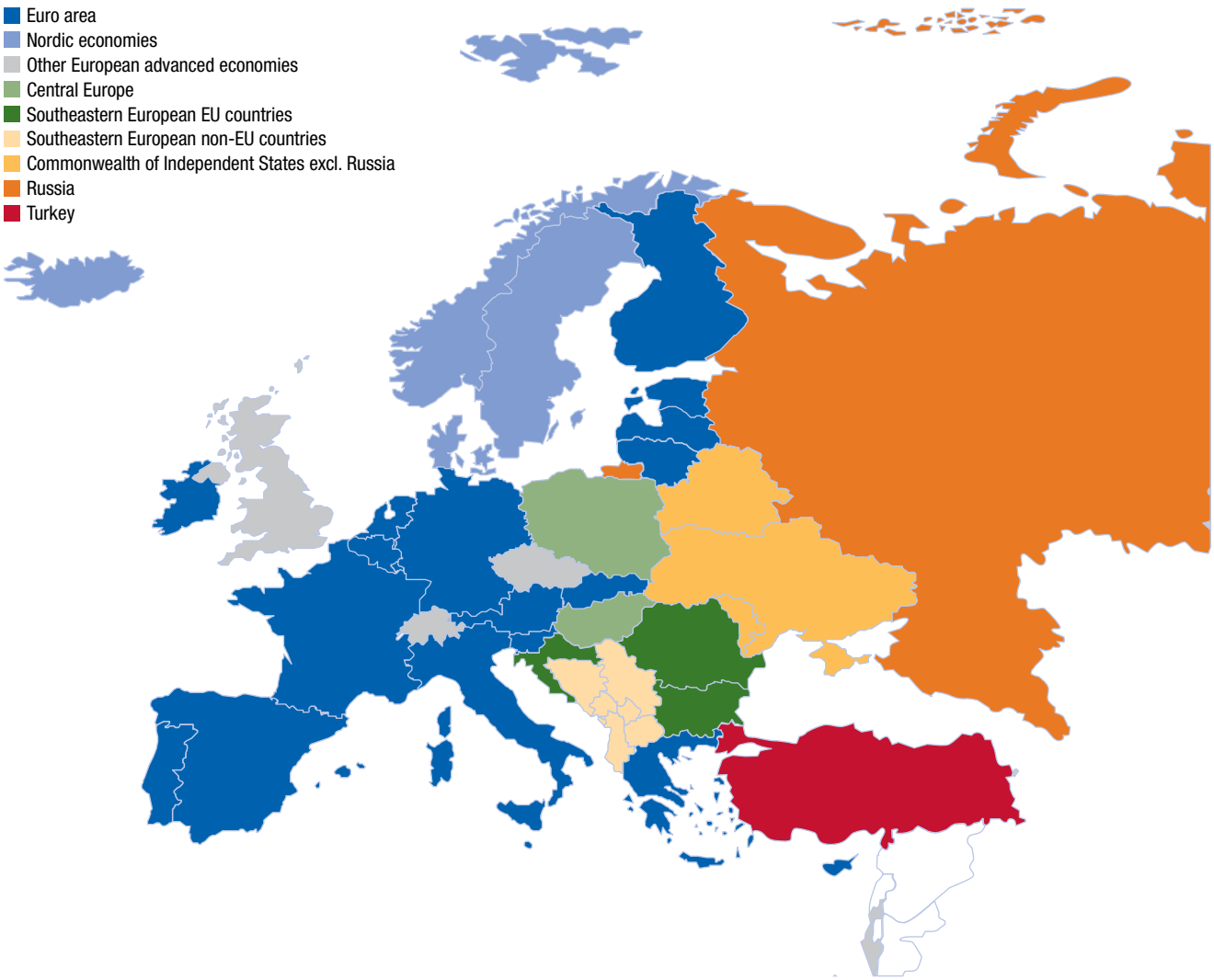
Regional Economic Outlook: Europe

Europe: Country Groups



Europe: Country Groups and Weights (2017)

Group/Country	Abbreviation		Weights	
Europe				**100.0**
Advanced European economies	**AEUR**		**100.0**	**68.7**
Euro area	**EA**	**100.0**	**73.4**	**50.5**
Austria	AUT	3.0	2.2	1.5
Belgium	BEL	3.6	2.6	1.8
Cyprus	CYP	0.2	0.2	0.1
Estonia	EST	0.3	0.2	0.1
Finland	FIN	1.7	1.2	0.8
France	FRA	19.2	14.1	9.7
Germany	DEU	28.3	20.8	14.3
Greece	GRC	2.0	1.5	1.0
Ireland	IRL	2.4	1.8	1.2
Italy	ITA	15.7	11.5	7.9
Latvia	LVA	0.4	0.3	0.2
Lithuania	LTU	0.6	0.5	0.3
Luxembourg	LUX	0.4	0.3	0.2
Malta	MLT	0.1	0.1	0.1
Netherlands	NLD	6.2	4.6	3.1
Portugal	PRT	2.1	1.6	1.1
Slovak Republic	SVK	1.2	0.9	0.6
Slovenia	SVN	0.5	0.4	0.2
Spain	ESP	12.0	8.8	6.1
Nordic economies	**NOR**	**100.0**	**6.0**	**4.1**
Denmark	DNK	23.8	1.4	1.0
Iceland	ISL	1.5	0.1	0.1
Norway	NOR	31.5	1.9	1.3
Sweden	SWE	43.2	2.6	1.8
Other European advanced economies	IT4	**100.0**	**20.6**	**14.1**
Czech Republic	CZE	9.1	1.9	1.3
Israel	ISR	7.7	1.6	1.1
San Marino	SMR	0.0	0.0	0.0
Switzerland	CHE	12.5	2.6	1.8
United Kingdom	GBR	70.6	14.5	10.0
Emerging European economies	**EEUR**		**100.0**	**31.3**
Central Europe	**CE**	**100.0**	**15.4**	**4.8**
Hungary	HUN	20.5	3.2	1.0
Poland	POL	79.5	12.3	3.8
Southeastern European EU member states	**SEE EU**	**100.0**	**8.0**	**2.5**
Bulgaria	BGR	20.8	1.7	0.5
Croatia	HRV	13.8	1.1	0.3
Romania	ROU	65.4	5.3	1.6
Southeastern European non-EU member states	**SEE non-EU**	**100.0**	**2.7**	**0.8**
Albania	ALB	14.5	0.4	0.1
Bosnia and Herzegovina	BIH	18.0	0.5	0.2
Kosovo	UVK	7.9	0.2	0.1
Macedonia, FYR	MKD	12.5	0.3	0.1
Montenegro	MNE	4.5	0.1	0.0
Serbia	SRB	42.6	1.2	0.4
Commonwealth of Independent States excl. Russia	**CIS excl RUS**	**100.0**	**6.2**	**1.9**
Belarus	BLR	31.5	2.0	0.6
Moldova	MDA	3.5	0.2	0.1
Ukraine	UKR	65.0	4.0	1.3
Russia	**RUS**	**100.0**	**43.8**	**13.7**
Turkey	**TUR**	**100.0**	**23.8**	**7.4**

Note: Country weights are based on 2017 GDP in purchasing-power-parity terms. The country groups are color coded, and the weights refer to respective groups.

Executive Summary

Europe continues to enjoy strong growth. Activity has firmed up in many economies, and the forecast is for more of the same. Real GDP increased by 2.8 percent in 2017, up from 1.8 percent in 2016. The expansion is largely driven by domestic demand. Credit growth has finally picked up, which is helping Europe's banks rebuild profitability. While leading indicators have recently begun to ease, they remain at high levels. Accordingly, the forecast is for growth to stay strong, reaching 2.6 percent in 2018 and declining to 2.2 percent in 2019. Amid the good times, however, fiscal adjustment and structural reform efforts are flagging.

Inflation and wage growth remain subdued in most advanced economies and are projected to gather pace only very gradually, given slack in labor markets. In central and eastern Europe, by contrast, where economies are cyclically much further ahead, wages are growing rapidly and inflation is expected to pick up appreciably in 2018, potentially affecting competitiveness. As Chapter 2 discusses, the subdued wage dynamics in many advanced economies reflect low inflation and inflation expectations, still-high unemployment and underemployment rates, as well as sluggish productivity growth. In addition, there are signs that wage Phillips curves are very flat in advanced economies and that spillovers from regional labor market conditions and slow wage growth in some economies are contributing to wage moderation, holding back demand in other economies. It could thus take some time before wage growth picks up noticeably and broadly in the advanced economies.

The favorable outlook is subject to several risks that are mainly to the downside over the medium term. The most immediate risks stem from rich valuations in financial markets at the global level, notably an exceptionally low term premium and a growing tendency toward inward-looking economic policies. European markets have weathered the recent financial turbulence well, with capital flows to emerging market economies staying strong. But, as is discussed in Chapter 1, sustained large declines in stock prices are often harbingers of lower growth and inflation. With many policy rates close to the zero lower bound and central banks still engaged in unorthodox policies, the scope for further, effective policy easing in response to new shocks is not large. It is therefore all the more important to rebuild room for fiscal policy maneuver.

An important question is how long this recovery can run even in the absence of external shocks. On the one hand, estimates for output gaps point to little slack in most economies. On the other hand, unemployment rates—especially when defined broadly—still appear high, particularly in key advanced economies. Whether the recovery has the legs to last depends on the response of investment. Chapter 1 shows that investment has generally been subdued, and mainly for replacement purposes. It has also been much weaker than after the global crisis of 1991.

With economic prospects continuing to improve in the short term but medium-term prospects less bright, policymakers should seize the moment to rebuild room for fiscal maneuver and push forward with reforms to boost growth potential. In countries where inflation is still subdued, monetary policy should continue to be supportive to ensure a durable increase in inflation to targets. In countries where inflation is hitting targets, it should gradually normalize. In many economies, policymakers should strive to bring fiscal deficits within range of balance over the next few years. This way, automatic stabilizers and fiscal stimulus can be deployed again, should downside risks materialize. Also, stabilizing and bringing down public debt would help economies better cope with the pressures from growing expenditures on pensions and health care. The combination of fiscal adjustment and easy monetary policy should also help the many economies that

have rebuilt much-needed competitiveness since the crisis continue to lower their still-high net external liability positions. Fiscal adjustment should be driven first and foremost by efforts to improve the efficiency of government. This is a major challenge, particularly in many of the emerging economies in Europe that also need to work further on improving institutions and governance. Countries with ample fiscal space can and should use it to promote higher potential growth.

Finally, the recovery provides an opportunity to move faster to deepen the Economic and Monetary Union. First, more actions are needed to complete the Banking Union. Instituting a European Stability Mechanism to backstop the Single Resolution Fund would mark an important first step toward greater risk sharing. Second, there is a strong case for a central fiscal capacity, but access should be strictly conditional on compliance with the fiscal rules combined with mechanisms to prevent permanent transfers between countries. Third, with the United Kingdom leaving the single market, there is a more urgent need to advance the Capital Markets Union, which requires steps to promote harmonization of insolvency regimes and better protection of cross-border investor rights.

1. Managing the Upswing in Uncertain Times

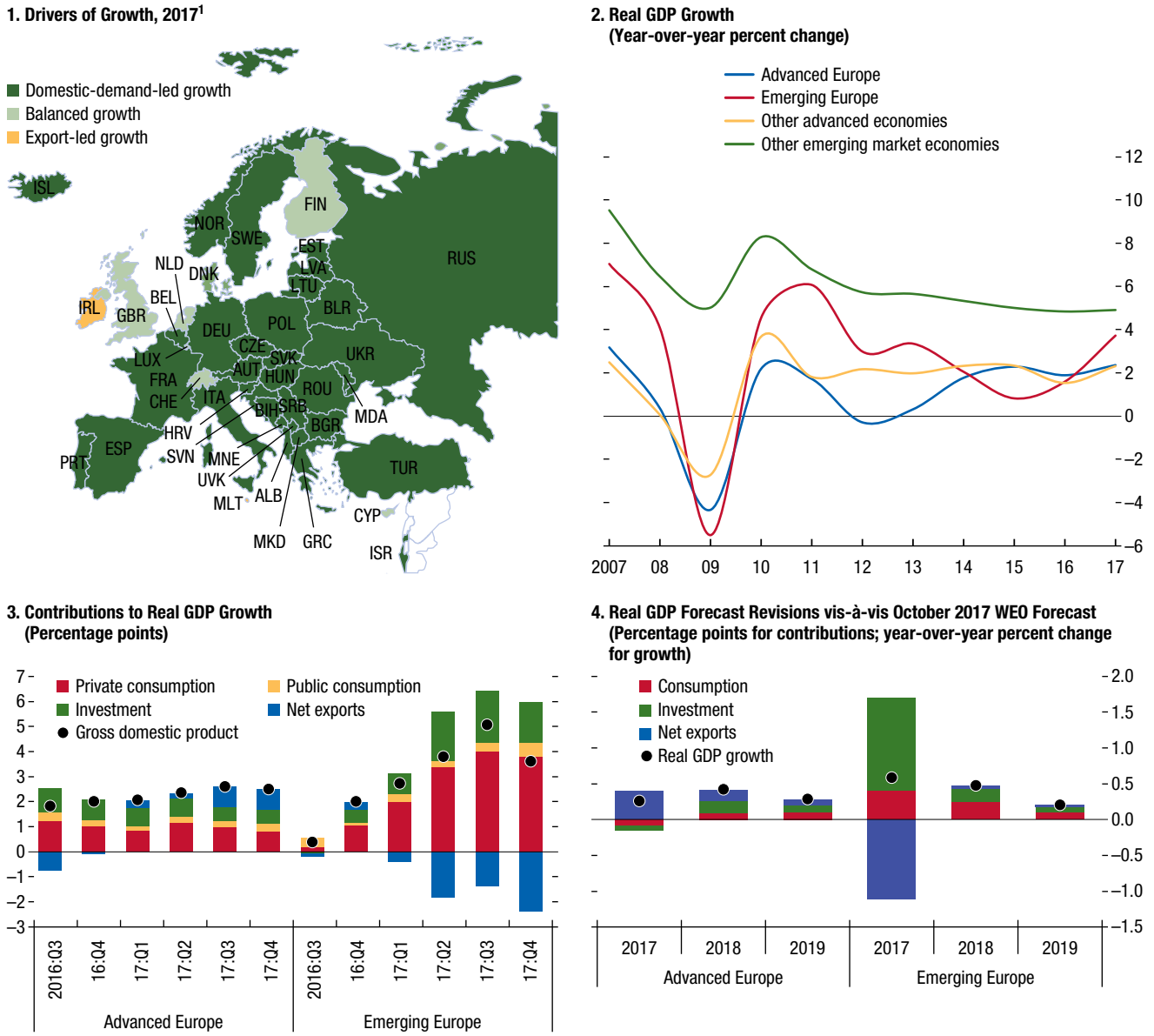
Economic Activity Continues to Firm Up

Europe continues to enjoy a strong growth spurt. Growth has firmed up in many European economies, including all the major ones except the *United Kingdom*. Also, activity has broadened: for the first time since the global financial crisis all economies are growing. Real GDP increased by 2.8 percent in 2017, up from 1.8 percent in 2016. The expansion is largely driven by domestic demand (Figure 1.1, panel 1), initially mainly by vibrant private consumption but now also by investment (Figure 1.1, panel 3; Box 1.1).

- *Advanced European economies* grew by 2.4 percent in 2017, up from 1.9 percent in 2016 (Figure 1.1, panel 2). The upward revision of 0.2 percentage point since the November 2017 *Regional Economic Outlook: Europe* is due to higher-than-expected net exports growth (Figure 1.1, panel 4).
  - In the *euro area*, quarterly growth has been positive for the last 19 quarters, and annual growth in 2017 reached 2.3 percent, up from 1.8 percent in 2016. The recovery is broad-based across countries and sectors, with a positive feedback loop between jobs, consumption, and investment. Moderate but sustained rises in wages and real disposable income and recovering asset prices are boosting household incomes and wealth. In *Germany*, household consumption grew by 2.1 percent in 2017, the largest increase since 2000. Business investment is being spurred by strong demand on the back of high capacity utilization, accommodative financing conditions, and gradually rising corporate profitability.
  - *Nordic economies* expanded by 2.2 percent in 2017, broadly the same as in 2016. *Sweden* enjoyed robust growth, with unemployment declining to near precrisis low levels. However, weaker-than-forecast net exports in the second half of 2017 resulted in a downward revision of growth to 2.4 percent in 2017, from 3.1 percent in the November 2017 *Regional Economic Outlook: Europe*. *Norway's* economy accelerated to 1.8 percent in 2017 from 1.1 percent in 2016, supported by the recovery of business investment, stronger consumer spending, and higher oil prices.
  - Growth in *other advanced European economies* was largely unchanged at 2 percent in 2017. In the *United Kingdom,* GDP growth slowed to 1.7 percent in 2017. Domestic demand is being held back by slower real income growth following the sharp depreciation of the pound as well as Brexit-related uncertainties that held back investment. However, favorable foreign demand and a cheaper pound led to a rise in exports of goods and services. In contrast, economic activity in the *Czech Republic* surged to 4.3 percent in 2017, due to strong private demand and increased absorption of the new round of EU Structural and Investment Funds (Figure 1.2).
- In most of *emerging Europe,* the strong cyclical upswing that took hold several years ago continued. The region more than doubled its annual real GDP growth rate to 3.7 percent in 2017, from 1.6 percent in 2016, a six-year high. The actual growth exceeded already strong projections in the November 2017 *Regional Economic Outlook:*

The chapter was prepared by a staff team comprising Vizhdan Boranova, Raju Huidrom, Sylwia Nowak, Faezeh Raei, and Yan Sun. Phillip-Bastian Brutscher and Miroslav Kollar of the European Investment Bank contributed to Box 1.2. The team was led by Emil Stavrev under the general guidance of Jörg Decressin. Laura Papi provided useful advice and comments. Lian Veluz provided administrative support. The chapter reflects data and developments as of April 19, 2018.

Figure 1.1. Real GDP Growth Developments

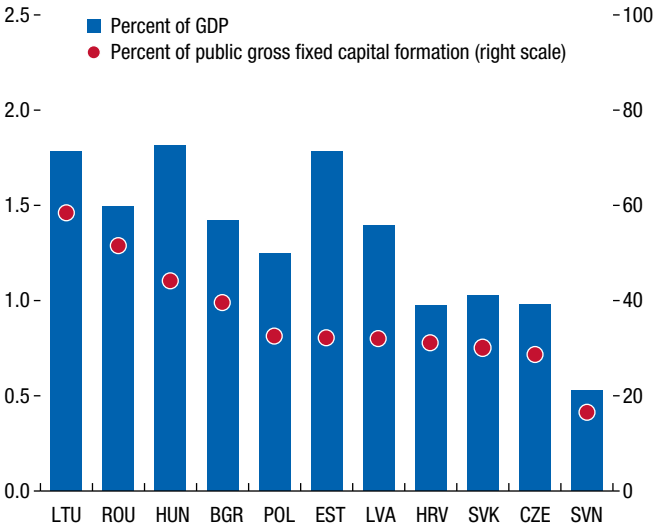


Sources: Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.
[1]Domestic-demand-led growth implies net exports contribute less than a fourth of total growth, and export-led growth implies domestic demand contributes less than a fourth of total growth.

Europe by 0.6 percentage point, despite an unexpectedly large drag from net exports of about 1 percentage point.

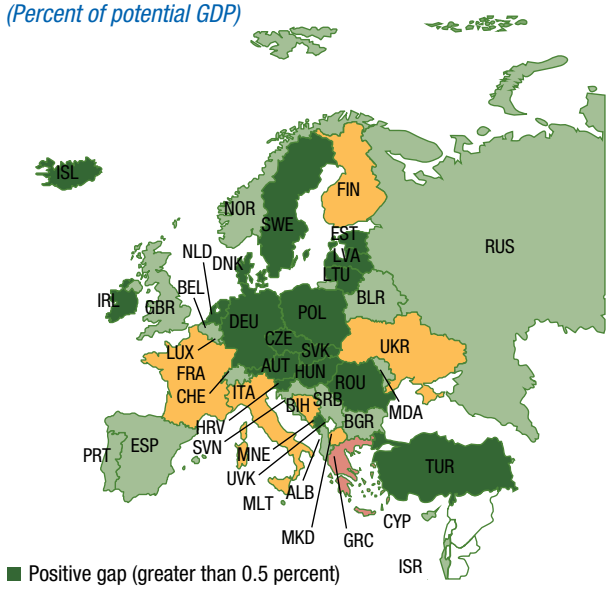
- In *Central Europe*, growth increased to 4.4 percent in 2017, and in *Southeastern European EU member states (SEE-EU)* growth increased to 5.8 percent. Activity was mainly driven by strong consumption on the back of high wage growth, higher public investment boosted by EU funds, and a modest recovery of private investment. As expected, the absorption of the new round of EU Structural and Investment Funds picked up pace after a slow start (see the May 2017 *Regional Economic Issues: Central, Eastern,*

Figure 1.2. EU Funds' Absorption in Selected New Member States, 2017



Sources: Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

Figure 1.3. Output Gap, 2018[1]
(Percent of potential GDP)



Sources: IMF, *World Economic Outlook*; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.
[1]Output gaps reflect IMF country desks' estimates.

and Southeastern Europe). In 2017, EU funds financed an equivalent of about half of public investment in *Romania* and *Hungary,* and a third elsewhere (Figure 1.2). Growth was further supported by discretionary fiscal spending in *Poland* and procyclical fiscal policy in *Romania*.

- In *Turkey*, growth accelerated sharply to 7 percent in 2017, from 3.2 percent the previous year. A sizable credit impulse (driven by state loan guarantees and relaxed macroprudential measures) and strong policy stimulus in the wake of the 2016 coup attempt stimulated domestic demand. In addition, exports increased considerably on the back of stronger external demand and a sizable depreciation of the lira.
- *Russia's* oil-dependent economy expanded by 1.5 percent in 2017, supported by higher oil prices, easier domestic financial conditions, and improved domestic demand. However, momentum softened in the second half of 2017. Economic activity in the other members of the *Commonwealth of Independent States (CIS)* also picked up in 2017 to 2.2 percent, with *Belarus* bouncing back from a two-year recession and recording growth of 2.4 percent.
- Growth moderated in the *Western Balkan* countries to 2.3 percent in 2017 from 3.1 percent in 2016, reflecting mainly a temporary slowdown in *Serbia* caused by a prolonged drought and electricity disruptions.

In addition to upward revisions to growth, the pickup in investment has also led to higher estimates of potential growth in 2018, by 0.2 percentage point in *advanced Europe* and by 0.1 percentage point in *emerging Europe*. While the estimates of potential growth and output gaps are uncertain (November 2017 *Regional Economic Outlook: Europe*), output gaps appear largely closed in most of the region (Figure 1.3). However, a broader set of indicators paints a mixed picture of overheating pressures in the largest European economies (Table 1.1). Many countries are seeing

Table 1.1. Overheating Indicators for Selected European Countries

2017 estimates above the 1996–2015 average, except as noted below, by

● Less than 0.5 standard deviation ● Greater than or equal to 0.5 but less than 1.5 standard deviations ● Greater than or equal to 1.5 standard deviations

	Domestic					External				Financial			
Country	Real GDP[1]	Output Gap[2]	Unemployment	Inflation[3]	Summary	Terms of Trade	Capital Flows[4]	Current Account[5]	Summary	Private Sector Credit Growth[4]	Real House Price Growth	Equity Price Growth	Summary
Germany	●	●	●	●	●	●	●	●	●	●	●	●	●
France	●	●	●	●	●	●	●	●	●	●	●	●	●
Italy	●	●	●	●	●	●	●	●	●	●	●	●	●
Spain	●	●	●	●	●	●	●	●	●	●	●	●	●
United Kingdom	●	●	●	●	●	●	●	●	●	●	●	●	●
Sweden	●	●	●	●	●	●	●	●	●	●	●	●	●
Czech Republic	●	●	●	●	●	●	●	●	●	●	●	●	●
Russia	●	●	●	●	●	●	●	●	●	●	●	●	●
Turkey	●	●	●	●	●	●	●	●	●	●	●	●	●
Poland	●	●	●	●	●	●	●	●	●	●	●	●	●
Romania	●	●	●	●	●	●	●	●	●	●	●	●	●

Sources: Bloomberg Finance L.P.; Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.

Note: For each indicator, except as noted below, economies are assigned colors based on estimated 2017 values relative to their 1996–2015 period average. Calculations are based on annual data except for capital flows and financial indicators, which are based on quarterly data. Each indicator is scored as red = 2, yellow = 1, and green = 0; summary scores are calculated as the sum of selected component scores divided by the maximum possible sum of those scores. Summary colors are assigned red if the summary score is greater than or equal to 0.66, yellow if greater than or equal to 0.33 but less than 0.66, and green if less than 0.33.

[1]Level of output more than 2.5 percent above the precrisis trend (1996–2006) is indicated by red; less than 2.5 percent by green; orange otherwise.

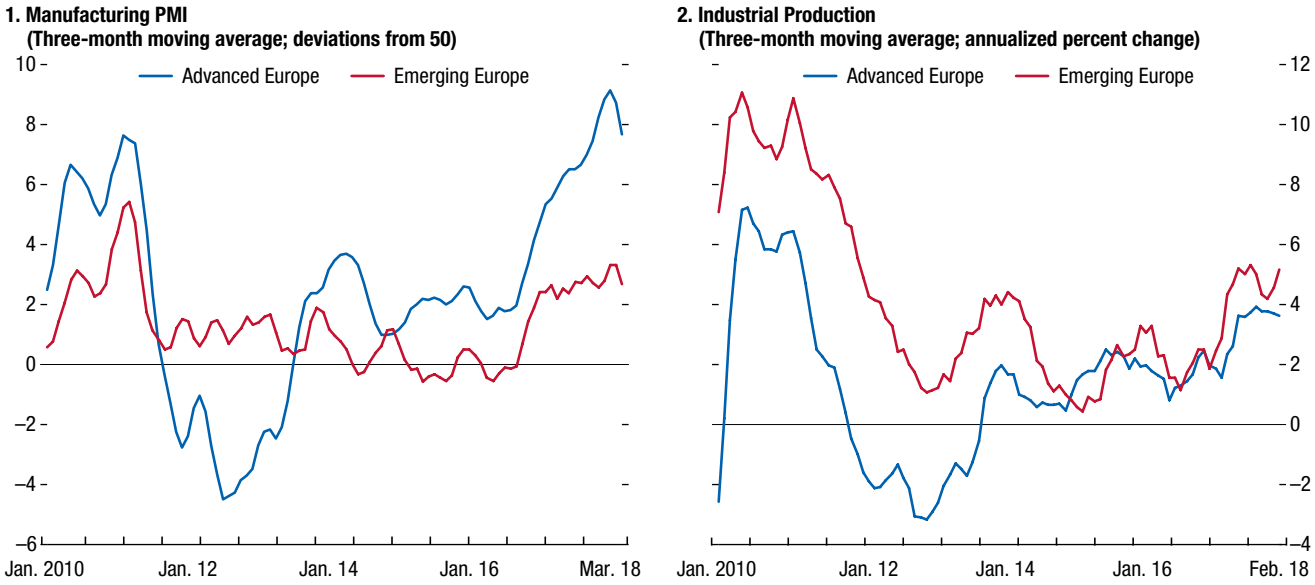
[2]Output gaps reflect IMF country desk estimates. Red is assigned for positive gap greater than 0.5 percent; yellow for gaps between −0.5 and 0.5 percent; and green for gaps smaller than −0.5 percent.

[3]The target inflation rate is used instead of the 1996–2015 period average in the calculation of the inflation indicator.

[4]The indicators for credit growth and capital flows refer to the latest available quarterly values in percent of GDP. Red is assigned if the annual change is greater than 5 percentage points, yellow if greater than 3 percentage points but less than or equal to 5 percentage points, and green if the annual change is equal to or less than 3 percentage points.

[5]In percent of GDP; difference between an average over 1996–2015 and the 2017 estimate.

Figure 1.4. High-Frequency Indicators



Sources: Haver Analytics; and IMF staff calculations.
Note: PMI = purchasing managers' index.

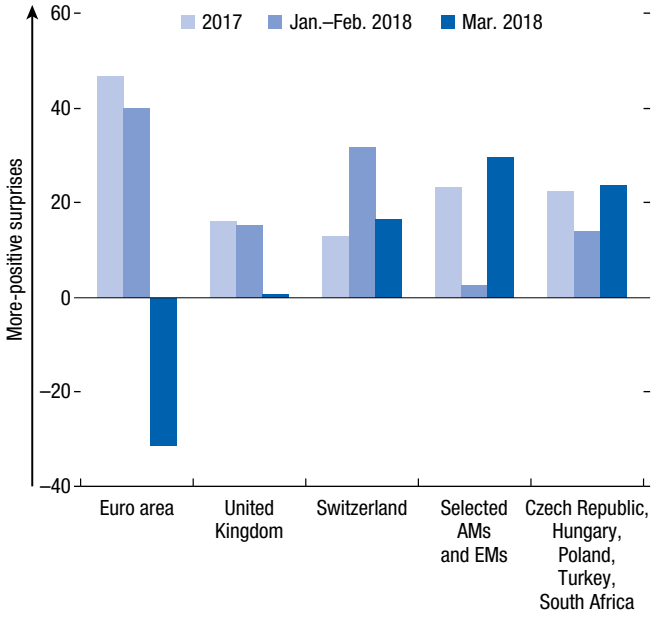
buoyant activity and unemployment rates below historical averages, with the notable exception of *France, Italy*, and *Spain*. Output is above precrisis levels but still below precrisis trend in most countries. However, inflation remains below central bank targets almost everywhere (partly reflecting slack, as discussed in Chapter 2), except in *Turkey* and the *United Kingdom*. Also, external indicators generally do not suggest overheating. Similarly, indicators of financial stability appear mostly benign, with a few exceptions (including high credit growth in *Turkey* and a rapid increase in house prices in *Romania*).

High-frequency data and indicators point to continued expansion in the near term, though likely with fewer upward surprises. Manufacturing purchasing managers' indices (PMIs) remain firmly in expansion territory (Figure 1.4). However, the March readings softened from their long string of gains. *Russia's* PMI came in barely above 50, and the composite index for the *euro area* has declined by a cumulative 4 points since the end of 2017—the largest three-month decrease since May 2012. Similarly, confidence among *euro area* and *Nordic* households eased in March, though it remains historically high. Hard data paint a similar picture: the trends remain favorable, but there is some softening. Industrial output continued to expand in January 2018 at about 3.6 percent in *advanced Europe* and 4.6 percent in *emerging Europe*, but the most recent growth rates are lower than in the second half of 2017. In *Germany*, industrial orders fell almost 4 percent, and factory sales edged down 0.2 percent month over month in January 2018. Looking ahead, Citigroup's Economic Surprise Index suggests that upside surprises are now less frequent than last year, especially in the *euro area* (Figure 1.5).

Inflation Still Subdued in the Euro Area but Gathering Pace in Eastern Europe

Price pressures are diverging across the region, but this is mostly visible in headline rates, owing to different weights of energy and food in household consumption baskets. Inflation rates are low in *advanced Europe* but gradually closing in or surpassing targets in *eastern Europe*. But even

Figure 1.5. Citigroup Economic Surprise Index[1]
(Percent; period average)

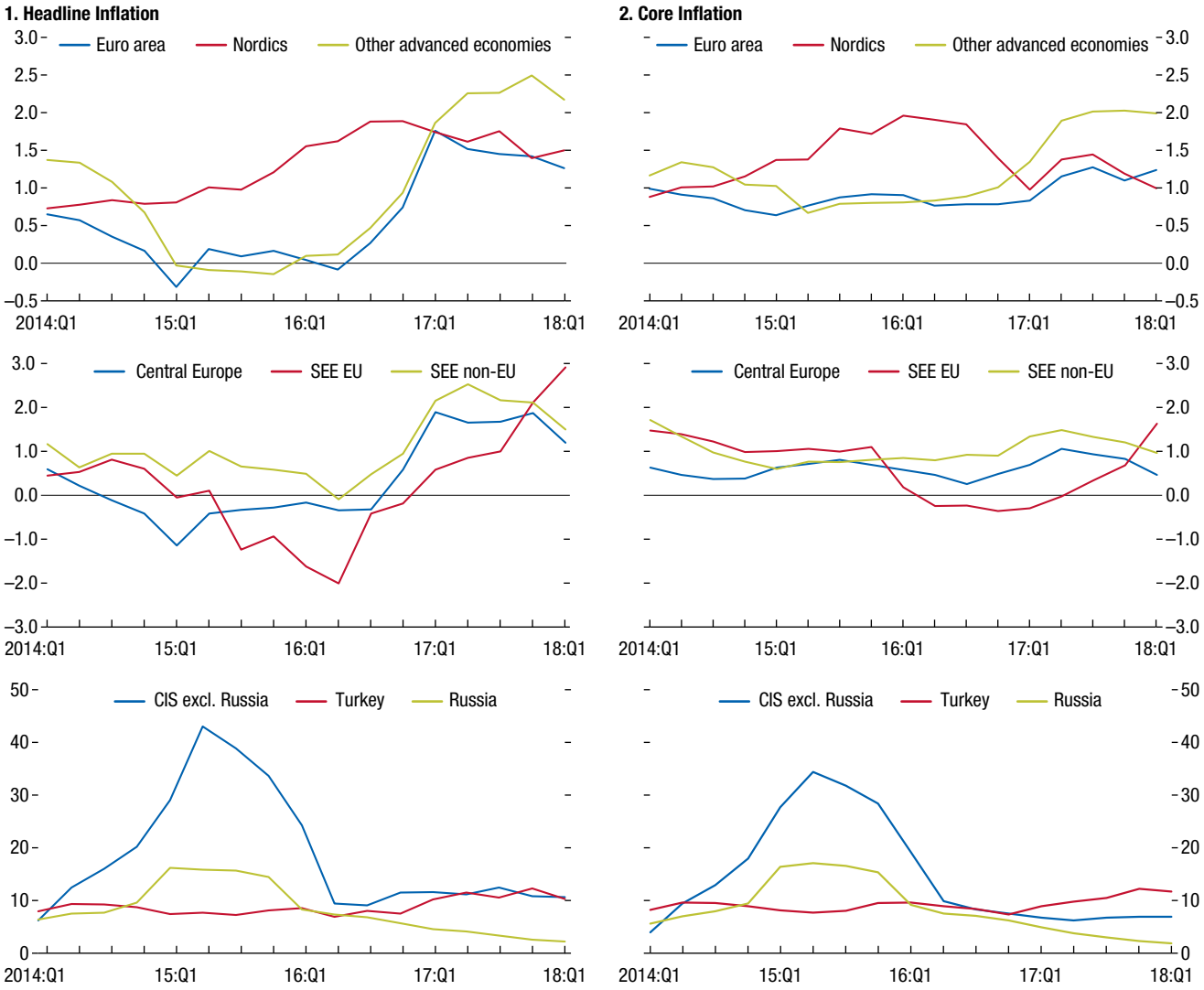


Sources: Haver Analytics; and IMF staff calculations.
[1]The index measures macroeconomic data surprises relative to market expectations. A positive reading means that the data releases were stronger than expected. Selected advanced markets (AMs) and emerging markets (EMs) comprise the Czech Republic, Hungary, Poland, Turkey, and 16 other countries.

there, core inflation is still quite low in most economies, despite higher wage growth.

- In many *advanced European economies*, inflation remains subdued (Figure 1.6, panel 1). In the *euro area*, headline inflation declined to 1.1 percent in February 2018, below the European Central Bank's (ECB's) target, most recently reflecting mainly lower food prices. On the back of sluggish wage growth, core inflation remains low (Figure 1.6, panel 2). Inflation is similarly subdued in the *Nordic economies*, with readings at 1.5 percent in February 2018. By contrast, inflation in the *United Kingdom* reached 2.7 percent in February 2018.
- In other advanced European economies, inflation has risen moderately, with the impact of high wage growth becoming increasingly visible. In the *Czech Republic*, inflation surpassed the 2 percent target of the central bank starting in early 2017 before declining at the beginning of this year. In the *Baltics*, inflation reached almost 4 percent in the second quarter of 2017, but then dropped to 2.8 percent in February 2018.
- Regarding *emerging Europe*, headline inflation in *Central* and *Southeastern Europe* increased appreciably to about 2 percent at the end of 2017, mostly owing to higher energy prices. Core inflation, however, while inching up, remains subdued at about 1 percent despite strong wage growth. In *Poland*, headline inflation hit 2.5 percent—the central bank's target—in November 2017 but has fallen since then, and core inflation has hovered around 0.8 percent in recent months. Among the *Southeastern Europe* (SEE) economies, headline inflation has increased steeply in *Romania* as the effects of tax and other administrative adjustments are dissipating. In the *non-EU SEE economies*, headline inflation, after picking up sharply to 2½ percent in mid-2017, declined somewhat in the second half of 2017, as inflation in *Serbia* fell to 3 percent. Core inflation remains relatively low at about 1 percent in *SEE countries*.
- In *Russia*, inflation has declined further amid tight monetary policy, a weaker-than-expected recovery, and a good harvest. The decline continues to be broad-based, and both headline and core inflation reached record lows of 2.2 and 2 percent, respectively, during January–February 2018.
- In contrast, inflation remains elevated in *Turkey*, reflecting strong domestic demand, expansionary fiscal and insufficiently tight monetary policies, and the pass-through of lira depreciation. Core inflation has picked up noticeably to about 12 percent in recent months, from about 10 percent in August 2017.

Figure 1.6. Inflation
(Year-over-year percent change)

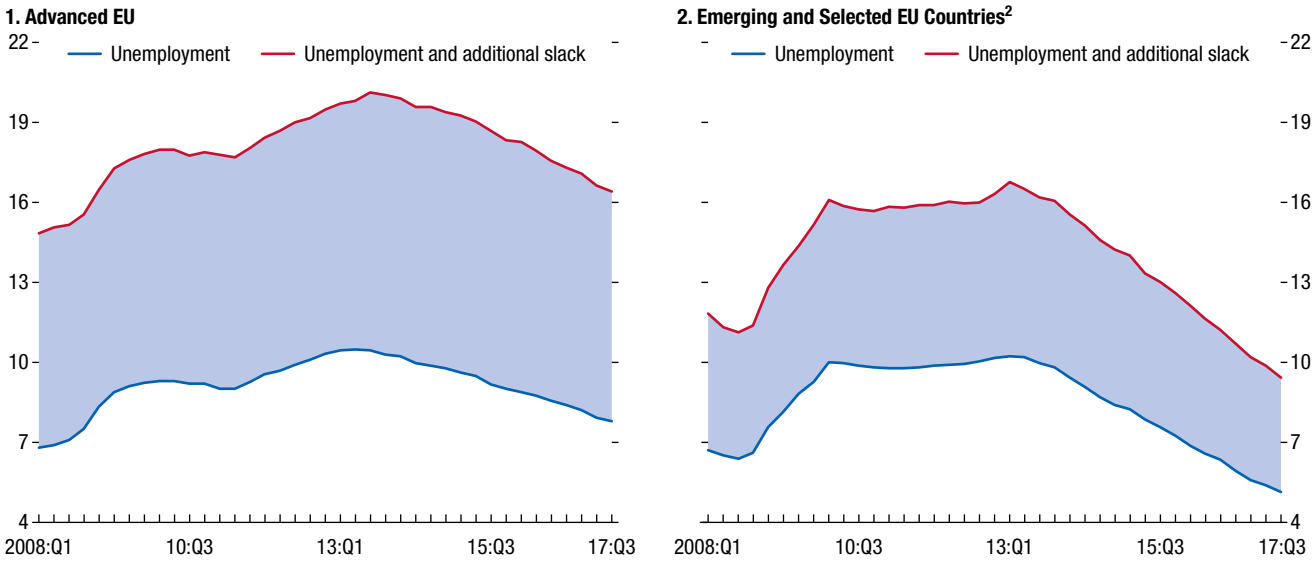


Sources: Haver Analytics; and IMF staff calculations.
Note: CIS = Commonwealth of Independent States; SEE = Southeastern Europe.

Different Wage Dynamics Continue across Europe: Sluggish in Most Advanced Economies but Strong Growth in the Newer EU Member States

Wage growth continues to be low in most of *advanced Europe,* but is strong in the rest of the region owing to tighter labor supply (Figure 1.7). While employment growth has been robust and there are notable reductions in indicators of labor market slack, wage growth is still subdued in the *euro area* and many *other advanced European economies.* However, recent wage negotiations in some *euro area economies* (such as *Germany*) suggest that employers are willing to accommodate demands for higher wage growth in tightening labor markets. In contrast, wage growth continues to be strong in the *newer EU member states* (*Czech Republic, Baltics, Central Europe*, *SEE economies*)—significantly outpacing inflation as unemployment rates dip below precrisis lows.

Figure 1.7. EU: Labor Market Slack
(Percent of active labor force[1])



Sources: Eurostat; and IMF staff calculations.
Note: EU = European Union.
[1]Additional slack comprises persons available but not seeking work, seeking work but not immediately available, and underemployed part-time workers.
[2]Selected advanced EU countries comprise the Baltics, the Czech Republic, the Slovak Republic, and Slovenia.

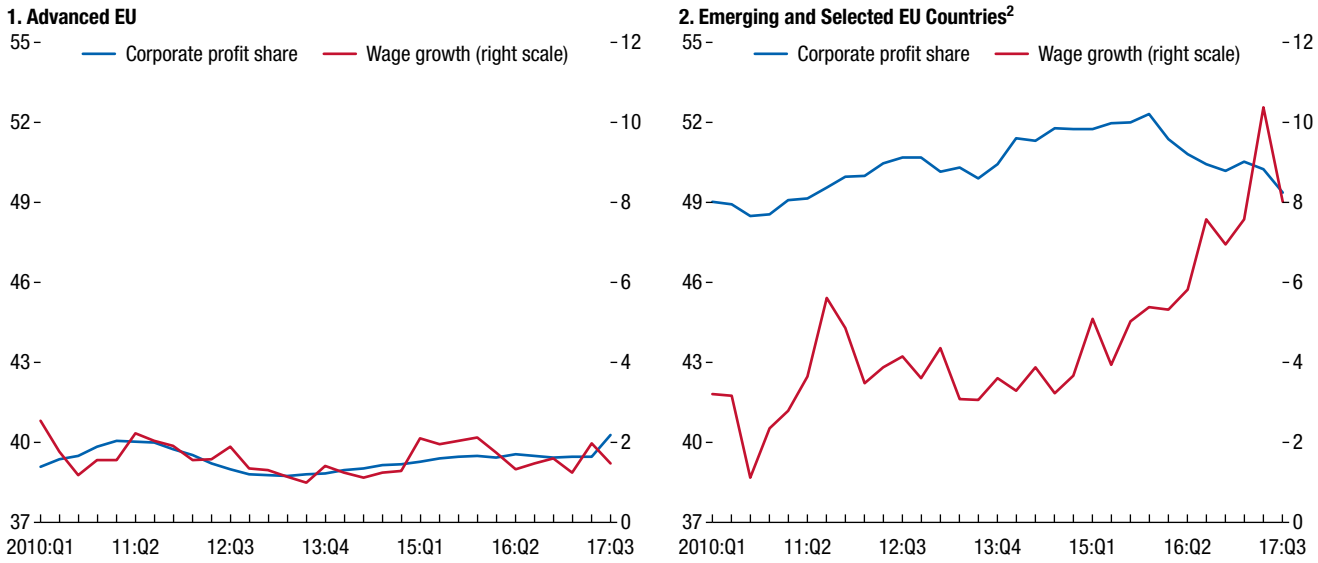
Differences in wage growth dynamics in the region are also the result of differences in labor productivity growth, wage-setting mechanisms, and inflation expectations. As examined in Chapter 2, wage Phillips curves appear alive and well, having broadly stable parameters, with a modest slope in the *EU15* and especially strong wage responses to slack in the *newer EU member states*. Wage growth has generally been synchronized with labor productivity in most of *advanced Europe*. In contrast, in the *newer EU member states,* wage growth has outpaced productivity growth, though the gap narrowed as labor productivity rose strongly in late 2017. In *advanced Europe,* low inflation expectations and external competition have been important factors in muting the response of wages to slack. As a result, corporate profitability has been broadly stable. In comparison, corporate profitability declined moderately in *Eastern Europe* in recent years, although it is still about 10 percentage points higher than in *advanced Europe* (Figure 1.8).

Credit Is Picking Up

After a long creditless recovery, credit growth has been picking up since 2016 in many *European countries*, but it continues to lag domestic demand and output. As investment gains further strength, credit growth should follow, with beneficial effects for bank profitability and balance sheets (see Box 1.2 for an in-depth discussion comparing the current recovery to the previous ones).

- In the *euro area* and other *advanced European countries*, bank credit to the private sector is picking up (Figure 1.9). However, growth in credit to businesses remains uneven across countries (Figure 1.9, panel 4) and is particularly weak in countries with high levels of nonperforming loans (NPLs). In the *Nordic economies*, credit to businesses is robust, in line with a pickup in investment and exports, while credit growth to households has slowed somewhat following the recent macroprudential measures aimed at containing the housing boom and elevated household debt levels.

Figure 1.8. EU: Corporate Profitability and Wage Growth[1]
(Year-over-year percent change)

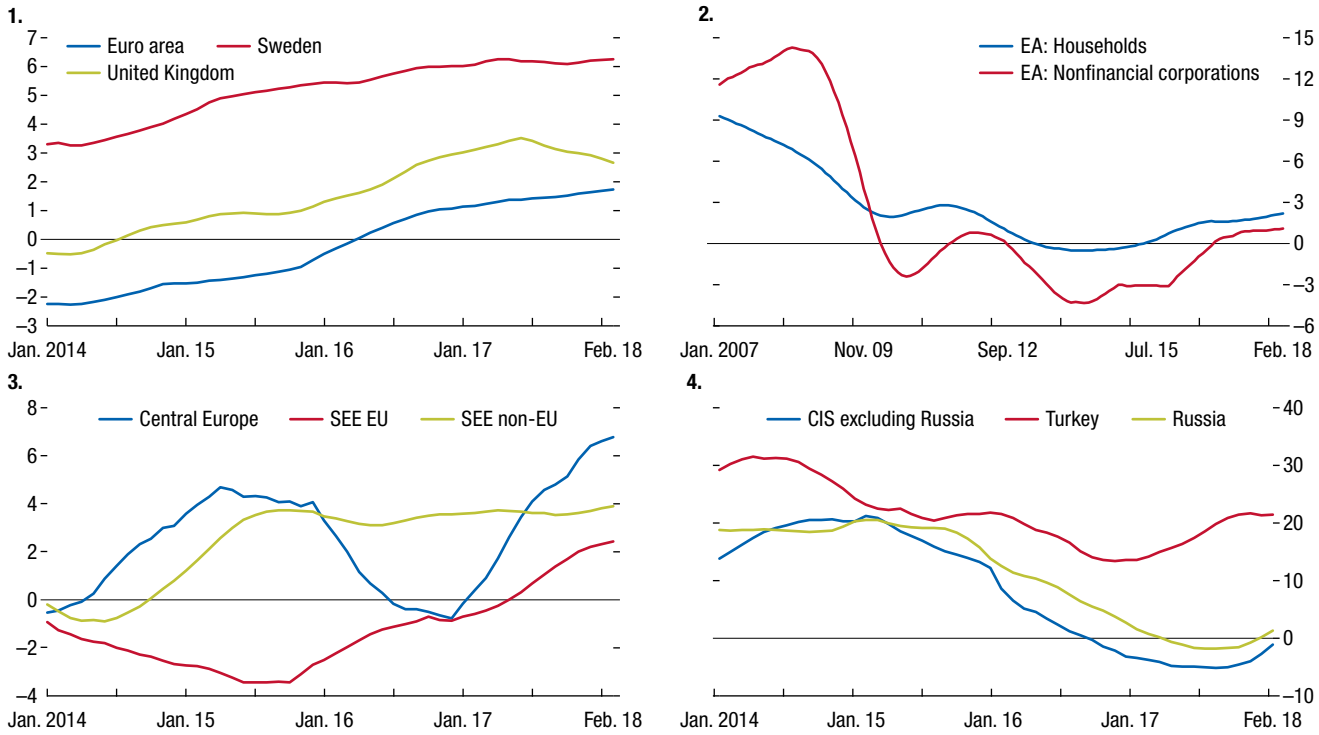


Sources: Eurostat; and IMF staff calculations.
Note: EU = European Union.
[1]Corporate profit share is the four-quarter average of seasonally unadjusted data.
[2]Selected advanced EU countries comprise the Baltics, the Czech Republic, the Slovak Republic, and Slovenia.

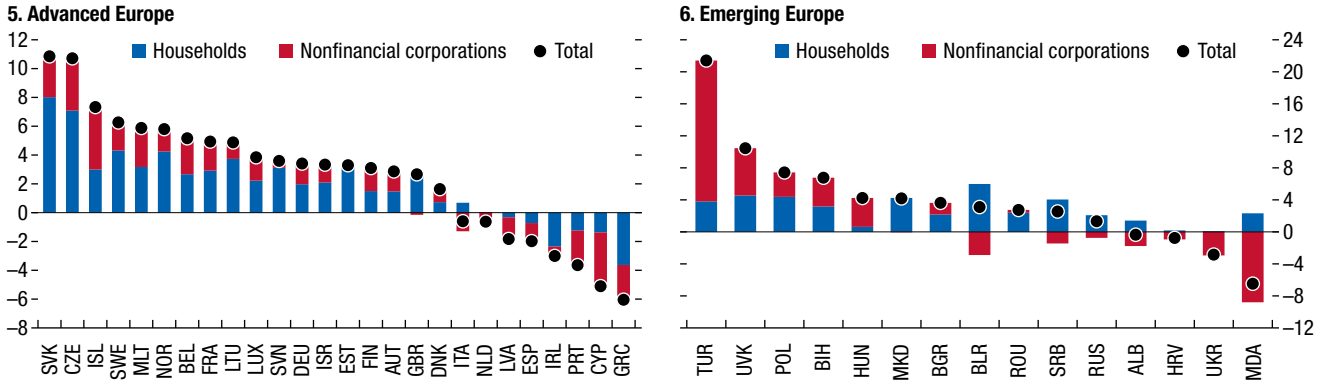
- In *emerging Europe*, outside the *CIS*, credit growth to both nonfinancial corporations and households is increasing, particularly in *Central Europe* and the *SEE-EU* region, in line with continuing strong real GDP and investment growth (Figure 1.9, panel 3). On a transactional basis, credit growth may be even higher in countries where the cleanup of loan portfolios has lowered credit stocks (for example in *Albania, Croatia,* and *Hungary*). In *Russia*, the decline in credit seems to have stabilized as the economy has exited the recession (Figure 1.9, panel 3). In the rest of the *CIS*, credit has continued to contract, albeit at a slower pace. In *Turkey*, credit growth initially slowed in 2016 in the aftermath of the failed coup attempt, but by way of various stimulus measures, notably a credit guarantee program for lending to businesses, it has since rebounded strongly to about 20 percent year over year in early 2018 (Figure 1.9, panel 4).

NPL levels have declined, but still weigh on bank profitability and credit supply in several countries (Figure 1.10). In *advanced Europe*, NPLs in the *euro area* have been substantially reduced since their peak in 2014, but the stock remains high in some countries. In *Ireland*, *Italy,* and *Spain,* the reduction of NPLs and the recent pickup in NPL sales is encouraging. However, for a sizable part of the banking system, the return on equity is persistently below the cost of equity (IMF 2017). The economic recovery may not be enough to boost returns to meet investor expectations or resolve the structural challenges faced by the least profitable banks; further consolidation and restructuring will be needed. NPL levels have been declining across *emerging Europe* but remain higher than 10 percent in half of the countries. While disentangling demand and supply factors is difficult, high NPL levels are weighing on profitability and credit growth. More actions are needed to repair bank balance sheets and facilitate the underlying corporate restructuring.

Figure 1.9. Private Sector Credit Growth[1]
(Year-over-year percent change; 12-month moving average)



Contributions to Private Sector Credit Growth, February 2018 or Latest Available
(Percentage points for contributions; year-over-year percent change for growth)

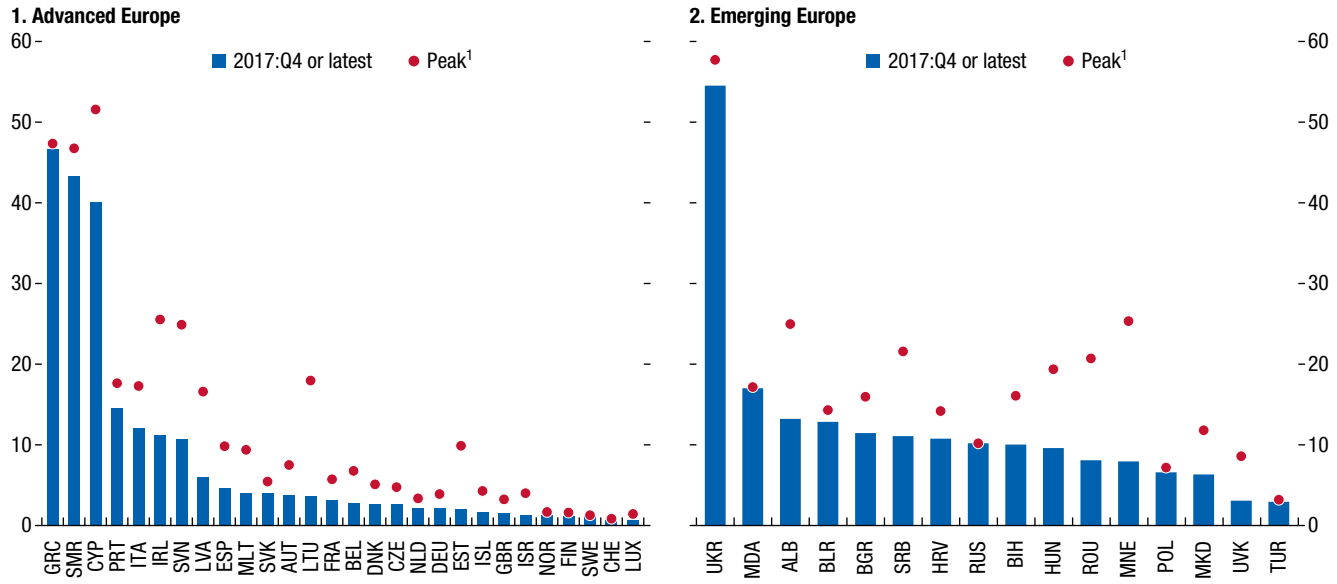


Sources: Eurostat; Haver Analytics; IMF, *International Financial Statistics* (IFS); and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. CIS = Commonwealth of Independent States; EA = euro area; SEE = Southeastern Europe.
[1]The source of data on private sector credit for euro area countries is Eurostat. The series are adjusted for sales and securitization.

External Positions Have Strengthened Relative to before the Crisis

Stronger fundamentals have been accompanied by appreciation of the real effective exchange rate of the euro and some other European currencies. Since the beginning of 2017, the euro has appreciated by 7 percent in real effective terms (Figure 1.11) mainly driven by improved euro area prospects, as shown in the November 2017 *Regional Economic Outlook: Europe*. The Czech koruna appreciated about 10 percent, following the lifting of the Koruna-euro floor in early 2017, and on the back of a more recent increase

Figure 1.10. Nonperforming Loans
(Percent of total gross loans)

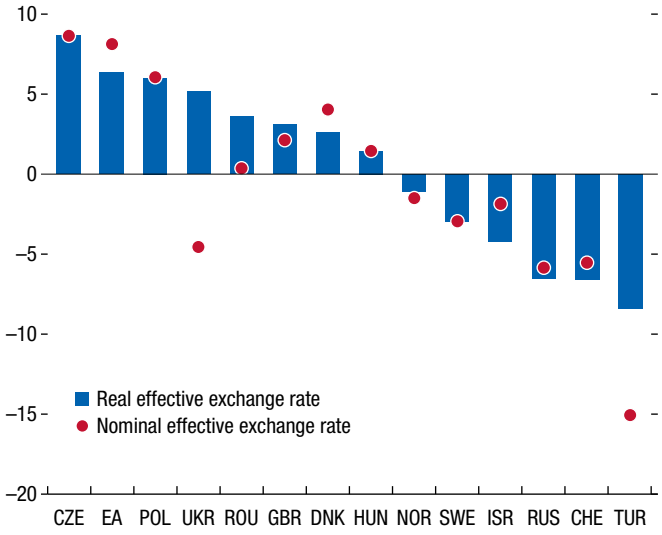


Sources: European Central Bank, *Consolidated Banking Statistics*; IMF, *Financial Soundness Indicators*; World Bank, *World Development Indicators*; and national authorities.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.
[1]Peak is defined as the highest value during the first quarter of 2011 (or earliest available) to the fourth quarter of 2017 (or latest available). Data for Serbia and Switzerland are based on annual numbers.

in the policy interest rate and strong growth performance. The Polish zloty and Hungarian forint also experienced some appreciation due to strong growth and subdued inflation. The depreciation of the Turkish lira in 2017 by about 6 percent follows a depreciation of a similar size after the coup in the second half of 2016, amid above-target inflation and a widening current account. The Russian ruble has depreciated by 6 percent since February 2017, following the 2014–16 depreciation and recovery. The British pound has also moved broadly sideways since the depreciation in 2016. Meanwhile, the Swiss franc has depreciated since early 2017, given the negative interest rate differential with the euro.

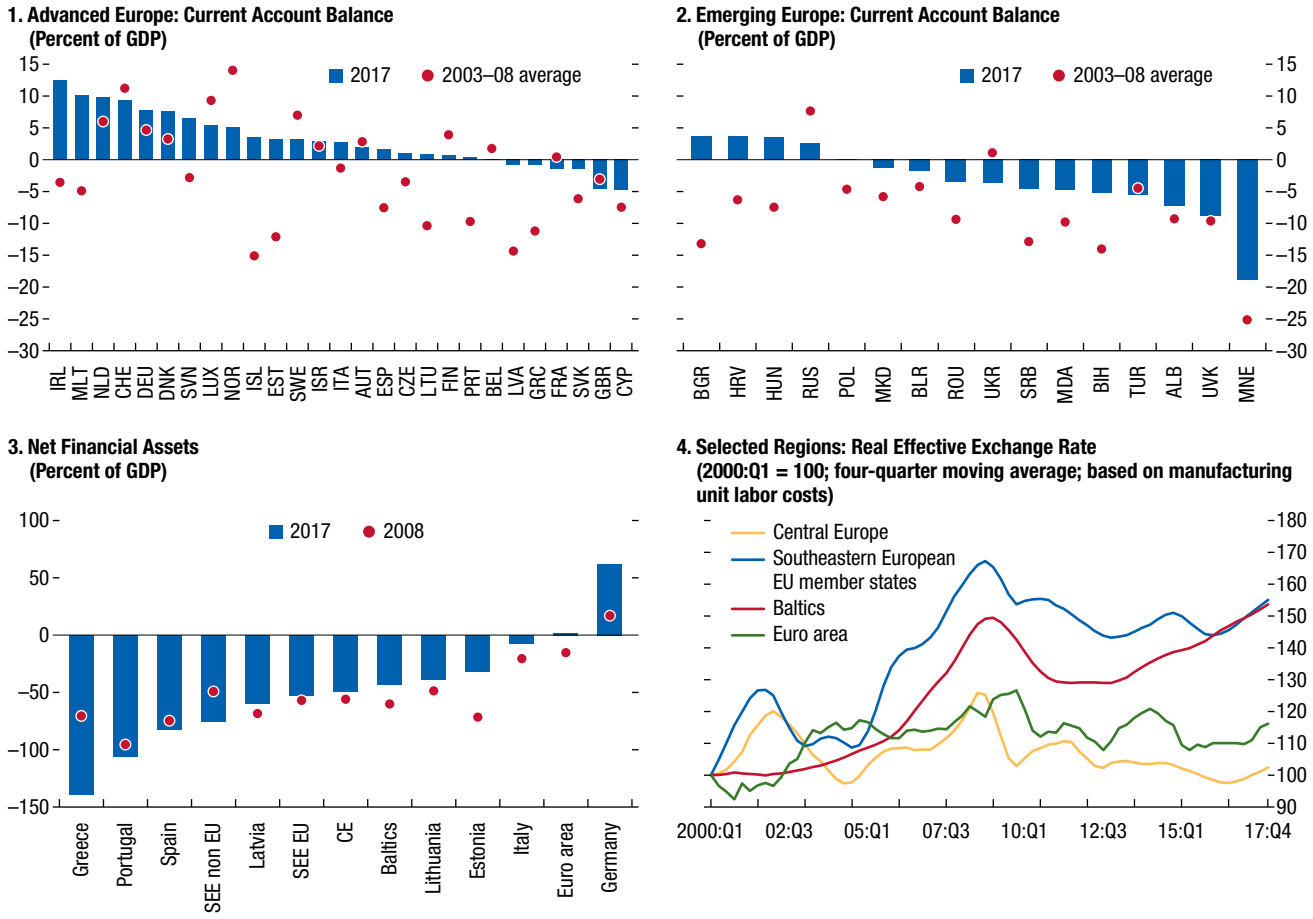
Thus far, current account balances remain noticeably stronger than before the global financial crisis in most countries. Net external debtor countries that had persistent and large current account deficits prior to the crisis have seen sizable current account adjustments (Figure 1.12), driven by both a permanent reduction in the

Figure 1.11. Exchange Rate Movements
(Percent; depreciation (–)/appreciation (+); March 2017–March 2018)



Sources: IMF, *Information Notice System;* and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

Figure 1.12. External Sector Developments

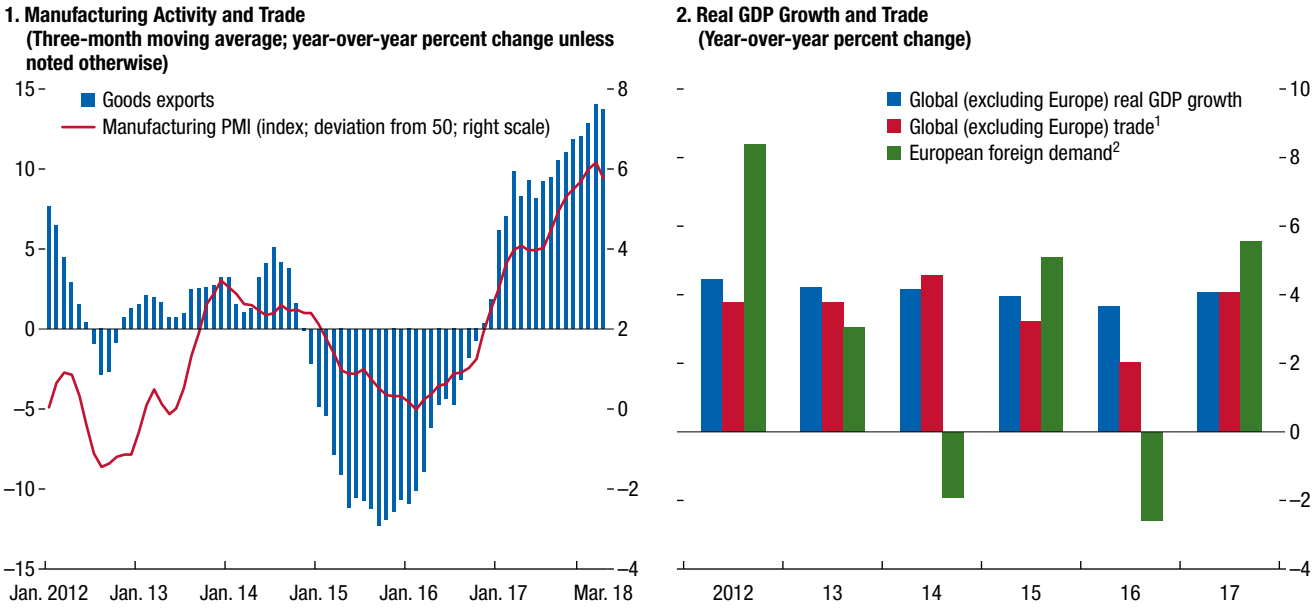


Sources: Eurostat; Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. CE = Central Europe; EU = European Union; SEE = Southeastern Europe.

level of demand and some labor cost reductions. Meanwhile excess external surpluses have persisted.

- In *advanced Europe*, the euro area members that had current account deficits prior to the crisis have achieved surpluses (*Estonia, Portugal, Spain*) or reduced their deficits appreciably (*Greece, Latvia, Lithuania*) over the past several years (Figure 1.12, panels 1 and 2), partly driven by adjustments in unit labor costs. However, negative net foreign asset positions remain elevated in many of these countries (Figure 1.12, panel 3). Recent indicators of competitiveness, while not conclusive, suggest some erosion of competitiveness in the *Baltics*, where real effective exchange rate appreciation, fast wage growth, and modest productivity gains have led to a notable increase in unit labor costs, bringing them close to the precrisis peak (Figure 1.12, panel 4). Excess current account surpluses have persisted in *Germany* and the *Netherlands*, and in *Germany* remained stronger than implied by medium-term fundamentals and desirable policy setting, indicating that adjustment mechanisms are weak, partly reflecting currency arrangements but also likely structural features (see the IMF 2017 *External Sector Report*).
- In *emerging Europe*, many economies managed to adjust from large current account deficits

Figure 1.13. Global Activity



Sources: European Commission; Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: PMI = purchasing managers' index.
[1]Measured by volume of goods and services imports.
[2]Proxied by extra-EU exports of goods.

to small surpluses, but here too the net external liability positions remain elevated (Figure 1.12, panels 2 and 3). In *Central Europe* and the *SEE-EU* region, real effective exchange rates have edged up somewhat as wages outstripped productivity in the last two years (Figure 1.12, panel 4). The level of economy-wide profit shares in these economies is higher than the EU average (Figure 1.8), which suggests that companies have some room to absorb the higher labor costs. However, the impact of high wage growth on competitiveness needs to be monitored closely.

- In *Turkey*, the current account deficit has stayed around 5 percent of GDP. Although exports have performed well, higher fuel prices and strong domestic demand have led to a wider current account deficit.

Key Forces Shaping the Outlook: Favorable External Conditions and Still-Accommodative Macroeconomic Policies

The external environment and macroeconomic policy setting remain supportive for Europe's near-term outlook. The synchronized global expansion remains on track, with global growth projected to edge up from 3.8 percent in 2017 to 3.9 percent in 2018 and 2019, partly reflecting spillover effects of expansionary fiscal policy in the *United States* (see Chapter 1 of the April 2018 *World Economic Outlook*). The continued recovery in global investment has spurred stronger manufacturing activity and an upturn in global trade (Figure 1.13, panel 1). Global PMIs for early 2018 indicate that the global growth momentum will continue into the first half of 2018, and Europe is enjoying significant goods trade momentum and upbeat foreign demand (Figure 1.13, panel 2). The recent agreement between the *United Kingdom* and the European

Union for a 21-month Brexit transition period mitigates the risk of a disorderly UK exit from the European Union and reduces the uncertainty facing firms and households.

Commodity prices started the year on a bullish note. Oil prices, boosted by healthy global growth prospects and expectations for continued oil production curbs by the Organization of the Petroleum Exporting Countries and *Russia*, increased to above $65 a barrel (about 30 percent above the projection in the October 2017 *World Economic Outlook*). Higher oil prices will aid the cyclical recovery in *Russia* and could put some upward pressure on headline inflation elsewhere. Futures markets point to some oil price declines over the next few years from current levels.

Despite recent equity market turbulence, financial conditions remain supportive of growth, although signs of tightening conditions are gradually appearing in some markets (see Chapter 1 of the April 2018 *Global Financial Stability Report*). Financial stress indices tightened modestly in late 2017 (Figure 1.14, panel 1). Sovereign bond yields edged up in many *euro area economies*, in response to better-than-expected growth outcomes and an expectation of earlier monetary policy normalization, and in the *Czech Republic* and *Romania*, which began normalizing their monetary policy (Figure 1.14, panel 2). However, yields actually declined in about a quarter of European economies, most notably in *Greece*, *Portugal*, and *Ukraine*. In the *euro area*, still-easy financial conditions are underpinned by large asset holdings by the ECB. Despite the lower purchase schedule, net purchases are expected to remain substantial at least through September 2018 relative to the projected net issuance of government debt (Figure 1.14, panel 3).

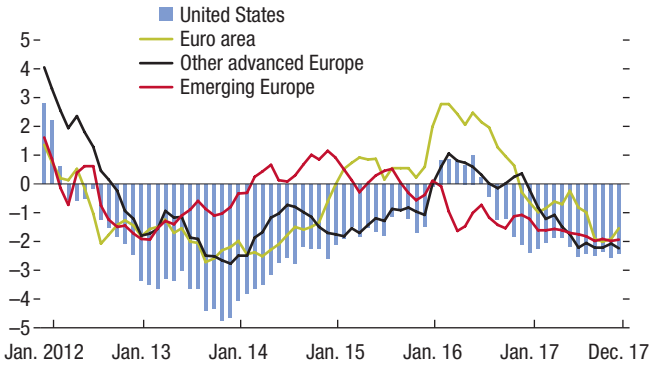
The recent stock market corrections have thus far left no lasting scars. Market volatility rose substantially for European equities in early February 2018, but since then has declined to the average level observed in 2016–17 (Figure 1.14, panel 4). Portfolio flows to *emerging Europe* remained robust through January 2018, especially bond flows (Figure 1.14, panel 5). Weekly data indicate that portfolio flows reversed slightly amid the global equity market correction in the first half of February, but have recovered since. The correction was mild compared with outflows during the "taper tantrum" of 2013 (Figure 1.14, panel 6). However, volatility is still a concern, given the recent stock movements and ongoing trade tensions.

Continued accommodative macroeconomic policies will further support activity, with almost all central banks in the region maintaining negative real policy rates (Figure 1.15, panel 2).

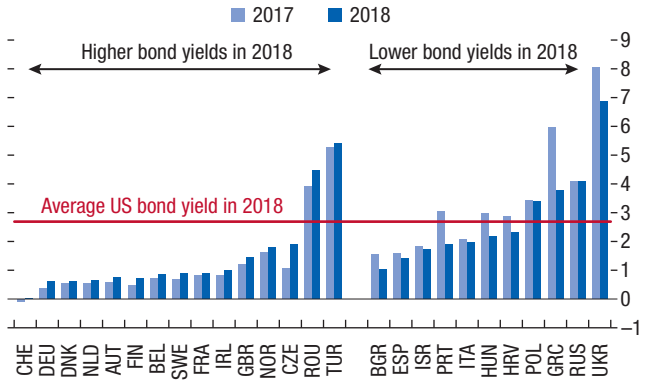
- Monetary policy normalization in the large advanced economies is expected to be gradual and predictable (Figure 1.15, panel 1). In the United Kingdom, monetary policy remains accommodative but the Bank of England has started to consider the case for the normalization process. It raised the policy rate for the first time in 10 years, to 0.5 from 0.25 of a percent. Central banks in the rest of advanced Europe are signaling a tightening bias. In the *Czech Republic*, the Czech National Bank has raised rates three times since August 2017, after almost five years of a supportive stance, and is expected to continue gradually normalizing monetary conditions.
- In *emerging Europe*, markets expect modest tightening of policy rates in almost all countries, although some central banks are maintaining a very accommodative monetary stance (*Hungary*, *Poland*). In *Romania*, the policy rate was raised twice in 2018 by a cumulative 50 basis points. In *Turkey*, the increase of the effective interest rate by almost 5 percentage points in 2017 has not been enough to contain inflation and prevent inflation expectations from increasing, prompting markets to expect further tightening of monetary policy in 2018. In contrast, *Russia's* central bank has cut policy rates by a cumulative 275 basis points since March 2017 as inflation stabilized below its 4 percent target. *Russia* and *Turkey* remain the

Figure 1.14. Financial Conditions

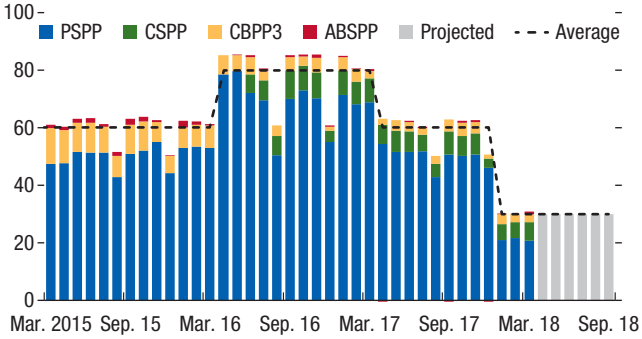
1. Financial Stress Indices[1]
(Three-month moving average; higher values indicate financial strain)



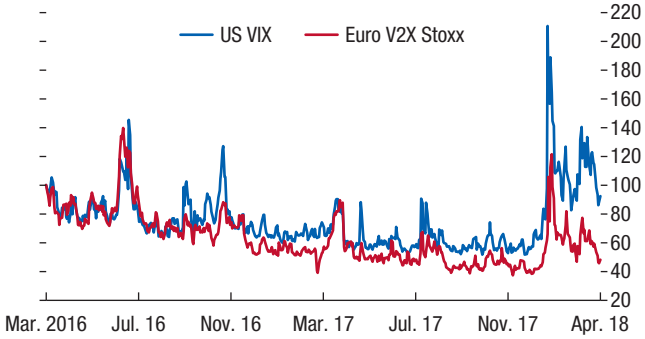
2. Sovereign Bond Yields
(Percent; average of daily data for generic 10-year government bond yields)



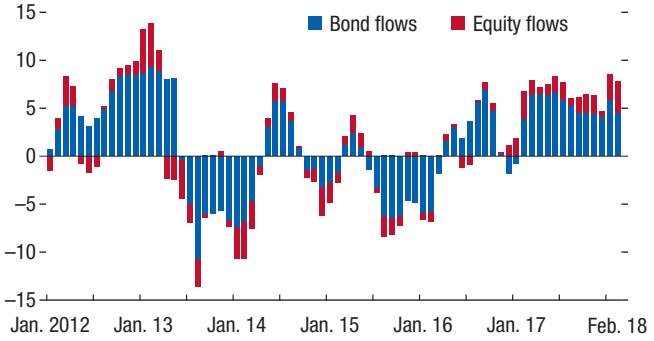
3. ECB's Asset Purchase Programs[2]
(Billions of euros; net monthly purchases by program)



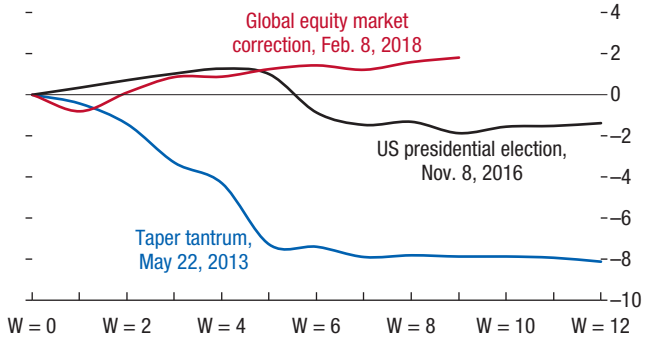
4. Market Volatility
(Index; March 1, 2016 = 100)



5. Portfolio Equity and Debt Flows to Emerging Europe
(Billions of US dollars, three-month rolling sum)

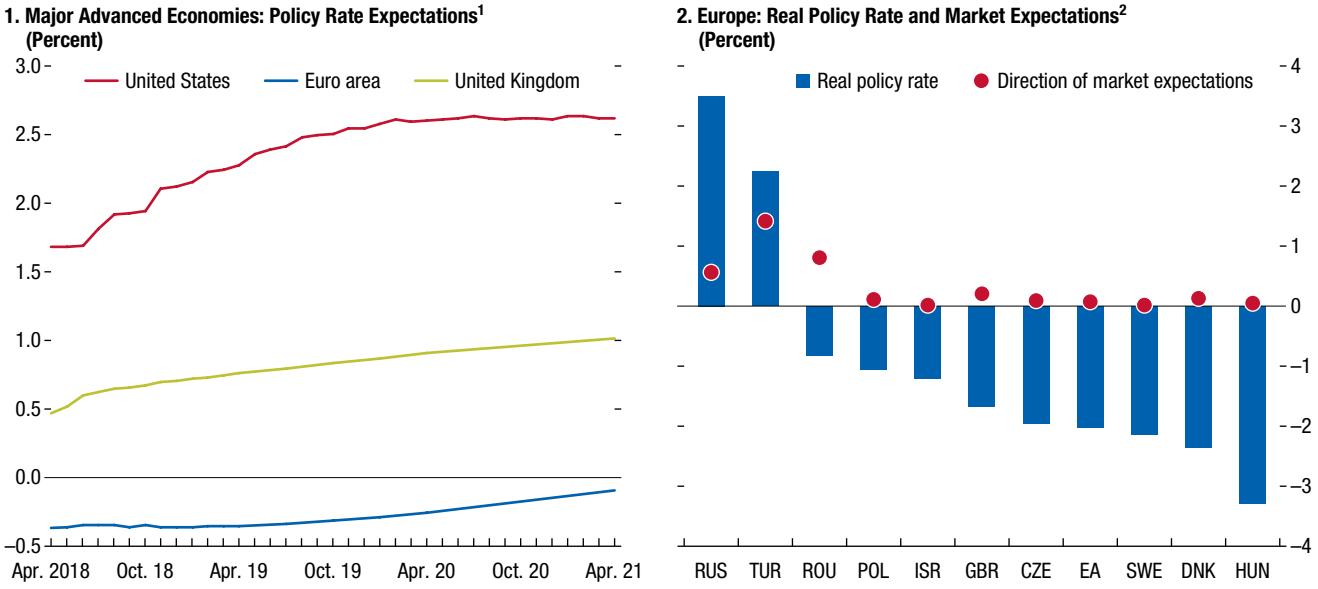


6. Portfolio Equity and Debt Flows to Emerging Europe
(Billions of US dollars; cumulative flows; W = 1 is first week of outflows)



Sources: Bloomberg Finance L.P.; European Central Bank; Haver Analytics; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. ECB = European Central Bank; V2X = Euro Stoxx 50 Volatility Index; VIX = Chicago Board Options Exchange Volatility Index.
[1]The indices capture markets movements relative to averages or trends to proxy for the presence of strains in financial markets (banking, securities markets, and exchange markets). For details see IMF (2009) and Balakrishnan and others (2009).
[2]ABSPP = asset-backed securities purchase program; CBPP3 = covered bond purchase program 3; CSPP = corporate sector purchase program; PSPP = public sector purchase program.

Figure 1.15. Monetary Policy Conditions and Expectations



Sources: Bloomberg Finance L.P.; Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. EA = euro area.
[1]Based on monthly average of federal funds rate futures for the United States; overnight interbank swap rates calculated using the overnight unsecured lending between banks (SONIA) for the United Kingdom; and the euro interbank offered forward rate (EONIA) for the euro area; updated April 19, 2018.
[2]Real policy rate is calculated as the difference between nominal policy rate and one-year-ahead inflation forecast (for example, IMF *World Economic Outlook* forecast for 2019; average of period). Market expectation of interest rate is calculated as the difference between one-year-ahead interest rate swap rate and three-month interbank rate. Positive values indicate expectations of monetary tightening.

only large European economies with positive real policy rates.

Fiscal policy is also projected to continue supporting economic activity, despite closed output gaps in most economies—procyclicality has been a feature of fiscal policy during the recovery. The fiscal stance is expected to be neutral or expansionary in the region in 2018, except in *Iceland, Italy, Russia,* the *Slovak Republic*, and the *United Kingdom* (Figure 1.16, panel 1). The aggregate fiscal stance in the *euro area* is forecast to remain broadly neutral in 2018–19 and to tighten only gradually in 2020 (Figure 1.16, panel 2). Procyclical loosening is projected in *Southeastern Europe* and *Turkey*.

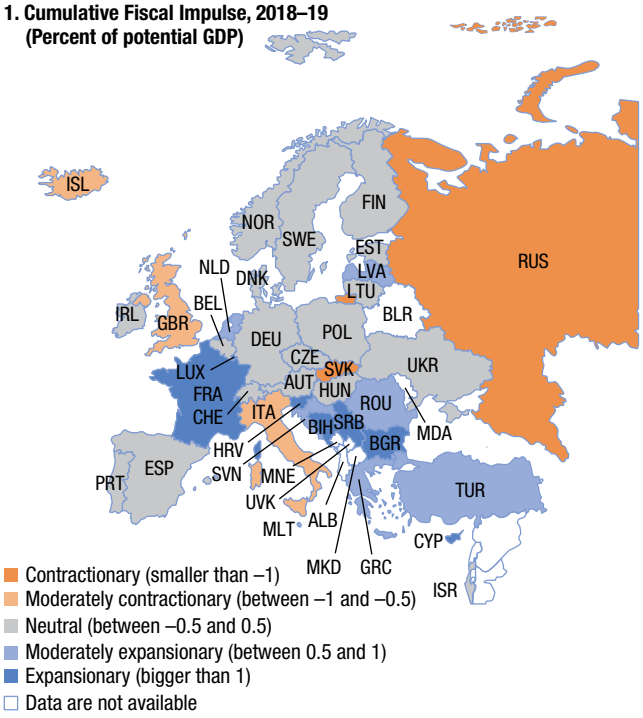
Favorable Outlook Expected to Continue

Against this backdrop, growth is expected to further improve in the short term, but slow gradually over the medium term. Europe's growth forecasts for 2018 and 2019 have been revised up relative to the forecast in the November 2017 *Regional Economic Outlook: Europe* (Table 1.2). The upward growth revisions reflect largely stronger domestic demand, with investment accounting for almost half of the revision in both *advanced* and *emerging Europe* (Figure 1.1, panel 4). While more dynamic investment growth has resulted in upward revisions of potential GDP, most of the growth revisions are attributed to cyclical factors (Figure 1.17).

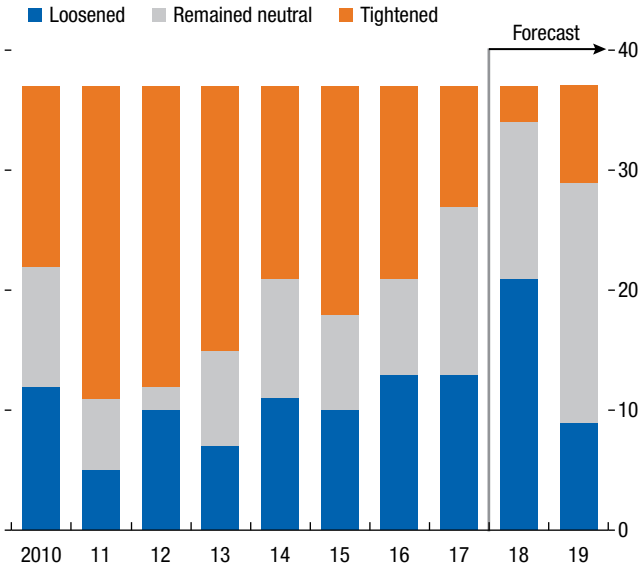
In *advanced Europe*, growth for the e*uro area* has been revised up by 0.4 and 0.3 percentage point for 2018 and 2019, respectively, with growth now forecast to reach 2.3 percent in 2018 and 2 percent in 2019. This reflects stronger-than-anticipated momentum from late 2017 to early 2018 and better prospects for external demand. The revision to *Germany*'s growth is particularly large, reaching about ¾ percentage point for 2018.

Figure 1.16. Fiscal Policy Conditions

1. Cumulative Fiscal Impulse, 2018–19
(Percent of potential GDP)



2. Fiscal Stance, 2010–19[1]
(Number of countries in which the fiscal stance was tightened, loosened, or remained neutral)



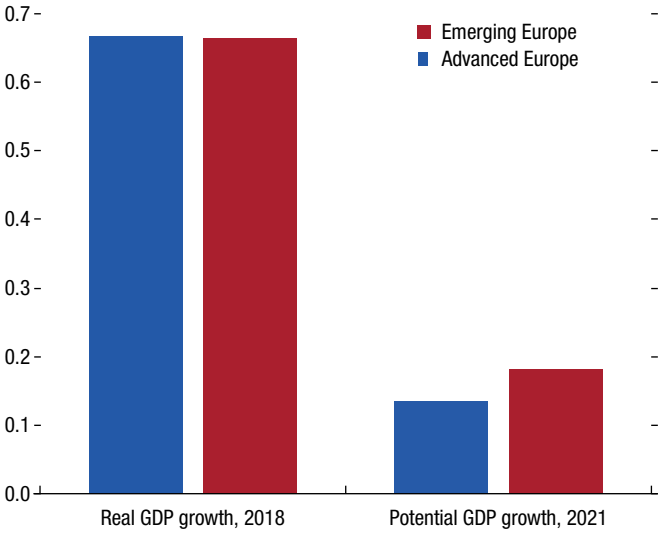
Sources: IMF, *World Economic Outlook*; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.
[1]The fiscal stance is considered to have tightened if the ratio of the structural primary balance to potential GDP improves by at least 0.25 percent a year, to have loosened if that ratio deteriorates by at least 0.25 percent a year, and to have remained neutral otherwise. General government non-oil primary structural balance is used for Russia, and structural non-oil balance in percent of mainland trend GDP is used for Norway. No data for ALB, BLR, MDA, MKD, MNE, SMR, and UVK.

In most *emerging European economies,* domestic demand (including investment) appears stronger than initially projected. Growth for *Central Europe* has been revised up by 0.7 and 0.5 percentage point for 2018 and 2019, respectively, while for *SEE-EU* it has been revised up by about 0.6 percentage point for 2018. Growth for *Russia* for 2018 has been revised slightly upward on account of higher oil prices. For *Turkey*, growth has been revised up by 0.9 and 0.5 percentage point for 2018 and 2019, respectively, as demand has again surprised on the upside due to supportive policies.

While the output growth trajectory of European economies has been raised, the inflation trajectory is broadly similar to that of the November 2017 forecast. Inflation is expected to remain subdued in *advanced Europe* and moderate in most of *emerging Europe* (Table 1.3). Reflecting higher oil prices and upward effects from energy and

Figure 1.17. WEO Forecast Revisions: April 2018 versus April 2017

(Percentage points)



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

Table 1.2. Real GDP Projections
(Year-over-year percent change)

		April 2018 WEO			Difference from October 2017 WEO[1]		
	2016	2017	2018	2019	2017	2018	2019
Europe	1.8	2.8	2.6	2.2	0.4	0.4	0.3
Advanced European Economies	1.9	2.4	2.3	2.0	0.3	0.4	0.3
Euro Area	1.8	2.3	2.4	2.0	0.2	0.5	0.3
France	1.2	1.8	2.1	2.0	0.3	0.3	0.1
Germany	1.9	2.5	2.5	2.0	0.5	0.7	0.6
Italy	0.9	1.5	1.5	1.1	0.0	0.4	0.2
Spain	3.3	3.1	2.8	2.2	0.0	0.2	0.2
Nordic Economies	2.3	2.2	2.3	2.1	−0.1	0.3	0.2
Other European Advanced Economies	2.1	2.0	2.0	1.9	0.2	0.3	0.1
United Kingdom	1.9	1.8	1.6	1.5	0.1	0.1	0.0
Emerging European Economies	1.6	3.7	3.1	2.7	0.6	0.5	0.2
Central Europe	2.7	4.4	4.0	3.4	0.7	0.7	0.5
Poland	2.9	4.6	4.1	3.5	0.7	0.7	0.5
Southeastern European EU Member States	4.4	5.7	4.5	3.3	1.0	0.6	−0.1
Southeastern European Non-EU Member States	3.1	2.3	3.4	3.5	−0.6	0.1	0.1
Commonwealth of Independent States	−0.1	1.7	1.9	1.7	−0.1	0.2	0.0
Russia	−0.2	1.5	1.7	1.5	−0.2	0.1	0.0
Turkey	3.2	7.0	4.4	4.0	1.9	0.9	0.5
Memorandum							
European Union	2.0	2.7	2.5	2.1	0.3	0.4	0.3

Sources: IMF, *World Economic Outlook* (WEO); and IMF staff calculations.
[1]Pink shading indicates a downward revision.

tobacco taxes, inflation in the *euro area* has been revised up by 0.1 percentage point to 1.5 percent in 2018, and down 0.1 percentage point in 2019 to 1.6 percent, still below the ECB target. Inflation in the *Nordic economies* has been revised marginally downward relative to the forecast in October 2017. In the *United Kingdom,* inflation is expected to decline gradually toward the target over the next two years as import price pressures dissipate. However, that decline is expected to be offset by some recovery in wage growth, given a tighter labor market.

In *Central and SEE countries*, inflation has been revised slightly upward for 2018, reflecting the impact of higher energy prices. In *Poland,* inflation has also been revised up by 0.3 percentage point to 2.5 percent in 2018 due largely to higher energy prices. In *Romania,* inflation has been revised up more sizably by 1.3 percentage points to 4.7 percent (above the upper end of the central bank target) for 2018, reflecting strong wage growth and demand pressure. In *Russia*, inflation has been revised significantly downward to below 3 percent in 2018, reflecting faster-than-expected deceleration in 2017, and to about 3¾ percent in 2019. For *Turkey*, inflation is revised significantly upward, reflecting the pass-through from the exchange rate depreciation and higher energy prices.

Risks Are Balanced in the Near Term, but Remain Tilted to the Downside in the Medium Term

Risks to the short-term outlook are broadly balanced:

- On the *upside*, there is still the potential for growth surprises. Business and consumer confidence indicators are robust, boosted by the strong cyclical upswing. High-frequency indicators, while somewhat softened, suggest solid growth in the months ahead, as market sentiment is buoyant and external conditions supportive (see the April 2018 *World Economic Outlook*). In addition, potential growth may be stronger and economic slack could be larger than currently assessed, thus the upswing may continue for longer before generating wage and price pressures.

Table 1.3. Inflation Projections
(Year-over-year percent change)

	April 2018 WEO				Difference from October 2017 WEO[1]		
	2016	2017	2018	2019	2017	2018	2019
Europe	2.0	2.9	2.8	2.8	0.0	0.1	0.1
Advanced European Economies	0.4	1.7	1.7	1.7	0.1	0.1	−0.1
Euro Area	0.2	1.5	1.5	1.6	0.1	0.1	−0.1
France	0.3	1.2	1.5	1.6	0.0	0.2	0.0
Germany	0.4	1.7	1.6	1.7	0.2	0.1	−0.3
Italy	−0.1	1.3	1.1	1.3	−0.1	−0.1	−0.1
Spain	−0.2	2.0	1.7	1.6	0.0	0.3	−0.1
Nordic Economies	1.7	1.7	1.6	1.8	0.1	−0.1	−0.1
Other European Advanced Economies	0.4	2.2	2.3	1.9	0.1	0.2	0.0
United Kingdom	0.7	2.7	2.7	2.2	0.1	0.1	−0.1
Emerging European Economies	5.6	5.5	5.3	5.3	−0.1	0.1	0.4
Central Europe	−0.4	2.1	2.6	2.7	0.0	0.1	0.1
Poland	−0.6	2.0	2.5	2.5	0.1	0.3	0.0
Southeastern European EU Member States	−1.4	1.3	3.7	2.7	0.2	1.0	0.0
Southeastern European Non-EU Member States	0.4	2.2	2.2	2.4	−0.1	−0.3	0.0
Commonwealth of Independent States	7.8	4.6	3.6	4.2	−0.4	−1.0	−0.2
Russia	7.1	3.7	2.8	3.7	−0.6	−1.2	−0.2
Turkey	7.8	11.1	11.4	10.5	0.3	2.0	1.7
Memorandum							
European Union	0.2	1.7	1.9	1.8	0.1	0.2	−0.1

Sources: IMF, *World Economic Outlook* (WEO); and IMF staff calculations.
[1]Pink shading indicates a downward revision.

- On the *downside*, increasingly overstretched asset valuations and compressed term premiums at the global level (see the April 2018 *Global Financial Stability Report*) raise the possibility of a financial market correction and a rapid tightening of global financial conditions, which could dampen growth and confidence in both the short term and potentially the medium term (see Box 1.3 for a quantification exercise). A possible trigger could be a faster-than-expected increase in inflation in the advanced economies. A worsening of trade tensions and imposition of trade barriers could also weaken confidence and take a toll on economic activity.
- Beyond the near term, risks are clearly tilted to the downside. External downside risks facing the entire region stem from a mix of financial vulnerabilities, possible inward-looking policies globally, and a range of noneconomic factors.
- With financial conditions set to remain easy despite the onset of monetary policy normalization, financial vulnerabilities that have accumulated over the years could give way to a rapid tightening in global financial conditions, with repercussions for growth (see the April 2018 *World Economic Outlook* and April 2018 *Global Financial Stability Report).* Inward-looking policies and rising protectionism could affect European countries as well as the rest of the world through trade, financial, and investment channels. Support for globalization has weakened in the *United States* and parts of Europe, as reflected in the renegotiations of free trade agreements such as the North American Free Trade Agreement and arrangements between the *United Kingdom* and the European Union. Retreat from cross-border integration and increases in tariffs and nontariff barriers in the context of these negotiations or elsewhere (as seen recently with the proposed US tariffs) could sour market sentiment, disrupt supply chains, slow the spread of technologies, and reduce global productivity and investment. A host of other risks, such as a significant slowdown in *China*, geopolitical tensions, and cyberattacks could cause financial instability and disrupt

growth. Domestic risks vary within the region and are tilted to the downside as well.

- With the reduction of monetary accommodation, highly indebted *euro area countries* could face challenges in coping with the higher financing costs in the absence of fiscal adjustments to rebuild buffers and structural reforms to improve productivity. Despite progress on bank cleanups, remaining vulnerabilities in parts of the *euro area* banking system could reignite financial distress. A tail of weaker internationally active banks that have lower levels of capital and provisions could face funding challenges in the case of a sudden bout of market turmoil or an unexpected downturn (see the April 2018 *Global Financial Stability Report*).
- Dissatisfaction with the slow pace of convergence after the crisis, and high unemployment rates in parts of the *euro area,* could challenge the cohesion of the Economic and Monetary Union and affect the reform efforts of existing members as well as non-EU countries that aspire to join the European Union.
- Protracted policy and economic uncertainty could weigh on growth. This includes uncertainties surrounding the negotiations of the post-Brexit arrangements between the European Union and the *United Kingdom.* A long list of tasks in those negotiations remains to be accomplished. Notably, a large and complex financial system exposes the *United Kingdom* and the global economy to risks associated with the transition to a new state of play. There are also policy uncertainties related to newly elected governments in major European countries.

Policy Priorities

With economic prospects continuing to improve in the short term, but medium-term downside risks persisting, policymakers should seize the moment to rebuild room for fiscal policy maneuver and push forward with reforms to boost growth potential. In countries where inflation is still subdued, monetary policy should continue to be supportive to ensure a durable increase in inflation to targets. In countries where inflation is hitting targets, monetary policy should gradually normalize.

Monetary Policy

For the *euro area* and most of *advanced Europe,* monetary policy should remain strongly accommodative until inflation has durably converged to the central bank target. The commitment to raising inflation and inflation expectations remains key to generating durably higher inflation and lifting sluggish wages (Chapter 2). The ECB's recent decision to drop an explicit reference to possible future increases in the monthly pace of net asset purchases reflects an improving balance of risks. The ECB's net asset purchases were downsized in January 2018. The well-communicated recalibration of asset purchases, coupled with forward guidance on keeping policy rates at their extraordinarily low levels well past the horizon of net asset purchases, will continue to support favorable financing conditions. In the *United Kingdom*, following the rate increase in November 2017, future policy rate increases should be guided by evolving inflation conditions and the need to deal with uncertainties posed by Brexit. Similarly, in the *Czech Republic*, the central bank's steady approach toward normalization has been appropriate, and future policy decisions should continue to be data driven.

In *emerging Europe*, for *Central European economies*, given the more advanced stage of the recovery and strong wage growth, inflation pressure should be monitored carefully, and monetary policy should stand ready to adjust if inflation reaches or exceeds targets. In *Hungary*, monetary policy can remain supportive in the immediate term, but should be prepared to remove some stimulus if underlying inflation pressure picks up. In *Poland*, policy decisions should be data dependent, but should take into account the

fiscal stance and monetary transmission lags to avoid inflation overshooting its target. In *Russia*, there is room for further policy easing given declining inflation, while in *Turkey*, monetary policy should tighten further beyond what would be needed to keep pace with the US Federal Reserve's rate hikes to lower inflation meaningfully and reanchor expectations. Credible monetary tightening would also help underpin the currency and rebuild official reserves.

Fiscal Policy

For most countries across the region (in both *advanced* and *emerging Europe*), the economic expansion has buoyed revenues and allowed the headline fiscal balance to improve (Annex Table 1.9). However, only about a third of these countries have seen improvement in cyclically adjusted balances, and policies need to ensure more progress on this front. The trade-off between protecting growth and fiscal consolidation is now tilted more favorably toward consolidation to rebuild room to cope with future shocks. In the *euro area,* countries with limited fiscal space should consolidate in a growth-friendly way before monetary accommodation ends in order to avoid a sharper adjustment later or during a new downturn. Countries with ample fiscal space can and should use it to promote higher potential growth through more public investment, which can also help their external rebalancing (see the IMF 2017 *External Sector Report).* For the *Nordic economies*, a mildly contractionary fiscal stance is appropriate given the cyclical positions of the economies. For the *United Kingdom,* the fiscal framework needs to strike a balance between preserving sufficient flexibility to respond to shocks and committing to fiscal discipline and to rebuilding fiscal buffers. Going forward, steady fiscal consolidation remains critical to rebuild room for policy maneuver.

Regarding *emerging Europe,* buoyant tax revenues, thanks in part to past tax administration reforms in *Central Europe* and consolidation efforts in *Southeastern Europe,* have helped rein in fiscal deficits. With a strong and well-entrenched cyclical recovery, the priority should be to continue to reduce structural fiscal deficits toward medium-term "close-to-balance" targets and to lower still-high debt levels. In *Russia,* the planned deficit reduction in 2018–20, underpinned by the new fiscal rule, is warranted due to permanently lower oil prices and the need to increase oil fund savings. The adjustment can be helped by measures to improve tax collection and the return on state assets—including dividend payouts and more permanent and better-targeted spending, such as parametric reform to the pension system, shifts to means testing of social assistance programs, and reductions in subsidies and tax expenditures. In *Turkey,* front-loaded fiscal consolidation—above the authorities' medium-term program targets and backed by well-defined and comprehensive revenue and spending measures—would support internal and external rebalancing and buoy investor sentiment.

Financial Policy

For many countries in the region, progress has been made on cleaning up bank balance sheets, but more remains to be done. For European Union member countries, the recent proposals from the EU and the ECB targeting NPLs are steps in the right direction. In addition, for the *euro area*, the authorities should focus on reducing impediments to NPL resolution caused by the fragmentation across the 19 jurisdictions' legal and regulatory frameworks, including by establishing minimum standards for valuation of loan collateral, consistent definitions of NPLs, and minimum standards for insolvency and creditor rights. The Single Supervisory Mechanism should continue to follow up on its NPL guidance—including by evaluating and monitoring bank-specific targets for NPL reduction—backed by its Pillar 2 powers. Equally, the European Banking Authority should press forward with its NPL sales platform. For the *Nordic economies*, macroprudential policy can help reduce vulnerabilities related to the housing sector. In the *Czech Republic*, the central bank should

be given binding powers over loan-to-value, debt-to-income, and debt-servicing-to-income ratios. Risks related to housing prices should also be carefully monitored in *Hungary*. Continued reduction of NPLs should be a priority for some *Eastern European economies*, where the economic recovery provides better prospects for asset sales. In *Turkey*, policies should aim at strengthening oversight and governance of the banking sector, where progress has been limited so far in implementing recommendations from the IMF's Financial Sector Assessment Program. Macroprudential policies should be revisited in areas where vulnerabilities are highest, particularly the highly leveraged corporate sector.

Structural Policy

In *advanced Europe*, countries should seize the moment to push forward structural reforms that boost competitiveness and potential growth and enhance resilience to shocks, while making sure that the gains from growth are shared widely. These include ambitious labor and product market reforms to close competitiveness gaps at the national level. Quality education and training that are well tailored to labor market needs will help improve labor productivity. Shifting taxes away from labor, better apprenticeship programs, and other active labor market policies will also help reduce high youth employment. As noted in the November 2017 *Regional Economic Outlook: Europe*, at the EU level, incentives for structural reforms in the form of targeted support from EU structural funds and outcome-based benchmarks could be combined with stricter enforcement of the Macroeconomic Imbalance Procedure.

In e*merging Europe*, structural reforms should focus on enhancing institutions (see Chapter 2 of the November 2017 *Regional Economic Outlook: Europe*) and on improving public sector efficiency (see the November 2016 *Regional Economic Issues: Central, Eastern, and Southeastern Europe*). For some countries, especially *SEE non-EU* and some *CIS countries*, priorities should also include improving the investment environment, boosting labor participation rates of women and older workers (see Box 1.4 for a discussion of policy options), and reducing high youth unemployment rates. In the *Western Balkan economies*, strengthening institutions should help the renewed effort for EU engagement.

In *Russia,* institutional improvements are prerequisites to realizing dividends from investment in innovation and other reforms. In *Turkey*, the reforms should focus on increasing labor market flexibility and improving the business environment.

European Economic and Monetary Union (EMU) Architecture

The recovery provides an opportunity to move faster to deepen the Economic and Monetary Union (see the IMF 2017 Article IV Staff Report for the Euro Area). First, more actions are needed to complete the banking union. Instituting a backstop from the European Stability Mechanism to the Single Resolution Fund and setting up a European deposit insurance scheme with a fiscal backstop would mark an important step toward greater risk sharing. Second, with the *United Kingdom* leaving the single market, there is a more urgent need to upgrade supervisory capacity to oversee a slew of migrating financial intermediation with Brexit and increased market-based activities from advancing the Capital Markets Union (CMU). The CMU aims to widen financing choices of small and medium-size enterprises by increasing the investor base, promoting harmonization of insolvency regimes, and protecting cross-border investor rights. Third, there is a strong case for setting up central fiscal capacity for macroeconomic stabilization. It will take time to build support for such capacity, and it will likely require making access to central funds conditional on compliance with the fiscal rules and having mechanisms to prevent permanent transfers across countries. The central fiscal capacity (CFC) could prevent permanent transfers between countries through several mechanisms (Arnold and others 2018). First, the CFC could

employ something known as a "usage premium," through which a country pays a premium in good times based on transfers it got in bad times. Second, the CFC could place a cap on the amount countries must contribute to prevent some countries from becoming large net contributors. Finally, it could limit how much a country can receive, so that transfers do not substitute for necessary policy adjustment.

Box 1.1. The Capital Expenditure Recovery Cycle: Insights from the European Investment Bank Survey

How strong is the recovery in investment likely to be? Are businesses expanding or replacing their capacity? Could the current recovery in investment translate into more jobs, higher productivity and growth, and thus a more durable recovery? This box sheds light on these questions using a rich survey of a large number of firms across the European Union conducted by the European Investment Bank (EIB). The EIB Investment Survey (www.eib.org/eibis) provides information about firms' investment purposes, areas, and obstacles. It finds that the current investment recovery, accompanied by upgrading of the quality of capital and moving to new products, bodes well for productivity and employment, though some challenges, notably skill shortages, could be limiting.

The 2017 EIB survey of EU firms reveals that the replacement of existing capacity continues to dominate firms' investment activities. About half of firms' investment undertaken in 2017 was for replacement purposes. Investment in capacity expansion accounted for slightly more than a quarter of total investment, while the remaining 17 percent was for innovation purposes (Figure 1.1.1, panel 1).

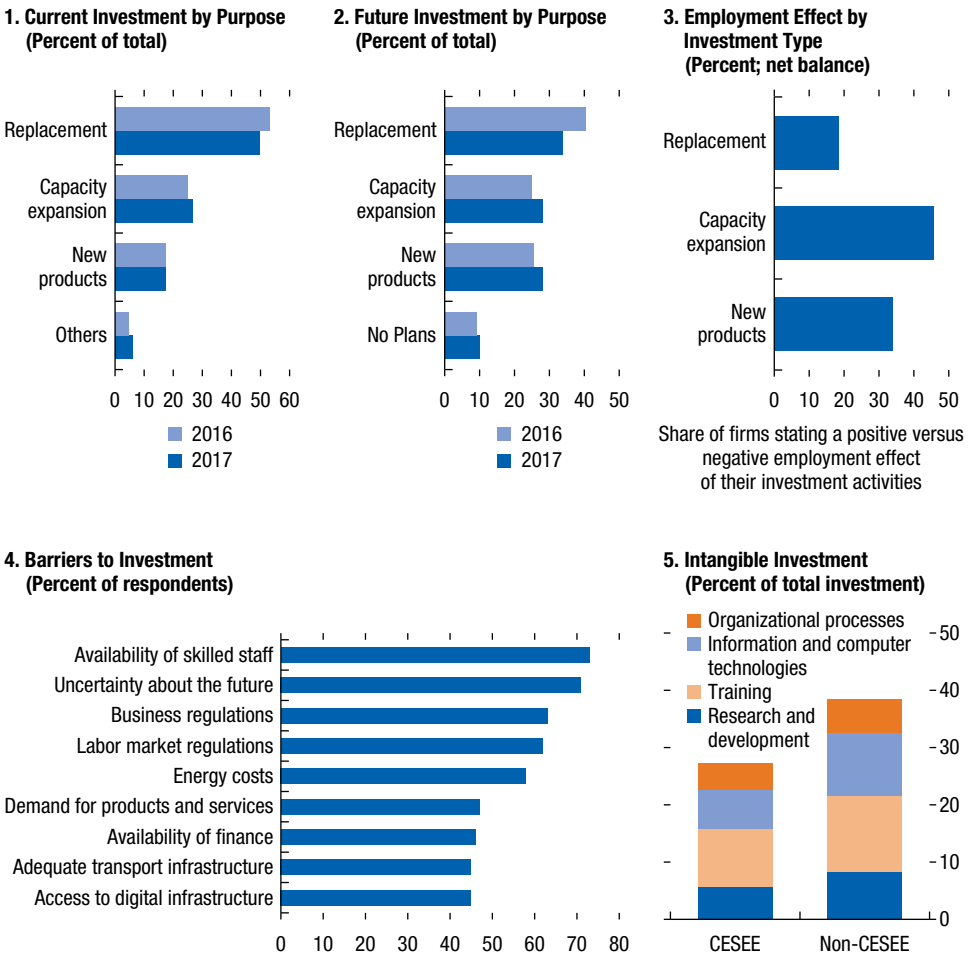
Looking ahead, investment in capacity expansion and new products is expected to account for more than half of the investment, boding well for productivity and employment. Compared with 2016, when asked about future plans, firms are increasingly prioritizing capacity expansion and investment in new activities (Figure 1.1.1, panel 2). The shift in investment focus is good news from a productivity angle as well as from an employment perspective. Investment for expanding capacity and innovation purposes, rather than for replacement purposes, tends to support more employment (Figure 1.1.1, panel 3).

Despite improvements in investment activity, challenges remain. Going forward, lack of staff with the right skills is considered by many firms as the most important factor limiting investment, closely followed by uncertainty about the future (Figure 1.1.1, panel 4). Skill constraints are particularly acute for newer member states, where emigration of skilled labor has been a long-standing issue (see Atoyan and others 2016) and is also reflected in indicators of labor shortages (see Chapter 2). In addition, investment in intangible assets, such as research and development, training, information and communication technology capital, and improvement of organizational processes, is weaker in *Central, Eastern, and Southeastern Europe* than in the rest of the European Union (Figure 1.1.1, panel 5). Investment in intangibles is likely an important factor in the convergence and catch-up process as firms move up the value chain (WIPO 2017). Here, too, lack of skilled staff could pose a challenge, since investment in intangibles is likely more skill-intensive. Another obstacle for investment in intangibles across Europe could be Europe's largely bank-based financial sector, which poses difficulties for using intangibles as collateral (EIB 2017).

This box was prepared by Phillip-Bastian Brutscher and Miroslav Kollar (European Investment Bank) and Raju Huidrom and Faezeh Raei (IMF).

Box 1.1 *(continued)*

Figure 1.1.1. Investment by Purpose, Types of Assets, and Barriers to Investment



Sources: European Investment Bank Survey; and IMF staff calculations.
Note: This box was prepared by Phillip-Bastian Brutscher and Miroslav Kollar (European Investment Bank) and Raju Huidrom and Faezeh Raei (IMF).

Box 1.2. How Different Is the Current Recovery in Europe Compared with Previous Ones?

Europe's recovery from the Great Recession has been long and uneven. It took about 10 years after the crisis for all countries in Europe to grow again in 2017. The years in the aftermath of the global financial crisis have been characterized by weak investment, lackluster credit growth, large output gaps, and stubbornly low inflation. The recent strengthening of the recovery in Europe on the back of still generally subdued inflation raises the question of how this recovery is different from previous recoveries from recessions, both for *advanced* and *emerging Europe*. Specifically, can one expect a more moderately paced but potentially longer recovery than after previous recessions?

To answer these questions, the dynamics of a set of economic and financial variables since the global financial crisis are compared with the recovery from the 1991 global recession. Among the global recessions in the past 50 years (1975, 1982, 1991, and 2009, as identified in the April 2012 *World Economic Outlook*), the 1991 crisis was chosen based on data availability and similarities, though for *emerging Europe*, the transition to a market economy makes comparability more difficult. First, both recoveries were preceded by a boom and bust in credit and stock markets in advanced economies. Second, the initial years of recovery involved challenges that complicated the recovery, notably, the 1992–93 Exchange Rate Mechanism crisis and the euro area debt crisis in 2011–13. The main obvious difference is the monetary union.

The current recovery differs from the past one in important ways. In the *advanced economies*, output growth has been much weaker, credit stagnant, and inflation very low. The same holds for the *emerging economies of Eastern Europe*, except for output. Regarding unemployment rates, in *emerging Europe* developments in the current cycle are notably better, reflecting in part stronger macroeconomic frameworks. In *advanced Europe*, despite the larger shock in the current episode, the recoveries are broadly similar in the early years due to more flexibility in labor markets in some of these countries. A comparison of the developments in real and financial variables between the two recoveries reveals the following (Figure 1.2.1).

Real GDP: In *advanced Europe*, growth gained momentum only five years after the global financial crisis as opposed to three years after 1991. The recent crisis was sharper and more globally synchronized than the 1991 recession. Also, the euro area debt crisis (2011–13) slowed the pace of recovery. The enduring legacy of the global financial crisis and the drawn-out process of balance sheet repair in corporate and household sectors led to a stubbornly slow recovery. In *emerging Europe excluding the CIS and Turkey*, the recovery has been stronger than in *advanced Europe*, and on average similar to that following the 1991 episode.

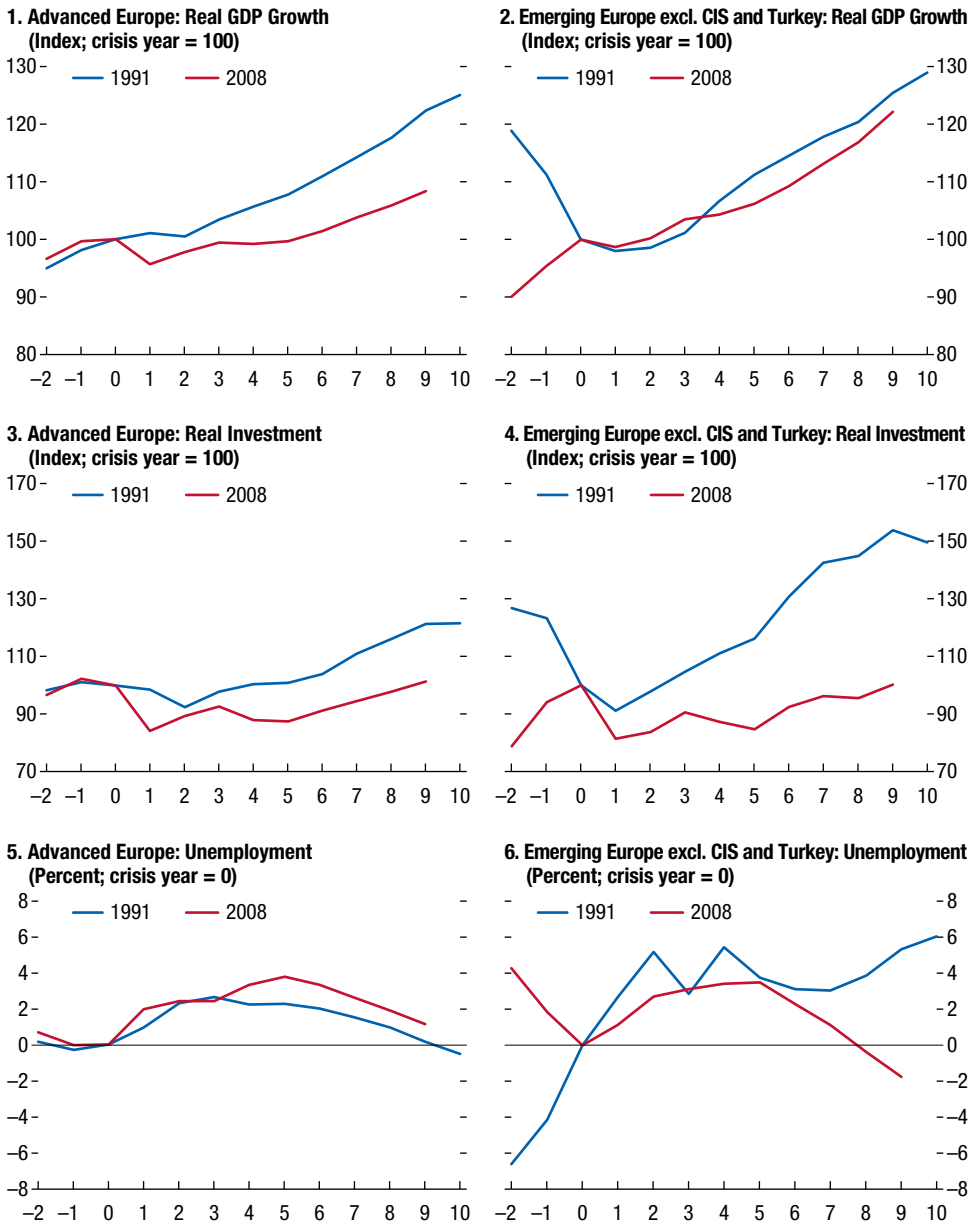
Investment: A feature of the aftermath of the global financial crisis has been the sustained weakness in investment in both *advanced* and *emerging Europe*. This deterioration can be traced to weaknesses in housing and credit markets and could, in some countries, reflect the need for a housing market correction.

Unemployment: Both recovery episodes are marked by higher unemployment rates. However, despite a much sharper contraction of output in 2009, there was a broadly similar rise in the unemployment rate in the first three years in *advanced Europe*. This may reflect more flexible labor markets and greater labor hoarding. Nonetheless following the double dip of 2011–13, the unemployment rate remains somewhat more elevated than in the previous crisis and has not yet returned to precrisis levels. In *emerging Europe*, the trajectory of the unemployment rate has been more favorable than following the 1991 recession, likely reflecting stronger macroeconomic frameworks and fundamentals in the current episode, but also the structural rise of unemployment in the early 1990s as these countries transitioned to market economies.

This box was prepared by Faezeh Raei.

Box 1.2 *(continued)*

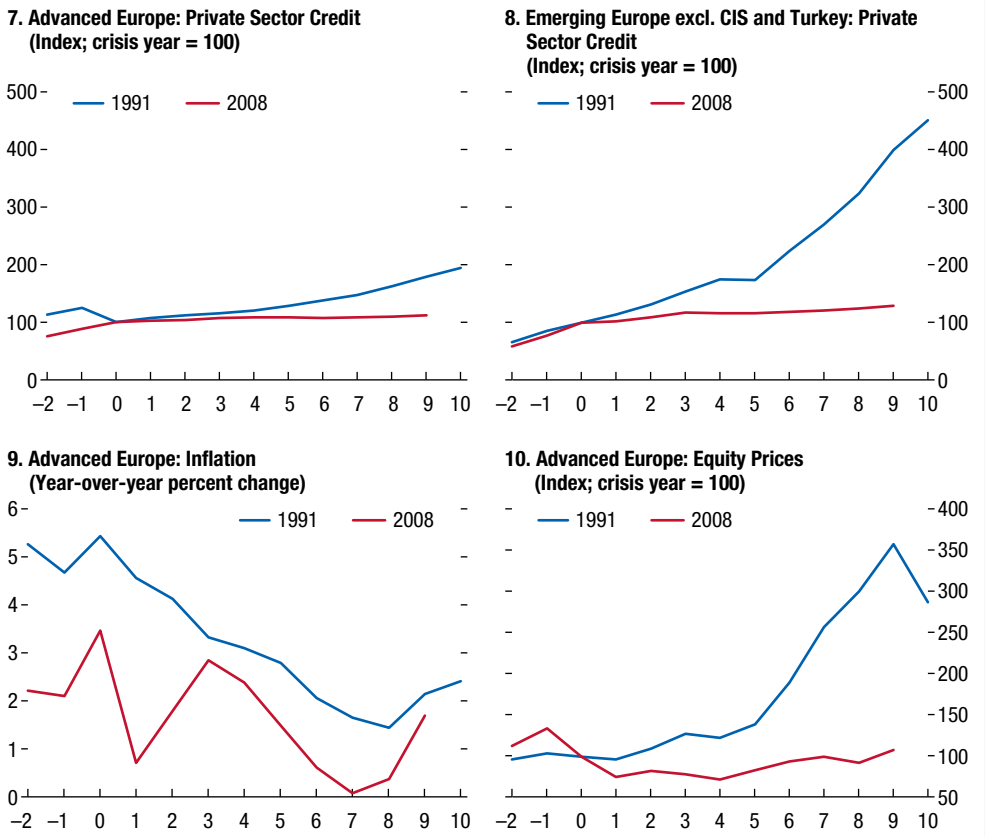
Figure 1.2.1. Main Indicators after Crises
(T = 0 is the crisis year)



Sources: IMF *World Economic Outlook*; and IMF staff calculations.
Note: CIS = Commonwealth of Independent States.

Box 1.2 *(continued)*

Figure 1.2.1. Main Indicators after Crises (continued)
(T = 0 is the crisis year)



Sources: Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics; IMF, *World Economic Outlook*; Thomson Reuters Datastream; and IMF staff calculations.
Note: CIS = Commonwealth of Independent States.

Inflation: Both recovery episodes are marked by declines in the inflation rate in the aftermath of crises. The initial drop in inflation after the global financial crisis was sharper. After seven years, average inflation has been lower by about 3 percentage points compared with the precrisis year. A salient difference is that initial inflation levels in the two episodes were different. In *advanced Europe*, average inflation hovered around 5 percent in 1991 and 3 percent in 2009. After the global financial crisis, this entailed below-target inflation rates for an extended period of time. For *emerging Europe*, higher inflation after 1991 was due to price liberalization on the way to market economies. But, like the advanced economies, most of the emerging market economies have now seen a prolonged period of very low inflation.

Equity prices: In *advanced Europe,* equity prices have been weaker in the current episode compared with the 1991 case. This is in line with developments in real GDP, as equity prices embody information about actual and expected output growth and the major weight of banks in the indices.

Credit growth: The current recovery in both *advanced* and *emerging Europe* has been creditless compared with the 1991 episode. For *advanced Europe*, the creditless nature of the current recovery is much more

Box 1.2 *(continued)*

pronounced, as even a decade after the initial shock credit has remained flat, compared with five years after the 1991 recession. This again highlights the depth of balance sheet challenges and the likely slow policy response to clean them up, which perpetuated the vicious circle of low credit and depressed demand. For *emerging Europe*, the current creditless recovery is in sharp contrast to the 1991 episode, when credit growth was strong as credit deepened during the transition to market economies.

What does this mean for growth going forward? Perhaps the main insight is that there are few compelling reasons to believe that the recovery in the *emerging economies of Eastern Europe* would go on for longer than the post-1991 recovery. While real GDP displays a broadly similar dynamic, investment has been much weaker, and this may increasingly constrain potential growth. In the *advanced economies*, the issue appears less clear, although there too the weakness of investment does not portend well for the future. This seems consistent with large markdowns in projected growth rates for potential output after the global financial crisis for all countries.

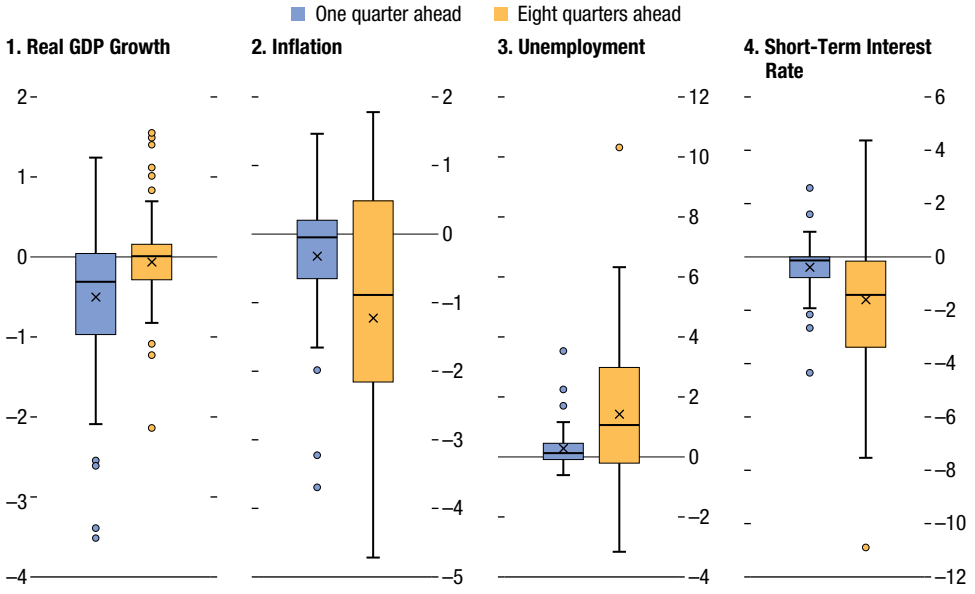
Box 1.3. What Do Large Stock Price Drops Mean for an Economy?

The financial market turbulence in early February 2018 was a reminder that asset prices can correct rapidly and trigger disruptive portfolio adjustments and increased volatility, with the potential to hamper growth. Indeed, there is extensive empirical evidence that asset price changes, particularly stock prices, have predictive power for growth in industrial economies (Fama 1990; Mauro 2000; Bluedorn, Decressin, and Terrones 2013). Asset prices incorporate information about expected growth and affect growth through wealth effects, the cost of capital, and confidence.

To gauge the implications of asset price declines for activity and policy responses, this box examines short- and medium-term developments in growth, inflation, unemployment, and short-term interest rates during past episodes of large asset price corrections in a sample of *G7 countries, Spain,* and *Sweden* from 1980 to 2017.

While there are notable differences across countries, it appears that in the aftermath of sharp asset price corrections—defined as asset price drops within the fifth percentile of the distribution of quarterly changes—GDP growth on average declines by 0.5 percentage point (quarter over quarter) in the first quarter. Growth recovers somewhat over the subsequent few quarters, but remains lower by 0.1 percentage point after eight quarters (Figure 1.3.1). Changes in inflation and unemployment are slower. Annual inflation tends to be

Figure 1.3.1. Changes in Main Indicators after a Large Stock Price Decline[1]
(Quarter-over-quarter percent change)



Sources: Haver Analytics; Thomson Reuters Datastream; IMF, *International Financial Statistics;* and IMF staff calculations.
[1]Whisker boxes represent the 25th and 75th percentile of the distribution of the respective variables. Within each box, the line and cross represent the average and median. The bars represent 10th and 90th percentiles.

This box was prepared by Faezeh Raei.

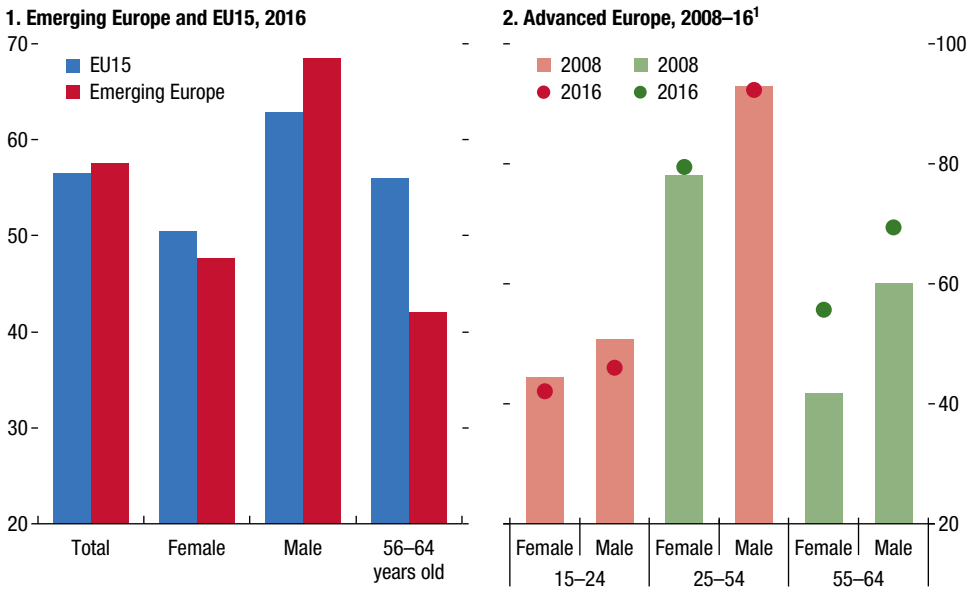
Box 1.3 *(continued)*

lower by 0.3 percentage point in the quarter after a sharp asset price drop and by 1.2 percentage points after eight quarters. The decline in inflation seems more pronounced in the recent crisis than in the early 2000s. Given the low starting level of inflation, another step down in inflation would be problematic for many inflation-targeting central banks. After eight quarters of sharp asset price drops, unemployment is higher by 1 percentage point on average. Appreciable asset price declines also trigger monetary policy responses that are generally limited in the first quarter (–0.5 percentage point reduction in short-term rates) but followed by larger responses over the medium term (eight quarters later). The scope for large responses is much more limited today.

Box 1.4. Policies to Get People to Work: The European Experience

Emerging European countries are confronting some of the worst demographic trends in the region. The working-age population has been declining due to aging, persistent outward migration, and relatively low life expectancy (see the May 2016 *Regional Economic Issues: Central, Eastern, and Southeastern Europe*). At the same time, labor force participation among certain demographic groups—women and older workers—is low compared with advanced Europe (Figure 1.4.1, panel 1). Thus, getting more working-age people to actually work could mitigate some of these adverse trends.

Figure 1.4.1. Labor Force Participation Rates
(Population-weighted average; percent of adult population)



Sources: Eurostat; World Bank, *World Development Indicators;* and IMF staff calculations.
[1]Higher participation rates in 2016 compared with 2008 indicated by green.

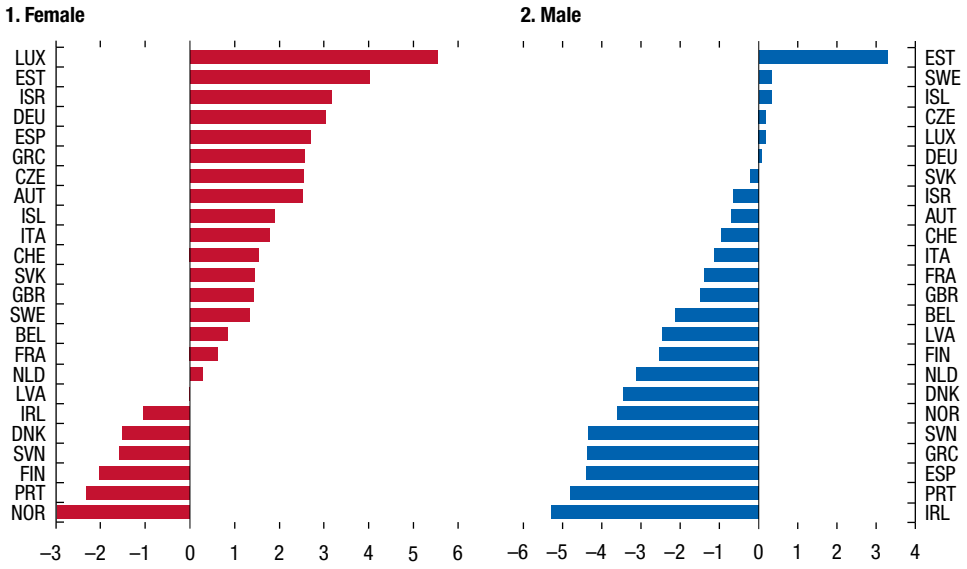
This box complements Chapter 2 of the April 2018 *World Economic Outlook,* on labor force participation in advanced economies, by drawing on the European experience with policies that encourage labor force participation in various demographic groups (prime-age women, older workers, the young, and newly arrived migrants).[1]

In line with global trends, overall labor force participation has fallen in many *advanced European economies* in the last decade (see Chapter 2 of the April 2018 *World Economic Outlook*). Workforce participation rates of men declined in most countries (Figure 1.4.2, panel 2), reflecting lower attachment rates of young and prime-age men (Figure 1.4.1, panel 2). Population aging and the prolonged impact of the global financial crisis have contributed to the recent decline in male workforce attachment, with technological progress

This box was prepared by Sylwia Nowak.
[1]The labor force participation rate is the fraction of the adult population (age 15 and older) either working or looking for work. Labor force participation and workforce attachment are used interchangeably.

Box 1.4 *(continued)*

Figure 1.4.2. Change in Labor Force Participation Rates, 2008–16
(Percentage points)



Sources: Eurostat; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

further weighing on low-skilled male workers. In contrast, female labor force participation rose in about three-quarters of advanced European economies, thanks to increased workforce attachment of prime-age and older women, as more women obtained secondary and tertiary education. Across different age groups, labor force attachment has markedly increased among older workers, yet declined slightly among youth (Figure 1.4.1, panel 2).

Labor force participation is a function of personal choices, demographics, economic trends, and labor market policies and institutions. Tax benefit systems, retirement benefits, family-friendly policies, and active labor market policies matter, and they are particularly important in getting more women and older workers to participate in the workforce. Drawing on the European experience, specific policies include those addressing:

- **Prime-age women:** Women's decisions to participate in the labor force are often affected by potential work flexibility, childcare and preschool availability and affordability, parental leave policies, and tax policy (Atoyan and Rahman 2017). In *Sweden*, policies such as parental leave, subsidized childcare, and scope for shorter working hours for parents with young children have made it easier for women to enter the workforce and return following childbirth. Also, the Swedish tax system does not discourage second earners (often women) from taking up work, as incomes are taxed individually. In *Germany,* a comprehensive set of labor market reforms introduced during 2003–05 (known as the "Hartz reforms") increased opportunities to work part-time, which has enabled millions of German women to work. In addition, the 2007 reform of maternity leave benefits encouraged faster return to work after childbirth. In *Spain*, the 2012 labor market reforms also promoted part-time work. In *Israel*, the 2003 reform of untargeted child allowances encouraged women to work by reducing benefits and gradually eliminating the progressivity of benefits linked to the number of children.

Box 1.4 *(continued)*

- **Older workers:** The participation decisions of older workers are influenced by the statutory retirement age, the generosity of pension schemes, and the generosity of disability insurance. In *Germany*, the 2007 pension reform gradually increases the statutory retirement age to 67 from 65 by 2030. The pension system also became less generous, as the replacement rates were reduced. More recently, *Germany* introduced financial incentives to encourage work past the mandatory retirement age coupled with more flexible work schedules, while lowering the retirement age for certain workers. In *Sweden,* an earned income tax credit reform was introduced in 2007 to encourage an increased labor supply; the size of the tax credit was larger for workers older than 65. In addition, the payroll tax rate was more than halved for these workers. These reforms were combined with stricter eligibility criteria in the disability insurance program (Laun and Palme 2017).
- **The young:** High labor costs (both the tax wedge and minimum wages) affect employment opportunities for entry-level workers, who require on-the-job training (Banerji and others 2014). In *Germany*, about 50 percent of all high school graduates receive dual vocational training to acquire skills and enhance job readiness. This training is a combination of company-based apprenticeships and theoretical classes at vocational colleges. Apprentices are exempted from minimum wage regulations and instead receive a "training allowance" of about 50 percent of the national minimum wage. The lower wages early in their careers pay for their training but result in higher productivity and better lifetime incomes.
- **Immigrants:** Policies that encourage labor market integration of migrants are associated with higher participation of prime-age workers. In *Sweden*, immigrants are integrated into the labor market mainly through general measures for the unemployed among the entire population, regardless of country of birth. These general measures are supplemented by targeted support for newly arrived refugees. Since 2008, newly arrived refugees and their relatives have been eligible for up to two years of personalized language training; employment assistance (for example, validation of education and prior work experience); and personal counseling. Participation in this introductory program is voluntary, but the available financial benefits and housing support are conditional on full-time participation. In *Germany*, intensive vocational language training was also used to help integrate more than 1 million refugees into the labor market.

In addition to specific policies, active labor market policies have centered on maintaining the motivation of jobseekers to actively seek employment, while improving their employability and helping them find appropriate jobs. In *Germany*, the Hartz reforms focused on improving job-search efficiency, modernizing public employment services, increasing employment flexibility, and activating the unemployed by making unemployment benefits conditional on tighter rules for job search and acceptance. The reforms introduced measures directly supporting integration into regular employment, such as wage subsidies paid to employers for hiring hard-to-place workers and start-up subsidies. Also, labor market institutions were deregulated to allow temporary and fixed-term contract work. In the *United Kingdom*, the 2008 reform of the welfare program for low-income single parents ("Lone Parent Obligations") provided out-of-work single parents with financial incentives to look for paid employment, alongside support for finding jobs.

Annex Table 1.1. GDP Growth

(Year-over-year percent change)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	1.8	2.8	2.6	2.2	2.4	2.1	2.0	0.4	0.4	0.3
Advanced European Economies	1.9	2.4	2.3	2.0	2.1	1.9	1.7	0.3	0.4	0.3
Euro Area	1.8	2.3	2.4	2.0	2.1	1.9	1.7	0.2	0.5	0.3
Austria	1.5	2.9	2.6	1.9	2.3	1.9	1.5	0.6	0.8	0.5
Belgium	1.5	1.7	1.9	1.7	1.6	1.6	1.5	0.1	0.2	0.2
Cyprus	3.0	3.9	3.6	3.0	3.4	2.6	2.4	0.5	1.0	0.6
Estonia	2.1	4.9	3.9	3.2	4.0	3.7	3.0	0.9	0.2	0.2
Finland	2.1	3.0	2.6	2.0	2.8	2.3	1.8	0.2	0.2	0.1
France	1.2	1.8	2.1	2.0	1.6	1.8	1.9	0.3	0.3	0.1
Germany	1.9	2.5	2.5	2.0	2.0	1.8	1.5	0.5	0.7	0.6
Greece	−0.2	1.4	2.0	1.8	1.8	2.6	1.9	−0.4	−0.6	−0.1
Ireland	5.1	7.8	4.5	4.0	4.1	3.4	3.0	3.7	1.1	1.0
Italy	0.9	1.5	1.5	1.1	1.5	1.1	0.9	0.0	0.4	0.2
Latvia	2.2	4.5	4.0	3.5	3.8	3.9	3.5	0.7	0.1	0.0
Lithuania	2.3	3.8	3.2	3.0	3.5	3.5	3.4	0.3	−0.3	−0.4
Luxembourg	3.1	3.5	4.3	3.7	3.9	3.6	3.3	−0.3	0.7	0.5
Malta	5.5	6.6	5.7	4.6	5.1	4.4	3.8	1.4	1.3	0.8
Netherlands	2.2	3.1	3.2	2.4	3.1	2.6	1.9	0.0	0.6	0.5
Portugal	1.6	2.7	2.4	1.8	2.5	2.0	1.7	0.2	0.4	0.1
Slovak Republic	3.3	3.4	4.0	4.2	3.3	3.7	3.9	0.1	0.3	0.3
Slovenia	3.1	5.0	4.0	3.2	4.0	2.5	2.1	1.0	1.5	1.1
Spain	3.3	3.1	2.8	2.2	3.1	2.5	2.0	0.0	0.2	0.2
Nordic Economies	2.3	2.2	2.3	2.1	2.3	2.0	2.0	−0.1	0.3	0.2
Denmark	2.0	2.1	2.0	1.9	1.9	1.8	1.8	0.2	0.2	0.1
Iceland	7.5	3.6	3.2	3.0	5.5	3.3	3.1	−1.9	0.0	−0.1
Norway	1.1	1.8	2.1	2.1	1.4	1.6	1.9	0.5	0.5	0.2
Sweden	3.2	2.4	2.6	2.2	3.1	2.4	2.1	−0.7	0.2	0.2
Other European Advanced Economies	2.1	2.0	2.0	1.9	1.9	1.7	1.8	0.2	0.3	0.1
Czech Republic	2.6	4.3	3.5	3.0	3.5	2.6	2.3	0.8	0.9	0.8
Israel	4.0	3.3	3.3	3.5	3.1	3.4	3.0	0.2	−0.1	0.5
San Marino	2.2	1.5	1.3	1.3	1.2	1.3	1.3	0.3	0.0	0.0
Switzerland	1.4	1.1	2.3	2.0	1.0	1.3	1.6	0.1	1.0	0.4
United Kingdom	1.9	1.8	1.6	1.5	1.7	1.5	1.6	0.1	0.1	0.0
Emerging European Economies	1.6	3.7	3.1	2.7	3.1	2.6	2.5	0.6	0.5	0.2
Central Europe	2.7	4.4	4.0	3.4	3.7	3.4	3.0	0.7	0.7	0.5
Hungary	2.2	4.0	3.8	3.0	3.2	3.4	2.8	0.8	0.4	0.2
Poland	2.9	4.6	4.1	3.5	3.8	3.3	3.0	0.7	0.7	0.5
Southeastern European EU Member States	4.4	5.7	4.5	3.3	4.7	3.9	3.4	1.0	0.6	−0.1
Bulgaria	3.9	3.6	3.8	3.1	3.6	3.2	2.9	0.0	0.6	0.2
Croatia	3.2	2.8	2.8	2.6	2.9	2.7	2.5	−0.2	0.1	0.1
Romania	4.8	7.0	5.1	3.5	5.5	4.4	3.8	1.5	0.7	−0.3
Southeastern European Non-EU Member States	3.1	2.3	3.4	3.5	3.0	3.3	3.4	−0.6	0.1	0.1
Albania	3.4	3.9	3.7	3.8	3.7	3.7	3.8	0.2	0.0	0.0
Bosnia and Herzegovina	3.2	2.7	3.2	3.5	2.5	2.6	2.7	0.2	0.6	0.8
Kosovo	4.1	4.1	4.0	4.0	3.5	3.5	3.6	0.6	0.5	0.4
Macedonia, FYR	2.9	1.9	2.8	3.0	2.5	3.2	3.4	−0.6	−0.4	−0.4
Montenegro	2.9	4.2	3.1	2.4	3.0	2.8	2.7	1.2	0.3	−0.3
Serbia	2.8	1.8	3.5	3.5	3.0	3.5	3.5	−1.2	0.0	0.0
Commonwealth of Independent States	−0.1	1.7	1.9	1.7	1.8	1.7	1.7	−0.1	0.2	0.0
Belarus	−2.5	2.4	2.8	2.4	0.7	0.7	0.9	1.6	2.2	1.5
Moldova	4.3	4.0	3.5	3.8	4.0	3.7	3.8	0.0	−0.2	0.0
Russia	−0.2	1.5	1.7	1.5	1.8	1.6	1.5	−0.2	0.1	0.0
Ukraine	2.4	2.5	3.2	3.3	2.0	3.2	3.5	0.5	0.0	−0.3
Turkey	3.2	7.0	4.4	4.0	5.1	3.5	3.5	1.9	0.9	0.5
Memorandum										
World	3.2	3.8	3.9	3.9	3.6	3.7	3.7	0.1	0.2	0.2
Advanced Economies	1.7	2.3	2.5	2.2	2.2	2.0	1.8	0.2	0.4	0.4
Emerging Market and Developing Economies	4.4	4.8	4.9	5.1	4.6	4.9	5.0	0.1	0.1	0.1
European Union	2.0	2.7	2.5	2.1	2.3	2.1	1.8	0.3	0.4	0.3
United States	1.5	2.3	2.9	2.7	2.2	2.3	1.9	0.1	0.6	0.8
China	6.7	6.9	6.6	6.4	6.8	6.5	6.3	0.1	0.1	0.1
Japan	0.9	1.7	1.2	0.9	1.5	0.7	0.8	0.2	0.6	0.1

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

Annex Table 1.2. GDP Growth: Comparison between WEO and Consensus Forecast
(Year-over-year percent change)

	April 2018 WEO			Consensus Forecast		Difference	
	2017	2018	2019	2018	2019	2018	2019
Europe	2.8	2.6	2.2	...	...	...	...
Advanced European Economies	2.4	2.3	2.0	...	...	...	...
Euro Area	2.3	2.4	2.0	2.4	1.9	0.0	0.1
Austria	2.9	2.6	2.0	2.7	2.1	−0.1	−0.2
Belgium	1.7	1.9	1.7	1.8	1.6	0.1	0.1
Cyprus	3.9	3.6	3.0	3.3	2.9	0.3	0.1
Estonia	4.9	3.9	3.2	3.5	3.1	0.4	0.1
Finland	3.0	2.6	2.0	2.5	2.0	0.1	0.0
France	1.8	2.1	2.0	2.1	1.8	0.0	0.2
Germany	2.5	2.5	2.0	2.4	1.9	0.1	0.1
Greece	1.4	2.0	1.8	1.9	2.2	0.1	−0.4
Ireland	7.8	4.5	4.0	4.4	3.4	0.1	0.6
Italy	1.5	1.5	1.1	1.5	1.2	0.1	−0.1
Latvia	4.5	4.0	3.5	3.9	3.2	0.1	0.3
Lithuania	3.8	3.2	3.0	3.2	2.8	0.0	0.3
Luxembourg	3.5	4.3	3.7	...	...	...	...
Malta	6.6	5.7	4.6	...	...	...	...
Netherlands	3.1	3.2	2.4	2.8	2.3	0.4	0.1
Portugal	2.7	2.4	1.8	2.3	2.0	0.1	−0.2
Slovak Republic	3.4	4.0	4.2	3.8	3.7	0.2	0.5
Slovenia	5.0	4.0	3.2	4.1	3.3	−0.1	−0.1
Spain	3.1	2.8	2.2	2.7	2.3	0.0	−0.1
Nordic Economies	2.2	2.3	2.1	...	...	...	...
Denmark	2.1	2.0	1.9	1.9	1.9	0.1	0.1
Iceland	3.6	3.2	3.0	...	...	...	...
Norway	1.8	2.1	2.1	2.1	2.1	0.0	0.0
Sweden	2.4	2.6	2.2	2.7	2.1	−0.1	0.1
Other European Advanced Economies	2.0	2.0	1.9	...	...	...	...
Czech Republic	4.3	3.5	3.0	3.5	3.0	0.1	0.1
Israel	3.3	3.3	3.5	3.3	3.2	0.0	0.3
San Marino	1.5	1.3	1.3	...	...	...	...
Switzerland	1.1	2.3	2.0	2.1	1.7	0.3	0.3
United Kingdom	1.8	1.6	1.5	1.6	1.5	0.1	0.0
Emerging European Economies	3.7	3.1	2.7	...	...	...	...
Central Europe	4.4	4.0	3.4	4.0	3.3	0.0	0.1
Hungary	4.0	3.8	3.0	3.7	2.9	0.1	0.1
Poland	4.6	4.1	3.5	4.0	3.4	0.0	0.2
Southeastern European EU Member States	5.7	4.5	3.3	4.2	3.4	0.3	−0.1
Bulgaria	3.6	3.8	3.1	3.7	3.4	0.1	−0.3
Croatia	2.8	2.8	2.6	2.8	2.7	0.0	−0.1
Romania	7.0	5.1	3.5	4.7	3.6	0.4	−0.1
Southeastern European Non-EU Member States	2.3	3.4	3.5	...	...	...	...
Albania	3.9	3.7	3.8	3.9	3.9	−0.2	−0.1
Bosnia and Herzegovina	2.7	3.2	3.5	3.0	3.1	0.2	0.4
Kosovo	4.1	4.0	4.0	...	...	...	...
Macedonia, FYR	0.0	2.8	3.0	2.9	3.2	−0.1	−0.2
Montenegro	4.2	3.1	2.4	...	...	...	...
Serbia	1.8	3.5	3.5	3.1	3.2	0.4	0.3
Commonwealth of Independent States	1.7	1.9	1.7	2.0	1.9	−0.1	−0.3
Belarus	2.4	2.8	2.4	2.3	1.9	0.5	0.5
Moldova	4.0	3.5	3.8	4.5	4.6	−1.0	−0.8
Russia	1.5	1.7	1.5	1.9	1.8	−0.2	−0.3
Ukraine	2.5	3.2	3.3	2.9	3.1	0.3	0.1
Turkey	7.0	4.4	4.0	4.1	3.9	0.3	0.1
Memorandum							
World	3.8	3.9	3.9	...	...	...	...
Advanced Economies	2.3	2.5	2.2	...	...	...	...
Emerging Market and Developing Economies	4.8	4.9	5.1	...	...	...	...
European Union	2.7	2.5	2.1	...	...	...	...
United States	2.3	2.9	2.7	2.8	2.6	0.1	0.1
China	6.9	6.6	6.4	6.5	6.3	0.0	0.1
Japan	1.7	1.2	0.9	1.4	1.1	−0.2	−0.2

Sources: Consensus Forecast (March 2018); IMF, *World Economic Outlook* (WEO); and IMF staff calculations.

Annex Table 1.3. Growth Rate of GDP per Capita

(Year-over-year percent change; in 2011 international dollars at purchasing power parity)

		April 2018 WEO					
	2016	2017	2018	2019	2020	2021	2022
Europe	1.4	2.5	2.3	2.0	1.8	1.7	1.7
Advanced European Economies	1.4	2.0	2.0	1.7	1.4	1.4	1.3
Euro Area	1.5	2.3	2.2	1.9	1.6	1.5	1.4
Austria	0.2	2.0	1.8	1.2	0.8	0.9	0.9
Belgium	0.8	1.3	1.4	1.2	0.9	1.0	1.0
Cyprus	2.9	3.3	2.9	2.3	2.0	1.9	1.8
Estonia	2.2	5.1	4.2	3.5	3.3	3.3	3.2
Finland	1.8	2.7	2.2	1.6	1.2	0.9	0.9
France	0.8	1.5	1.6	1.6	1.3	1.2	1.2
Germany	1.0	2.1	2.4	1.9	1.5	1.4	1.4
Greece	0.4	1.5	2.4	2.2	2.2	2.2	1.6
Ireland	4.1	7.2	3.5	3.0	2.5	2.0	1.8
Italy	1.1	1.6	1.3	1.2	0.9	0.8	0.9
Latvia	3.1	5.6	4.3	3.8	3.5	3.4	3.3
Lithuania	3.7	5.4	4.7	4.6	4.3	4.3	4.1
Luxembourg	0.7	1.2	1.9	1.4	0.9	0.8	0.7
Malta	3.0	4.3	4.1	3.4	3.2	2.9	2.8
Netherlands	1.7	2.8	2.9	2.1	1.8	1.7	1.6
Portugal	1.9	2.9	2.8	2.1	1.8	1.5	1.5
Slovak Republic	3.2	3.3	3.9	4.1	3.7	3.6	3.4
Slovenia	3.1	4.9	3.9	3.1	2.6	2.5	2.2
Spain	3.3	3.2	2.9	2.3	2.0	1.8	1.8
Nordic Economies	1.1	1.2	0.9	1.1	1.0	1.0	0.9
Denmark	1.1	1.4	1.2	1.2	1.1	1.0	1.0
Iceland	6.3	2.5	2.1	1.8	1.6	1.6	1.5
Norway	0.2	1.1	0.8	1.0	0.8	0.7	0.8
Sweden	1.7	1.1	0.8	1.2	1.0	1.0	0.9
Other European Advanced Economies	1.2	1.3	1.2	1.2	1.1	1.1	1.2
Czech Republic	2.4	4.0	3.4	2.9	2.4	2.4	2.4
Israel	1.9	1.4	1.4	1.6	1.1	1.1	1.1
San Marino	1.4	0.8	0.6	0.5	0.6	0.6	0.6
Switzerland	0.3	0.0	0.9	0.8	0.7	0.4	0.4
United Kingdom	1.1	1.2	1.0	0.9	1.0	1.1	1.2
Emerging European Economies	1.3	3.5	2.9	2.5	2.4	2.4	2.4
Central Europe	2.9	4.5	4.1	3.5	3.0	2.8	2.8
Hungary	2.5	4.3	4.1	3.3	2.9	2.7	2.5
Poland	3.0	4.5	4.1	3.6	3.0	2.8	2.9
Southeastern European EU Member States	5.1	6.3	5.1	3.9	3.6	3.5	3.5
Bulgaria	4.7	4.2	4.4	3.7	3.4	3.4	3.4
Croatia	4.0	3.3	3.3	3.1	3.0	2.8	2.7
Romania	5.4	7.6	5.7	4.1	3.7	3.7	3.8
Southeastern European Non-EU Member States	3.4	2.4	3.4	3.5	3.8	3.9	4.0
Albania	3.5	3.9	3.8	3.9	4.0	4.1	4.1
Bosnia and Herzegovina	3.8	3.0	3.3	3.6	3.8	4.1	4.2
Kosovo	4.0	2.6	2.5	2.5	2.5	2.5	2.5
Macedonia, FYR	2.8	−0.1	2.7	2.9	3.1	3.3	3.4
Montenegro	2.9	4.1	3.0	2.3	3.0	3.0	3.2
Serbia	3.3	2.2	3.9	3.9	4.4	4.4	4.4
Commonwealth of Independent States	0.0	1.7	2.0	1.8	1.8	1.9	1.9
Belarus	−2.7	2.9	3.3	3.0	2.5	2.5	2.5
Moldova	4.3	4.1	3.6	3.9	3.9	4.0	4.0
Russia	−0.3	1.5	1.7	1.5	1.6	1.6	1.6
Ukraine	2.9	2.7	3.4	3.5	3.7	3.9	4.2
Turkey	1.8	5.7	3.1	2.7	2.4	2.3	2.4
Memorandum							
World	1.9	2.4	2.7	2.7	2.5	2.5	2.5
Advanced Economies	1.1	1.9	2.0	1.8	1.3	1.3	1.1
Emerging Market and Developing Economies	2.8	3.3	3.6	3.7	3.7	3.7	3.7
European Union	1.7	2.4	2.3	2.0	1.7	1.6	1.6
United States	0.7	1.5	2.1	1.8	1.1	0.9	0.7
China	6.1	6.3	6.0	5.9	5.8	5.6	5.3
Japan	1.0	1.9	1.4	1.2	0.7	1.1	0.9

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

Annex Table 1.4. Domestic Demand

(Year-over-year percent change)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	2.0	2.8	2.5	2.2	2.4	2.2	1.9	0.4	0.4	0.2
Advanced European Economies	2.4	2.0	2.2	1.9	2.1	1.9	1.7	−0.2	0.3	0.2
Euro Area	2.4	2.0	2.2	1.9	2.1	1.9	1.7	−0.1	0.4	0.3
Austria	2.1	2.6	2.1	1.9	2.2	1.5	1.6	0.4	0.7	0.3
Belgium	2.1	1.4	1.8	1.7	1.7	1.7	1.5	−0.3	0.1	0.2
Cyprus	4.8	1.7	5.1	4.2	1.9	2.1	2.7	−0.2	3.0	1.6
Estonia	3.2	4.2	5.5	5.2	3.7	4.8	4.1	0.5	0.8	1.1
Finland	2.7	2.0	1.8	1.6	2.3	2.2	1.8	−0.2	−0.3	−0.2
France	1.9	2.3	1.9	1.8	1.9	1.7	1.8	0.4	0.2	0.0
Germany	2.4	2.4	2.3	2.0	2.1	2.0	1.7	0.3	0.3	0.3
Greece	0.6	1.2	1.7	1.7	0.6	2.4	1.9	0.6	−0.7	−0.2
Ireland	21.2	−7.8	5.7	4.3	5.0	3.7	3.2	−12.8	2.0	1.1
Italy	1.1	1.4	1.6	1.1	1.6	1.1	0.8	−0.3	0.5	0.4
Latvia	2.5	7.5	6.1	4.2	4.9	5.4	3.8	2.6	0.7	0.3
Lithuania	2.5	3.4	4.1	4.0	4.4	3.6	3.7	−1.0	0.4	0.3
Luxembourg	1.6	2.7	3.9	3.1	3.9	3.1	2.5	−1.2	0.8	0.6
Malta	1.3	1.0	3.8	4.0	2.8	2.8	2.7	−1.9	1.1	1.3
Netherlands	1.8	2.4	3.0	2.7	2.4	2.2	1.9	0.0	0.8	0.8
Portugal	1.6	2.8	2.7	1.9	2.6	2.1	1.8	0.2	0.6	0.1
Slovak Republic	0.9	3.2	3.5	3.6	3.1	3.4	3.1	0.1	0.1	0.5
Slovenia	2.9	4.1	4.6	3.8	4.4	2.7	2.8	−0.3	1.9	1.0
Spain	2.6	2.9	2.6	2.1	2.6	2.2	1.9	0.3	0.3	0.2
Nordic Economies	3.0	2.5	2.4	2.3	2.6	2.3	2.2	−0.1	0.1	0.0
Denmark	2.4	1.7	2.1	2.1	2.2	2.1	2.0	−0.5	0.0	0.1
Iceland	8.5	6.4	4.8	3.8	6.3	3.0	4.2	0.1	1.8	−0.4
Norway	2.7	2.3	2.4	2.2	2.1	2.0	2.1	0.3	0.3	0.2
Sweden	3.3	2.9	2.6	2.3	3.1	2.5	2.4	−0.2	0.0	−0.1
Other European Advanced Economies	2.2	1.6	1.8	1.7	1.8	1.5	1.6	−0.2	0.2	0.1
Czech Republic	1.5	3.6	3.5	3.4	3.5	3.0	2.7	0.1	0.5	0.6
Israel	6.0	3.5	3.4	3.5	2.8	4.3	2.7	0.8	−0.9	0.9
San Marino	4.0	1.1	4.7	2.8	1.0	1.5	1.6	0.0	3.2	1.2
Switzerland	0.4	0.3	1.5	1.5	0.8	0.8	1.5	−0.5	0.7	−0.1
United Kingdom	2.2	1.4	1.4	1.3	1.6	1.2	1.4	−0.2	0.2	−0.1
Emerging European Economies	1.1	4.7	3.2	2.6	3.1	2.8	2.5	1.6	0.4	0.2
Central Europe	2.1	5.2	4.1	3.8	3.6	3.7	3.2	1.6	0.4	0.6
Hungary	1.6	6.0	2.6	3.7	1.4	3.5	2.7	4.5	−0.8	1.1
Poland	2.3	5.0	4.5	3.8	4.1	3.8	3.3	0.8	0.7	0.5
Southeastern European EU Member States	4.3	6.7	5.8	3.5	5.4	4.8	3.7	1.3	1.0	−0.2
Bulgaria	1.7	5.7	4.7	4.1	4.7	3.8	3.0	0.9	0.9	1.0
Croatia	3.4	3.3	3.2	3.0	3.7	3.2	2.9	−0.4	0.0	0.1
Romania	5.3	7.7	6.8	3.4	6.0	5.5	4.0	1.8	1.3	−0.6
Southeastern European Non-EU Member States	3.1	2.1	3.1	3.2	2.5	2.8	2.9	−0.4	0.4	0.4
Albania	1.3	1.3	2.4	3.0	3.7	1.4	2.1	−2.4	1.1	1.0
Bosnia and Herzegovina	3.2	2.9	4.0	4.0	2.8	3.0	3.2	0.2	1.0	0.9
Kosovo	...	...	...	...	...	...	...	...	...	...
Macedonia, FYR	5.7	0.1	2.7	2.5	1.6	2.6	2.7	−1.5	0.1	−0.2
Montenegro	8.2	6.0	3.5	1.5	3.8	4.2	1.5	2.2	−0.7	0.1
Serbia	2.3	2.1	3.1	3.3	2.2	3.0	3.2	0.0	0.0	0.2
Commonwealth of Independent States	−1.4	3.7	2.1	1.6	2.4	1.9	1.5	1.3	0.2	0.1
Belarus	−5.4	2.2	3.3	2.7	0.2	0.4	0.4	2.0	2.9	2.3
Moldova	2.4	2.5	1.2	4.6	−0.9	6.8	4.0	3.4	−5.6	0.6
Russia	−1.9	3.6	1.8	1.3	2.3	1.7	1.3	1.2	0.1	0.0
Ukraine	6.0	5.3	5.0	4.3	4.1	4.0	4.2	1.2	1.0	0.1
Turkey	4.4	6.2	3.9	3.7	3.6	3.5	3.5	2.6	0.4	0.2
Memorandum										
World	3.0	3.9	4.1	4.0	3.9	4.1	4.0	3.9	4.1	4.0
Advanced Economies	1.8	2.3	2.7	2.4	2.3	2.7	2.4	2.3	2.7	2.4
Emerging Market and Developing Economies	3.9	5.0	5.1	5.1	5.0	5.1	5.1	5.0	5.1	5.1
European Union	2.5	2.4	2.5	2.1	2.4	2.1	1.9	0.0	0.4	0.2
United States	1.7	2.4	3.5	3.2	2.3	2.5	2.0	0.1	1.0	1.2
China	7.6	6.4	6.7	6.6	6.9	6.9	6.7	−0.5	−0.2	−0.1
Japan	0.4	1.2	1.1	1.0	1.1	0.7	1.0	0.1	0.3	0.0

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

Annex Table 1.5. Gross Investment

(Percent of GDP)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	21.4	21.9	22.0	22.2	21.6	21.9	22.1	0.2	0.1	0.2
Advanced European Economies	20.3	20.5	20.7	20.9	20.5	20.6	20.8	0.0	0.1	0.1
Euro Area	20.4	20.9	21.1	21.3	20.6	20.8	21.0	0.2	0.3	0.2
Austria	24.1	25.0	25.1	25.0	24.1	24.0	24.1	0.8	1.0	0.9
Belgium	23.9	23.8	24.1	24.5	23.5	23.9	24.1	0.2	0.2	0.4
Cyprus	16.3	15.2	17.3	18.8	15.7	15.7	16.3	−0.5	1.6	2.5
Estonia	24.2	25.4	27.3	29.3	25.3	27.2	28.5	0.0	0.1	0.8
Finland	21.9	22.7	22.9	22.9	22.3	22.9	23.0	0.4	−0.1	−0.1
France	23.0	23.4	23.2	23.1	23.3	23.0	23.0	0.1	0.2	0.1
Germany	19.2	19.7	19.7	20.0	19.4	19.6	19.8	0.2	0.1	0.2
Greece	10.6	11.7	12.7	13.8	10.8	11.8	13.1	0.9	0.8	0.8
Ireland	32.4	24.2	25.9	26.8	33.7	34.1	34.4	−9.6	−8.2	−7.6
Italy	17.1	17.5	17.7	17.9	16.9	17.3	17.5	0.7	0.4	0.3
Latvia	19.6	21.5	23.1	23.5	21.2	22.6	22.9	0.3	0.5	0.5
Lithuania	17.2	17.5	18.2	18.8	17.6	17.6	17.7	−0.1	0.6	1.0
Luxembourg	17.9	17.8	17.7	17.4	18.5	18.3	18.3	−0.7	−0.6	−0.9
Malta	25.2	22.5	21.8	22.0	22.1	21.3	20.9	0.4	0.5	1.2
Netherlands	20.1	20.3	20.7	21.1	20.6	21.1	21.7	−0.3	−0.4	−0.6
Portugal	15.5	16.3	17.1	17.9	16.5	17.4	18.0	−0.2	−0.2	−0.1
Slovak Republic	22.6	22.9	23.8	24.1	22.5	23.0	23.6	0.5	0.8	0.5
Slovenia	18.7	19.3	20.1	20.6	19.5	19.9	20.3	−0.2	0.2	0.3
Spain	20.5	21.1	21.5	21.7	20.6	20.8	20.8	0.5	0.7	0.9
Nordic Economies	25.2	25.5	25.9	26.2	25.5	25.8	26.0	0.0	0.1	0.2
Denmark	21.0	21.0	21.4	21.7	20.6	20.9	21.1	0.4	0.5	0.6
Iceland	21.5	22.2	22.2	22.6	21.9	20.7	21.6	0.3	1.5	1.0
Norway	29.3	28.9	28.9	29.1	28.8	29.1	29.3	0.1	−0.2	−0.1
Sweden	24.7	25.7	26.4	26.8	26.0	26.4	26.6	−0.3	0.0	0.2
Other European Advanced Economies	18.8	18.9	19.0	19.1	18.9	18.9	19.0	0.0	0.1	0.1
Czech Republic	26.3	26.3	26.5	26.4	26.6	26.5	26.6	−0.3	0.0	−0.2
Israel	20.5	20.7	20.9	21.3	20.1	20.9	20.7	0.7	0.0	0.7
San Marino	21.0	19.7	22.3	23.4	18.2	18.4	18.5	1.5	3.9	4.8
Switzerland	23.1	23.7	23.6	23.6	23.7	23.6	23.6	0.0	0.0	0.0
United Kingdom	16.9	16.9	17.0	17.1	17.0	16.8	17.0	−0.1	0.2	0.1
Emerging European Economies	23.9	25.0	24.9	25.2	24.3	24.8	24.9	0.7	0.0	0.3
Central Europe	19.6	20.5	21.7	22.0	19.9	20.3	20.7	0.6	1.3	1.3
Hungary	19.7	22.4	24.0	23.8	19.6	20.3	20.9	2.8	3.7	2.9
Poland	19.6	20.0	21.1	21.6	20.0	20.3	20.7	0.0	0.7	0.9
Southeastern European EU Member States	22.4	23.3	22.9	22.7	22.9	23.0	23.1	0.4	−0.1	−0.4
Bulgaria	19.1	20.9	21.5	21.2	20.1	19.7	19.4	0.8	1.8	1.9
Croatia	20.2	19.4	19.9	20.6	20.6	21.0	21.2	−1.1	−1.1	−0.7
Romania	24.0	24.9	23.9	23.6	24.4	24.5	24.7	0.6	−0.6	−1.1
Southeastern European Non-EU Member States	19.6	19.6	19.9	19.8	19.9	20.0	20.1	−0.3	−0.1	−0.3
Albania	23.5	23.9	23.7	24.2	24.8	24.5	24.4	−0.9	−0.8	−0.2
Bosnia and Herzegovina	16.0	16.3	17.7	19.0	17.2	17.2	17.7	−1.0	0.5	1.4
Kosovo	...	...	...	...	...	...	...	...	...	...
Macedonia, FYR	...	...	...	...	...	...	...	...	...	...
Montenegro	26.1	28.3	28.7	26.4	27.9	31.1	29.9	0.4	−2.4	−3.5
Serbia	19.1	18.7	18.6	17.9	18.5	18.5	18.7	0.1	0.0	−0.7
Commonwealth of Independent States	23.7	24.1	23.3	23.9	23.6	24.3	24.3	0.5	−1.0	−0.4
Belarus	26.5	25.2	25.6	25.9	24.7	24.5	24.2	0.5	1.1	1.7
Moldova	22.1	21.7	20.0	21.2	22.7	22.6	22.6	−1.1	−2.6	−1.4
Russia	23.8	24.3	23.3	23.8	23.8	24.4	24.2	0.6	−1.1	−0.5
Ukraine	21.5	20.8	22.2	24.0	21.0	23.2	25.1	−0.1	−1.0	−1.1
Turkey	28.2	30.9	31.3	31.1	29.6	30.0	29.8	1.3	1.3	1.3
Memorandum										
World	...	...	...	...	...	...	...	...	...	...
Advanced Economies	...	...	...	...	...	...	...	...	...	...
Emerging Market and Developing Economies	...	...	...	...	...	...	...	...	...	...
European Union	20.0	20.4	20.6	20.8	20.3	20.5	20.7	0.1	0.2	0.2
United States	19.7	19.8	20.2	20.8	19.8	20.0	20.0	0.0	0.2	0.7
China	44.1	44.4	44.2	43.7	44.0	43.3	42.8	0.4	0.9	0.9
Japan	23.6	24.0	24.6	24.7	23.4	23.5	23.7	0.6	1.1	1.0

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

Annex Table 1.6. Inflation

(Year-over-year percent change; period average)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	2.0	2.9	2.8	2.8	2.9	2.7	2.8	0.0	0.1	0.1
Advanced European Economies	0.4	1.7	1.7	1.7	1.6	1.6	1.8	0.1	0.1	−0.1
Euro Area	0.2	1.5	1.5	1.6	1.5	1.4	1.7	0.1	0.1	−0.1
Austria	1.0	2.2	2.2	2.2	1.6	1.8	2.1	0.6	0.3	0.1
Belgium	1.8	2.2	1.6	1.8	2.2	1.5	1.8	0.0	0.1	0.0
Cyprus	−1.2	0.7	0.4	1.6	0.8	0.7	1.1	−0.1	−0.3	0.5
Estonia	0.9	3.7	3.0	2.5	3.8	3.4	2.5	−0.1	−0.4	0.0
Finland	0.4	0.8	1.2	1.7	0.8	1.2	1.7	0.0	0.1	0.0
France	0.3	1.2	1.5	1.6	1.2	1.3	1.6	0.0	0.2	0.0
Germany	0.4	1.7	1.6	1.7	1.6	1.5	2.0	0.2	0.1	−0.3
Greece	0.0	1.1	0.7	1.1	1.2	1.3	1.4	−0.1	−0.6	−0.2
Ireland	−0.2	0.3	0.9	1.3	0.4	1.5	1.7	−0.2	−0.5	−0.3
Italy	−0.1	1.3	1.1	1.3	1.4	1.2	1.4	−0.1	−0.1	−0.1
Latvia	0.1	2.9	3.0	2.5	3.0	3.0	2.5	−0.1	0.0	0.0
Lithuania	0.7	3.7	2.2	2.2	3.5	2.0	2.1	0.2	0.2	0.0
Luxembourg	0.0	2.1	1.4	1.8	1.2	1.3	1.7	0.8	0.1	0.1
Malta	0.9	1.3	1.6	1.8	1.3	1.6	1.8	0.0	0.0	0.0
Netherlands	0.1	1.3	2.0	2.2	1.3	1.4	1.5	0.0	0.6	0.7
Portugal	0.6	1.6	1.6	1.6	1.6	2.0	2.1	0.0	−0.4	−0.5
Slovak Republic	−0.5	1.3	1.9	1.9	1.2	1.4	1.7	0.1	0.6	0.2
Slovenia	−0.1	1.4	1.7	2.0	1.6	1.8	2.0	−0.2	−0.2	0.0
Spain	−0.2	2.0	1.7	1.6	2.0	1.5	1.7	0.0	0.3	−0.1
Nordic Economies	1.7	1.7	1.6	1.8	1.6	1.7	1.9	0.1	−0.1	−0.1
Denmark	0.2	1.1	1.4	1.7	1.0	1.4	1.8	0.1	0.0	−0.1
Iceland	1.7	1.8	2.4	2.3	1.8	2.6	2.8	−0.1	−0.2	−0.5
Norway	3.6	1.9	1.9	2.0	2.1	2.0	2.2	−0.2	−0.1	−0.2
Sweden	1.1	1.9	1.5	1.6	1.6	1.6	1.7	0.3	−0.1	−0.1
Other European Advanced Economies	0.4	2.2	2.3	1.9	2.1	2.1	2.0	0.1	0.2	0.0
Czech Republic	0.7	2.4	2.3	2.0	2.3	1.8	2.0	0.1	0.5	0.0
Israel	−0.5	0.2	0.7	1.3	0.2	0.5	1.4	0.1	0.2	−0.1
San Marino	0.6	0.9	1.0	1.1	0.9	1.0	1.1	0.0	0.0	0.0
Switzerland	−0.4	0.5	0.7	1.0	0.5	0.6	0.9	0.1	0.1	0.1
United Kingdom	0.7	2.7	2.7	2.2	2.6	2.6	2.2	0.1	0.1	−0.1
Emerging European Economies	5.6	5.5	5.3	5.3	5.6	5.2	5.0	−0.1	0.1	0.4
Central Europe	−0.4	2.1	2.6	2.7	2.0	2.5	2.6	0.0	0.1	0.1
Hungary	0.4	2.4	2.7	3.3	2.5	3.2	3.0	−0.1	−0.5	0.3
Poland	−0.6	2.0	2.5	2.5	1.9	2.3	2.5	0.1	0.3	0.0
Southeastern European EU Member States	−1.4	1.3	3.7	2.7	1.1	2.6	2.7	0.2	1.0	0.0
Bulgaria	−1.3	1.2	2.0	2.1	1.1	1.4	1.7	0.1	0.5	0.4
Croatia	−1.1	1.1	1.5	1.5	1.1	1.2	1.5	0.0	0.3	0.0
Romania	−1.5	1.3	4.7	3.1	1.1	3.3	3.2	0.2	1.3	−0.1
Southeastern European Non-EU Member States	0.4	2.2	2.2	2.4	2.3	2.5	2.5	−0.1	−0.3	0.0
Albania	1.3	2.0	2.5	2.8	2.1	2.8	3.0	−0.1	−0.4	−0.2
Bosnia and Herzegovina	−1.1	1.3	1.5	1.6	1.8	1.2	1.6	−0.5	0.4	0.0
Kosovo	0.3	1.5	1.0	1.9	1.4	1.4	1.9	0.1	−0.4	0.0
Macedonia, FYR	−0.2	1.4	1.8	1.9	0.3	2.6	1.9	1.1	−0.8	0.0
Montenegro	−0.3	2.4	2.8	1.8	2.1	2.6	1.8	0.3	0.2	0.0
Serbia	1.1	3.1	2.7	3.0	3.4	3.0	3.0	−0.2	−0.3	0.0
Commonwealth of Independent States	7.8	4.6	3.6	4.2	5.1	4.5	4.4	−0.4	−1.0	−0.2
Belarus	11.8	6.0	6.0	6.0	8.0	7.5	7.2	−1.9	−1.5	−1.2
Moldova	6.4	6.6	4.7	5.1	6.5	5.3	5.1	0.1	−0.6	0.0
Russia	7.1	3.7	2.8	3.7	4.2	3.9	4.0	−0.6	−1.2	−0.2
Ukraine	13.9	14.4	11.0	8.0	12.8	10.0	7.0	1.7	1.1	1.0
Turkey	7.8	11.1	11.4	10.5	10.9	9.3	8.8	0.3	2.0	1.7
Memorandum										
World	2.8	3.0	3.5	3.4	3.1	3.3	3.3	−0.1	0.2	0.1
Advanced Economies	0.8	1.7	2.0	1.9	1.7	1.7	2.0	0.0	0.3	−0.1
Emerging Market and Developing Economies	4.3	4.0	4.6	4.3	4.2	4.4	4.1	−0.2	0.1	0.2
European Union	0.2	1.7	1.9	1.8	1.7	1.7	1.9	0.1	0.2	−0.1
United States	1.3	2.1	2.5	2.4	2.1	2.1	2.6	0.0	0.4	−0.2
China	2.0	1.6	2.5	2.6	1.8	2.4	2.5	−0.2	0.1	0.1
Japan	−0.1	0.5	1.1	1.1	0.4	0.5	1.1	0.1	0.6	0.0

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

Annex Table 1.7. Inflation: Comparison between WEO and Consensus Forecast
(Year-over-year percent change; period average)

	April 2018 WEO			Consensus Forecast		Difference	
	2017	2018	2019	2018	2019	2018	2019
Europe	2.9	2.8	2.8	...	...	...	...
Advanced European Economies	1.7	1.7	1.7	...	...	...	...
Euro Area	1.5	1.5	1.6	1.5	1.5	0.0	0.1
Austria	2.2	2.2	2.2	2.0	1.9	0.2	0.3
Belgium	2.2	1.6	1.8	1.8	1.7	−0.2	0.1
Cyprus	0.7	0.4	1.6	1.2	1.6	−0.8	0.0
Estonia	3.7	3.0	2.5	3.2	2.7	−0.2	−0.2
Finland	0.8	1.2	1.7	1.2	1.5	0.0	0.2
France	1.2	1.5	1.6	1.4	1.5	0.1	0.1
Germany	1.7	1.6	1.7	1.7	1.8	−0.1	−0.1
Greece	1.1	0.7	1.1	0.9	1.2	−0.2	−0.1
Ireland	0.3	0.9	1.3	1.0	1.3	0.0	0.0
Italy	1.3	1.1	1.3	1.1	1.3	−0.1	0.0
Latvia	2.9	3.0	2.5	2.9	2.8	0.1	−0.3
Lithuania	3.7	2.2	2.2	3.0	2.7	−0.8	−0.5
Luxembourg	2.1	1.4	1.8	...	...	...	...
Malta	1.3	1.6	1.8	...	...	...	...
Netherlands	1.3	2.0	2.2	1.6	2.1	0.4	0.1
Portugal	1.6	1.6	1.6	1.4	1.5	0.2	0.1
Slovak Republic	1.3	1.9	1.9	2.0	2.2	−0.1	−0.3
Slovenia	1.4	1.7	2.0	1.7	1.9	−0.1	0.2
Spain	2.0	1.7	1.6	1.5	1.5	0.3	0.1
Nordic Economies	1.7	1.6	1.8	...	...	...	...
Denmark	1.1	1.4	1.7	1.2	1.7	0.2	0.0
Iceland	1.8	2.4	2.3	...	...	...	...
Norway	1.9	1.9	2.0	1.7	1.8	0.2	0.2
Sweden	1.9	1.5	1.6	1.8	2.2	−0.3	−0.6
Other European Advanced Economies	2.2	2.3	1.9	...	...	...	...
Czech Republic	2.4	2.3	2.0	2.2	2.1	0.1	−0.1
Israel	0.2	0.7	1.3	0.8	1.5	−0.1	−0.2
San Marino	0.9	1.0	1.1	...	...	...	...
Switzerland	0.5	0.7	1.0	0.8	1.0	−0.1	0.0
United Kingdom	2.7	2.7	2.2	3.5	3.0	−0.7	−0.8
Emerging European Economies	5.5	5.2	5.3	...	...	...	...
Central Europe	2.1	2.6	2.7	2.2	2.6	0.3	0.1
Hungary	2.4	2.7	3.3	2.6	3.0	0.1	0.3
Poland	2.0	2.5	2.5	2.1	2.5	0.4	0.1
Southeastern European EU Member States	1.3	3.7	2.7	3.4	2.9	0.2	−0.3
Bulgaria	1.2	2.0	2.1	2.4	2.5	−0.4	−0.4
Croatia	1.1	1.5	1.5	1.6	1.8	−0.1	−0.4
Romania	1.3	4.7	3.1	4.1	3.3	0.5	−0.2
Southeastern European Non-EU Member States	2.2	2.2	2.4	...	...	...	...
Albania	2.0	2.5	2.8	2.6	2.9	−0.1	−0.1
Bosnia and Herzegovina	1.3	1.5	1.6	1.8	2.2	−0.3	−0.6
Kosovo	1.5	1.0	1.9	...	...	...	...
Macedonia, FYR	1.4	1.8	1.9	2.1	2.2	−0.3	−0.3
Montenegro	2.4	2.8	1.8	...	...	...	...
Serbia	3.1	2.7	3.0	2.7	3.4	0.0	−0.4
Commonwealth of Independent States	4.6	3.6	4.2	4.5	4.4	−0.9	−0.2
Belarus	6.0	6.0	6.0	6.9	7.1	−0.9	−1.1
Moldova	6.6	4.7	5.1	5.1	4.9	−0.4	0.2
Russia	3.7	2.8	3.7	3.8	4.0	−1.0	−0.2
Ukraine	14.4	11.0	8.0	11.1	8.0	−0.1	0.0
Turkey	11.1	11.4	10.5	10.0	8.6	1.4	1.9
Memorandum							
World	3.0	3.5	3.4	...	...	...	...
Advanced Economies	1.7	2.0	1.9	...	...	...	...
Emerging Market and Developing Economies	4.0	4.6	4.3	...	...	...	...
European Union	1.7	1.9	1.8	...	...	...	...
United States	2.1	2.5	2.4	2.4	2.1	0.2	0.3
China	1.6	2.5	2.6	2.3	2.3	0.2	0.3
Japan	0.5	1.1	1.1	1.0	1.1	0.2	0.0

Sources: Consensus Forecast (March 2018); IMF, *World Economic Outlook* (WEO); and IMF staff calculations.

Annex Table 1.8. Unemployment

(Percent)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	8.1	7.5	7.2	7.0	7.6	7.3	7.2	−0.1	−0.1	−0.1
Advanced European Economies	8.6	7.8	7.3	7.1	7.9	7.5	7.3	−0.1	−0.2	−0.2
Euro Area	10.0	9.1	8.4	8.1	9.2	8.7	8.3	−0.1	−0.2	−0.3
Austria	6.0	5.5	5.2	5.1	5.4	5.3	5.2	0.2	−0.1	−0.1
Belgium	7.9	7.2	7.0	6.8	7.5	7.3	7.2	−0.4	−0.4	−0.4
Cyprus	13.0	11.3	10.0	9.1	11.8	10.7	9.9	−0.5	−0.7	−0.8
Estonia	6.8	5.8	6.3	6.7	8.4	9.0	9.8	−2.6	−2.7	−3.0
Finland	8.8	8.7	8.0	7.5	8.7	8.1	7.8	0.0	−0.1	−0.3
France	10.0	9.4	8.8	8.4	9.5	9.0	8.7	0.0	−0.3	−0.3
Germany	4.2	3.8	3.6	3.5	3.8	3.7	3.7	0.0	−0.1	−0.1
Greece	23.6	21.5	19.8	18.0	22.3	20.7	19.5	−0.8	−0.9	−1.5
Ireland	8.4	6.7	5.5	5.2	6.4	5.9	5.8	0.3	−0.5	−0.5
Italy	11.7	11.3	10.9	10.6	11.4	11.0	10.6	−0.1	−0.1	0.0
Latvia	9.6	8.7	8.2	8.1	9.0	8.7	8.4	−0.3	−0.5	−0.4
Lithuania	7.9	7.1	6.9	6.8	7.0	6.5	6.0	0.1	0.4	0.8
Luxembourg	6.3	5.8	5.5	5.2	5.9	5.5	5.3	−0.1	0.0	−0.1
Malta	4.7	4.0	4.2	4.4	4.4	4.5	4.7	−0.4	−0.3	−0.3
Netherlands	6.0	5.1	4.9	4.8	5.1	4.9	4.8	0.0	0.0	0.0
Portugal	11.1	8.9	7.3	6.7	9.7	9.0	8.5	−0.8	−1.7	−1.9
Slovak Republic	9.7	8.3	7.5	7.4	8.1	7.5	7.4	0.2	0.0	0.0
Slovenia	8.0	6.8	5.9	5.5	6.8	6.4	6.3	0.0	−0.5	−0.8
Spain	19.6	17.2	15.5	14.8	17.1	15.6	15.0	0.1	−0.1	−0.2
Nordic Economies	6.2	5.8	5.6	5.5	5.7	5.5	5.5	0.2	0.0	0.0
Denmark	6.2	5.8	5.7	5.6	5.8	5.8	5.8	0.0	−0.1	−0.2
Iceland	3.0	2.8	3.1	3.3	2.8	3.2	3.6	0.0	−0.1	−0.3
Norway	4.8	4.2	3.9	3.7	4.0	3.8	3.7	0.2	0.1	0.0
Sweden	7.0	6.7	6.3	6.3	6.6	6.3	6.3	0.1	0.0	0.0
Other European Advanced Economies	4.6	4.1	4.1	4.2	4.1	4.1	4.3	0.0	0.0	−0.1
Czech Republic	3.9	2.9	3.0	3.2	2.8	3.0	3.2	0.1	0.0	0.0
Israel	4.8	4.2	4.2	4.2	4.3	4.5	4.5	−0.1	−0.2	−0.2
San Marino	8.6	8.0	7.4	6.8	8.0	7.4	6.8	0.0	0.0	0.0
Switzerland	3.3	3.2	3.0	3.0	3.0	3.0	3.0	0.2	0.0	0.0
United Kingdom	4.9	4.4	4.4	4.5	4.4	4.4	4.6	0.0	0.0	−0.1
Emerging European Economies	7.4	7.0	7.0	6.9	7.2	7.0	7.0	−0.2	−0.1	−0.1
Central Europe	5.9	4.7	4.0	3.9	4.7	4.1	4.0	0.0	−0.1	−0.1
Hungary	5.1	4.0	3.8	3.5	4.4	4.3	4.3	−0.4	−0.6	−0.7
Poland	6.2	4.9	4.1	4.0	4.8	4.0	3.9	0.1	0.1	0.1
Southeastern European EU Member States	7.4	6.1	5.8	5.7	6.6	6.5	6.7	−0.5	−0.7	−1.1
Bulgaria	7.7	6.2	6.0	5.8	6.6	6.4	6.3	−0.4	−0.4	−0.5
Croatia	14.8	12.2	12.0	11.2	13.9	13.5	13.2	−1.7	−1.5	−2.0
Romania	5.9	5.0	4.6	4.6	5.3	5.2	5.7	−0.3	−0.6	−1.1
Southeastern European Non-EU Member States	18.8	16.8	17.5	17.2	17.8	18.6	18.4	−1.0	−1.1	−1.1
Albania	15.2	13.9	13.7	13.4	14.0	13.8	13.5	−0.1	−0.1	−0.1
Bosnia and Herzegovina	25.4	20.5	25.1	25.0	20.5	25.1	25.0	0.0	0.0	0.0
Kosovo	...	...	...	...	...	...	...	...	...	...
Macedonia, FYR	23.8	22.5	22.3	22.1	23.4	23.2	23.0	−0.8	−0.8	−0.8
Montenegro	...	...	...	...	...	...	...	...	...	...
Serbia	15.9	14.6	14.3	14.0	16.0	15.6	15.3	−1.4	−1.3	−1.2
Commonwealth of Independent States	6.0	5.8	6.0	5.9	6.0	6.0	5.9	−0.2	0.0	0.0
Belarus	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Moldova	4.2	4.2	4.2	4.1	4.3	4.2	4.2	−0.1	0.0	−0.1
Russia	5.5	5.2	5.5	5.5	5.5	5.5	5.5	−0.3	0.0	0.0
Ukraine	9.3	9.4	9.2	8.8	9.5	9.3	8.8	−0.1	−0.1	0.0
Turkey	10.9	11.0	10.7	10.7	11.2	10.7	10.4	−0.2	0.0	0.2
Memorandum										
World	...	...	...	...	...	...	...	...	...	...
Advanced Economies	6.2	5.7	5.3	5.1	5.7	5.4	5.4	0.0	−0.2	−0.3
Emerging Market and Developing Economies	...	...	...	...	...	...	...	...	...	...
European Union	8.6	7.7	7.1	6.9	7.7	7.3	7.2	−0.1	−0.2	−0.3
United States	4.9	4.4	3.9	3.5	4.4	4.1	4.2	0.0	−0.2	−0.6
China	4.0	3.9	4.0	4.0	4.0	4.0	4.0	−0.1	0.0	0.0
Japan	3.1	2.9	2.9	2.9	2.9	2.9	2.9	0.0	0.0	0.0

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

Annex Table 1.9. General Government Overall Balance

(Percent of GDP)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	−1.9	−1.2	−0.9	−0.8	−1.7	−1.4	−1.0	0.5	0.5	0.2
Advanced European Economies	−1.5	−0.9	−0.7	−0.6	−1.3	−1.0	−0.6	0.4	0.3	0.1
Euro Area	−1.5	−0.9	−0.6	−0.5	−1.3	−1.0	−0.7	0.3	0.3	0.2
Austria	−1.5	−0.8	−0.3	−0.2	−0.9	−0.6	−0.4	0.0	0.3	0.2
Belgium	−2.5	−1.1	−1.3	−1.3	−1.8	−1.8	−1.9	0.7	0.5	0.6
Cyprus	0.5	1.9	2.0	2.0	0.9	0.3	0.5	1.0	1.7	1.5
Estonia	−0.3	−0.1	−0.4	−0.2	0.0	−0.7	−0.6	−0.1	0.3	0.4
Finland	−1.8	−1.4	−1.4	−0.9	−1.5	−1.2	−0.9	0.2	−0.2	0.0
France	−3.4	−2.6	−2.4	−3.1	−3.0	−3.0	−3.2	0.4	0.6	0.1
Germany	0.8	1.1	1.5	1.7	0.7	0.8	1.0	0.4	0.7	0.6
Greece	0.5	0.0	−0.1	0.0	−1.7	−1.1	0.2	1.8	1.0	−0.1
Ireland	−0.7	−0.4	−0.2	−0.1	−0.5	−0.2	−0.2	0.1	0.1	0.1
Italy	−2.5	−1.9	−1.6	−0.9	−2.2	−1.3	−0.3	0.3	−0.2	−0.6
Latvia	−0.4	0.0	−0.5	−0.9	−0.7	0.0	−0.4	0.7	−0.6	−0.4
Lithuania	0.3	0.6	0.7	0.8	0.1	0.5	0.3	0.5	0.2	0.5
Luxembourg	1.6	1.4	0.8	0.2	0.3	0.2	0.0	1.1	0.6	0.2
Malta	1.1	1.9	1.6	1.1	0.5	0.5	0.5	1.3	1.1	0.6
Netherlands	0.4	0.5	0.6	0.7	0.6	0.9	1.2	−0.1	−0.3	−0.5
Portugal	−2.0	−1.2	−1.0	−0.9	−1.5	−1.4	−1.5	0.3	0.3	0.6
Slovak Republic	−2.2	−1.6	−0.9	−0.4	−1.2	−0.7	−0.1	−0.5	−0.2	−0.3
Slovenia	−1.7	−0.8	0.0	−0.3	−0.9	−0.9	−1.2	0.1	0.9	0.9
Spain	−4.5	−3.1	−2.5	−2.1	−3.2	−2.5	−2.1	0.1	−0.1	0.0
Nordic Economies	1.8	2.0	1.5	1.4	1.5	1.8	2.0	0.5	−0.3	−0.6
Denmark	−0.4	−0.1	−0.8	−0.5	−1.5	−0.6	−0.4	1.4	−0.2	−0.1
Iceland	12.6	1.6	1.2	1.1	0.9	1.3	1.4	0.8	−0.1	−0.2
Norway	3.9	4.9	3.7	3.8	4.5	4.6	5.4	0.4	−1.0	−1.6
Sweden	1.2	1.2	1.1	0.7	1.0	1.0	0.8	0.2	0.1	−0.1
Other European Advanced Economies	−2.2	−1.7	−1.4	−1.2	−2.2	−1.9	−1.2	0.6	0.5	0.0
Czech Republic	0.7	1.3	1.1	1.0	0.5	0.6	0.7	0.8	0.5	0.3
Israel	−2.1	−2.2	−3.2	−3.3	−3.2	−3.7	−3.7	1.0	0.6	0.4
San Marino	−0.3	−0.3	−0.3	−0.2	−0.3	−0.3	−0.3	0.0	0.0	0.1
Switzerland	0.1	0.0	0.4	0.4	−0.1	−0.1	0.0	0.1	0.5	0.4
United Kingdom	−3.0	−2.3	−1.8	−1.5	−2.9	−2.3	−1.4	0.6	0.5	−0.1
Emerging European Economies	−2.8	−1.7	−1.4	−1.4	−2.6	−2.1	−1.8	0.8	0.7	0.4
Central Europe	−2.3	−1.8	−1.9	−1.8	−2.7	−2.6	−2.6	0.9	0.7	0.8
Hungary	−1.8	−2.0	−2.1	−1.9	−2.6	−2.6	−2.3	0.5	0.5	0.4
Poland	−2.5	−1.7	−1.9	−1.8	−2.7	−2.7	−2.6	1.0	0.8	0.8
Southeastern European EU Member States	−1.3	−1.6	−2.7	−2.4	−2.2	−3.2	−3.2	0.6	0.5	0.7
Bulgaria	1.6	0.9	−1.0	−0.5	−0.4	−0.7	−0.3	1.3	−0.3	−0.2
Croatia	−0.9	0.6	−0.5	−0.3	−1.3	−1.0	−0.7	1.9	0.5	0.4
Romania	−2.4	−2.8	−3.6	−3.5	−3.0	−4.4	−4.5	0.2	0.8	1.1
Southeastern European Non-EU Member States	−1.4	−0.1	−0.9	−1.1	−1.6	−1.6	−1.5	1.5	0.6	0.4
Albania	−1.8	−1.4	−2.1	−1.9	−1.2	−2.0	−2.3	−0.1	−0.1	0.4
Bosnia and Herzegovina	0.3	1.9	1.3	0.2	−0.4	0.0	0.0	2.3	1.3	0.3
Kosovo[1]	−1.2	−1.2	−3.1	−3.8	−3.4	−3.7	−3.1	2.2	0.6	−0.7
Macedonia, FYR	−2.7	−2.7	−3.0	−3.1	−3.5	−3.6	−3.8	0.7	0.6	0.6
Montenegro	−6.2	−7.1	−2.9	−2.2	−6.4	−5.6	−4.9	−0.6	2.7	2.7
Serbia	−1.2	1.2	−0.3	−0.2	−1.0	−0.7	−0.6	2.1	0.4	0.4
Commonwealth of Independent States	−3.5	−1.5	−0.3	−0.2	−2.3	−1.7	−1.2	0.8	1.4	0.9
Belarus	−3.4	−1.7	−2.4	−3.0	−5.6	−3.8	−2.3	3.9	1.4	−0.7
Moldova	−2.1	−1.0	−3.2	−3.8	−3.2	−3.0	−3.0	2.2	−0.2	−0.8
Russia	−3.7	−1.5	0.0	0.1	−2.1	−1.5	−1.0	0.7	1.6	1.1
Ukraine	−2.2	−2.4	−2.5	−2.7	−2.9	−2.5	−2.3	0.4	0.0	−0.4
Turkey	−2.3	−2.3	−2.9	−3.2	−3.2	−2.4	−2.3	0.9	−0.5	−0.9
Memorandum										
World	−3.5	−3.3	−3.2	−3.3	−3.4	−3.0	−2.9	0.1	−0.2	−0.4
Advanced Economies	−2.6	−2.6	−2.6	−2.8	−2.7	−2.3	−2.1	0.2	−0.4	−0.6
Emerging Market and Developing Economies	−4.8	−4.4	−4.1	−4.0	−4.4	−4.2	−4.0	0.0	0.1	−0.1
European Union	−1.7	−1.1	−0.8	−0.7	−1.5	−1.2	−0.8	0.4	0.4	0.1
United States	−4.2	−4.6	−5.3	−5.9	−4.3	−3.7	−4.0	−0.2	−1.5	−1.9
China	−3.7	−4.0	−4.1	−4.3	−3.7	−3.7	−3.9	−0.2	−0.4	−0.4
Japan	−3.7	−4.2	−3.4	−2.8	−4.1	−3.3	−2.9	−0.1	−0.1	0.0

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

[1]Includes international financial institutions and privatization-proceeds-financed capital projects, which are not part of the "fiscal rule" definition.

Annex Table 1.10. General Government Gross Debt

(Percent of GDP)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	68.8	67.3	66.0	64.5	68.2	67.1	65.7	−0.9	−1.2	−1.2
Advanced European Economies	85.4	83.5	81.5	79.4	84.3	82.8	81.0	−0.8	−1.3	−1.6
Euro Area	88.9	86.6	84.2	81.7	87.4	85.6	83.5	−0.8	−1.3	−1.8
Austria	83.7	78.8	75.4	72.0	80.2	77.5	74.8	−1.4	−2.2	−2.9
Belgium	105.7	103.2	101.0	99.1	104.3	102.9	101.5	−1.1	−1.9	−2.4
Cyprus	107.1	99.3	97.0	89.5	105.5	102.0	96.4	−6.3	−5.1	−6.9
Estonia	9.4	8.8	8.5	8.1	8.7	8.8	8.9	0.1	−0.3	−0.8
Finland	63.0	61.4	60.5	59.6	63.3	62.6	61.8	−1.9	−2.0	−2.3
France	96.6	97.0	96.3	96.2	96.8	97.0	97.0	0.1	−0.6	−0.8
Germany	68.2	64.1	59.8	55.7	65.0	61.8	58.7	−0.9	−2.0	−2.9
Greece	183.5	181.9	191.3	181.8	180.2	184.5	177.9	1.7	6.8	3.8
Ireland	72.9	68.5	67.1	64.9	69.3	67.8	66.2	−0.8	−0.7	−1.4
Italy	132.0	131.5	129.7	127.5	133.0	131.4	128.8	−1.6	−1.7	−1.2
Latvia	37.4	34.8	32.9	31.9	35.6	33.2	31.8	−0.7	−0.3	0.1
Lithuania	40.2	36.5	34.2	31.4	37.5	35.0	32.9	−1.0	−0.9	−1.5
Luxembourg	20.8	23.0	22.9	22.8	18.6	17.5	16.6	4.4	5.5	6.2
Malta	56.2	52.6	48.6	45.9	55.9	53.6	50.3	−3.3	−5.0	−4.4
Netherlands	61.8	56.7	53.5	50.9	57.4	54.2	51.2	−0.7	−0.7	−0.3
Portugal	129.9	125.6	121.2	117.5	125.7	122.5	119.8	−0.1	−1.2	−2.3
Slovak Republic	51.8	50.4	49.0	46.6	50.9	49.7	47.8	−0.5	−0.7	−1.2
Slovenia	78.4	75.4	72.1	69.8	75.0	73.9	73.3	0.4	−1.8	−3.5
Spain	99.0	98.4	96.7	95.1	98.7	97.2	95.8	−0.3	−0.5	−0.7
Nordic Economies	39.5	38.5	37.1	35.3	36.8	35.6	34.1	1.7	1.5	1.2
Denmark	37.7	36.4	35.9	35.1	37.8	37.0	35.9	−1.4	−1.1	−0.9
Iceland	52.7	40.9	38.4	34.9	41.2	39.0	35.5	−0.3	−0.6	−0.6
Norway	36.7	36.7	36.7	36.7	33.1	33.1	33.1	3.5	3.5	3.5
Sweden	42.2	40.9	38.0	34.4	38.8	36.5	33.8	2.1	1.5	0.7
Other European Advanced Economies	75.9	74.7	73.9	73.2	76.5	76.3	75.4	−1.8	−2.5	−2.2
Czech Republic	36.8	34.7	32.9	31.3	34.5	32.5	30.4	0.1	0.4	0.9
Israel	62.3	61.0	61.6	61.4	62.7	63.6	64.1	−1.7	−2.0	−2.7
San Marino	22.5	56.6	55.5	54.6	23.2	22.8	22.6	33.4	32.7	32.0
Switzerland	43.3	42.8	41.9	41.1	42.8	41.7	40.7	0.0	0.2	0.4
United Kingdom	88.2	87.0	86.3	85.9	89.5	89.7	88.9	−2.5	−3.4	−3.0
Emerging European Economies	31.9	31.7	32.1	32.3	32.8	32.8	32.7	−1.1	−0.7	−0.4
Central Europe	58.1	55.2	54.2	53.1	58.0	57.4	56.9	−2.8	−3.2	−3.8
Hungary	73.3	69.9	67.4	65.9	72.9	71.3	70.2	−3.0	−3.9	−4.4
Poland	54.1	51.4	50.8	49.8	54.2	53.8	53.5	−2.8	−3.0	−3.7
Southeastern European EU Member States	42.8	39.9	40.0	40.2	41.9	42.2	42.8	−2.0	−2.2	−2.7
Bulgaria	27.4	23.9	23.6	22.9	24.6	24.2	23.4	−0.7	−0.6	−0.5
Croatia	82.7	78.4	75.5	72.6	81.9	79.6	76.9	−3.5	−4.2	−4.4
Romania	39.1	36.9	37.8	39.0	38.9	40.2	42.0	−2.1	−2.3	−3.0
Southeastern European Non-EU Member States	59.1	53.5	52.4	50.5	58.2	56.8	54.8	−4.7	−4.4	−4.3
Albania	73.3	71.2	71.3	68.5	70.8	68.2	65.2	0.4	3.2	3.3
Bosnia and Herzegovina	44.0	41.0	39.3	38.4	42.3	40.9	39.4	−1.3	−1.6	−1.0
Kosovo	19.6	20.9	22.4	24.9	23.5	25.4	25.9	−2.5	−3.0	−1.0
Macedonia, FYR	39.5	39.3	41.2	42.2	39.7	41.6	43.0	−0.4	−0.4	−0.8
Montenegro	66.4	67.5	69.7	66.5	71.6	73.6	74.1	−4.1	−3.9	−7.6
Serbia	73.1	61.5	58.5	55.1	70.9	67.9	64.4	−9.5	−9.4	−9.3
Commonwealth of Independent States	22.5	23.5	24.8	25.6	24.6	24.6	24.7	−1.1	0.2	0.9
Belarus	53.5	51.0	49.5	49.9	58.8	56.8	56.7	−7.8	−7.3	−6.7
Moldova	42.1	37.7	39.8	42.0	41.3	40.5	41.1	−3.6	−0.8	0.9
Russia	15.7	17.4	18.7	19.5	17.4	17.7	18.2	0.1	1.0	1.3
Ukraine	81.2	75.6	78.4	76.9	86.2	83.5	77.9	−10.6	−5.1	−1.0
Turkey	28.3	28.5	27.8	27.9	27.9	28.0	27.5	0.6	−0.2	0.3
Memorandum										
World	83.1	82.4	82.1	81.9	82.8	82.4	81.9	−0.4	−0.3	0.0
Advanced Economies	105.9	104.4	102.9	102.2	105.3	104.2	103.1	−0.9	−1.3	−1.0
Emerging Market and Developing Economies	46.9	49.0	51.0	52.5	48.3	49.9	51.2	0.6	1.2	1.3
European Union	85.5	83.2	81.1	78.9	84.2	82.6	80.7	−1.0	−1.5	−1.8
United States	107.2	107.8	108.0	109.4	108.1	107.8	107.9	−0.4	0.2	1.5
China	44.3	47.8	51.2	54.4	47.6	50.8	53.9	0.2	0.4	0.5
Japan	235.6	236.4	236.0	234.2	240.3	240.0	238.5	−3.9	−4.1	−4.3

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

Annex Table 1.11. Current Account

(Percent of GDP)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe	2.0	2.3	2.5	2.4	2.4	2.3	2.3	−0.1	0.1	0.1
Advanced European Economies	2.5	2.9	2.9	2.9	2.9	2.9	2.8	0.0	0.0	0.1
Euro Area	3.4	3.5	3.2	3.2	3.1	3.0	2.9	0.5	0.2	0.3
Austria	2.1	2.1	2.5	2.0	2.1	2.2	2.3	0.0	0.4	−0.3
Belgium	0.1	0.1	0.3	0.2	−0.3	0.0	0.1	0.4	0.3	0.1
Cyprus	−4.9	−4.7	−4.1	−4.6	−3.8	−2.7	−2.8	−0.9	−1.4	−1.8
Estonia	1.9	3.2	2.0	0.7	1.8	1.4	0.5	1.4	0.6	0.1
Finland	−1.4	0.7	1.4	1.9	0.4	0.4	0.5	0.3	1.1	1.4
France	−0.9	−1.4	−1.3	−0.9	−1.1	−0.8	−0.5	−0.3	−0.6	−0.4
Germany	8.5	8.0	8.2	8.2	8.1	7.7	7.5	−0.1	0.5	0.8
Greece	−1.1	−0.8	−0.8	−0.6	−0.2	−0.1	−0.1	−0.6	−0.7	−0.4
Ireland	3.3	12.5	9.8	8.7	3.4	3.5	3.6	9.2	6.3	5.1
Italy	2.7	2.9	2.6	2.2	2.7	2.3	2.0	0.1	0.3	0.2
Latvia	1.4	−0.8	−1.9	−2.2	−0.3	−1.5	−1.6	−0.4	−0.4	−0.6
Lithuania	−1.1	1.0	−0.1	−0.6	−1.6	−1.4	−1.6	2.6	1.3	1.1
Luxembourg	4.8	5.5	5.4	5.3	4.7	4.9	5.2	0.8	0.4	0.1
Malta	6.5	10.2	9.9	9.5	8.9	8.8	8.4	1.2	1.1	1.1
Netherlands	8.4	9.8	9.6	8.9	10.0	10.0	9.6	−0.2	−0.4	−0.8
Portugal	0.6	0.5	0.2	−0.1	0.4	0.3	−0.1	0.0	−0.1	−0.1
Slovak Republic	−1.5	−1.5	−0.3	0.5	0.3	0.2	0.5	−1.8	−0.5	0.0
Slovenia	5.2	6.5	5.7	5.2	5.0	4.9	4.4	1.5	0.8	0.9
Spain	1.9	1.7	1.6	1.7	1.9	2.0	2.0	−0.2	−0.4	−0.3
Nordic Economies	4.9	4.9	5.2	5.1	5.3	5.2	5.0	−0.4	0.0	0.1
Denmark	7.3	7.6	7.6	7.2	7.3	7.0	6.7	0.3	0.6	0.5
Iceland	7.7	3.6	3.3	2.6	6.2	6.1	5.1	−2.6	−2.8	−2.5
Norway	3.8	5.1	6.1	6.5	5.5	5.7	5.9	−0.4	0.4	0.6
Sweden	4.2	3.2	3.1	3.1	3.9	3.7	3.5	−0.8	−0.6	−0.5
Other European Advanced Economies	−2.0	−0.8	−0.6	−0.4	−0.2	−0.2	0.0	−0.6	−0.4	−0.4
Czech Republic	1.1	1.1	0.3	0.4	0.6	0.1	−0.2	0.6	0.2	0.6
Israel	3.5	3.0	2.6	2.7	4.1	3.1	3.3	−1.1	−0.5	−0.6
San Marino	...	...	...	...	...	...	...	...	...	...
Switzerland	9.4	9.3	9.7	9.4	9.9	9.4	9.2	−0.6	0.2	0.2
United Kingdom	−5.8	−4.1	−3.7	−3.4	−3.6	−3.3	−2.9	−0.5	−0.5	−0.5
Emerging European Economies	−0.4	−0.4	0.2	−0.1	−0.3	−0.3	−0.1	−0.1	0.5	0.1
Central Europe	1.1	0.8	−0.2	−0.5	0.2	−0.1	−0.6	0.6	0.0	0.2
Hungary	6.0	3.6	2.5	2.4	4.8	4.2	3.2	−1.2	−1.7	−0.7
Poland	−0.3	0.0	−0.9	−1.2	−1.0	−1.2	−1.6	1.0	0.3	0.4
Southeastern European EU Member States	−0.5	−0.8	−1.5	−1.7	−0.9	−1.1	−1.3	0.0	−0.4	−0.4
Bulgaria	2.3	4.5	3.0	2.3	2.5	1.9	1.5	2.0	1.1	0.8
Croatia	2.5	3.7	3.0	2.1	3.8	3.0	2.0	−0.1	0.0	0.1
Romania	−2.1	−3.5	−3.7	−3.7	−3.0	−2.9	−2.9	−0.5	−0.8	−0.8
Southeastern European Non-EU Member States	−5.2	−5.7	−5.7	−5.6	−5.9	−5.7	−5.6	0.2	0.0	−0.1
Albania	−7.6	−7.2	−6.7	−6.7	−9.2	−8.2	−7.7	2.1	1.6	1.0
Bosnia and Herzegovina	−5.1	−5.2	−5.9	−6.5	−4.3	−4.2	−4.3	−0.9	−1.7	−2.2
Kosovo	−8.9	−8.7	−8.9	−8.6	−11.0	−11.3	−10.9	2.3	2.5	2.3
Macedonia, FYR	−2.7	−1.3	−1.5	−1.8	−2.3	−2.5	−2.8	1.0	1.0	1.0
Montenegro	−18.1	−18.9	−19.0	−17.8	−20.2	−21.2	−19.7	1.2	2.2	1.9
Serbia	−3.1	−4.6	−4.5	−4.1	−4.0	−3.9	−3.8	−0.6	−0.6	−0.3
Commonwealth of Independent States	1.4	2.1	3.7	3.1	2.1	2.5	3.0	−0.1	1.2	0.2
Belarus	−3.5	−1.8	−2.5	−2.7	−5.3	−4.6	−4.0	3.6	2.1	1.4
Moldova	−4.0	−4.7	−3.7	−4.7	−4.0	−4.0	−4.8	−0.7	0.4	0.2
Russia	2.0	2.6	4.5	3.8	2.8	3.2	3.6	−0.2	1.3	0.2
Ukraine	−4.1	−3.7	−3.7	−3.5	−3.3	−3.0	−2.3	−0.4	−0.6	−1.2
Turkey	−3.8	−5.5	−5.4	−4.8	−4.6	−4.6	−4.4	−0.9	−0.8	−0.4
Memorandum										
World	0.3	0.5	0.4	0.2	0.4	0.3	0.2	0.1	0.1	0.1
Advanced Economies	0.7	0.8	0.7	0.5	0.8	0.7	0.7	0.0	−0.1	−0.1
Emerging Market and Developing Economies	−0.3	−0.1	−0.1	−0.2	−0.3	−0.4	−0.5	0.2	0.4	0.3
European Union	2.0	2.4	2.4	2.4	2.4	2.4	2.3	0.0	0.0	0.1
United States	−2.4	−2.4	−3.0	−3.4	−2.4	−2.6	−2.7	0.0	−0.4	−0.7
China	1.8	1.4	1.2	1.2	1.4	1.2	0.9	0.0	0.0	0.2
Japan	3.8	4.0	3.8	3.7	3.6	3.8	3.7	0.4	0.0	0.1

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

Annex Table 1.12. Net Financial Assets

(Percent of GDP)

		April 2018 WEO			October 2017 WEO			Difference		
	2016	2017	2018	2019	2017	2018	2019	2017	2018	2019
Europe										
Advanced European Economies	3.8	5.5	6.4	8.3	7.2	9.1	11.1	−1.8	−2.7	−2.8
Euro Area	9.2	11.1	11.8	13.8	13.4	15.2	17.3	−2.3	−3.4	−3.5
Austria	−0.7	2.1	4.7	8.0	−0.5	3.2	6.6	2.6	1.4	1.4
Belgium	5.4	9.2	10.8	12.3	12.1	13.2	14.9	−2.9	−2.4	−2.7
Cyprus	49.2	47.4	43.2	42.3	45.5	43.1	42.3	1.9	0.1	0.0
Estonia	−127.8	−123.8	−121.3	−118.6	−121.3	−118.5	−116.8	−2.6	−2.8	−1.9
Finland	−35.3	−31.7	−25.3	−22.2	−33.5	−26.9	−23.0	1.8	1.6	0.8
France	−2.3	−2.9	−1.3	0.7	7.3	7.5	7.8	−10.2	−8.8	−7.2
Germany	−15.0	−17.7	−17.8	−18.2	−17.6	−17.2	−17.1	−0.1	−0.6	−1.1
Greece	51.8	62.0	61.2	66.3	54.5	58.3	63.6	7.4	2.9	2.7
Ireland	−132.7	−138.8	−129.4	−125.8	−140.5	−130.8	−126.8	1.8	1.5	1.0
Italy	−167.8	−172.0	−148.6	−133.7	−172.0	−154.3	−143.8	0.0	5.8	10.1
Latvia	−9.4	−7.2	−4.0	−1.6	−12.6	−9.5	−7.1	5.4	5.5	5.6
Lithuania	−56.1	−59.2	−55.1	−53.2	−55.0	−47.5	−43.1	−4.2	−7.6	−10.1
Luxembourg	−41.1	−39.1	−34.3	−31.3	−43.1	−39.9	−38.7	4.0	5.7	7.4
Malta	33.1	40.2	41.5	44.2	25.9	27.6	30.1	14.4	13.9	14.1
Netherlands	45.3	44.8	44.3	44.0	46.9	46.6	46.2	−2.2	−2.2	−2.2
Portugal	64.5	72.9	79.8	86.2	73.8	81.3	88.9	−0.9	−1.5	−2.6
Slovak Republic	−106.1	−105.7	−100.1	−95.5	−98.4	−93.3	−89.2	−7.3	−6.8	−6.3
Slovenia	−59.5	−66.8	−59.2	−53.6	−55.6	−48.9	−44.2	−11.2	−10.3	−9.5
Spain	−32.4	−28.8	−17.6	−8.8	−30.7	−23.4	−18.1	1.9	5.8	9.3
Nordic Economies	−79.9	−82.5	−74.0	−69.3	−83.5	−74.7	−69.5	1.0	0.7	0.2
Denmark	76.2	88.2	87.2	87.6	84.4	82.4	82.8	3.7	4.8	4.8
Iceland	52.3	61.3	64.7	70.1	62.9	65.8	70.7	−1.6	−1.1	−0.6
Norway	4.3	5.5	6.6	8.6	3.9	9.9	14.2	1.6	−3.2	−5.6
Sweden	199.2	221.6	214.6	210.9	197.5	193.4	190.0	24.1	21.3	20.9
Other European Advanced Economies	4.7	9.8	10.9	12.1	19.2	19.8	21.2	−9.4	−9.0	−9.1
Czech Republic	18.6	15.0	10.2	8.4	35.4	32.5	30.8	−20.4	−22.2	−22.4
Israel	−23.5	−19.8	−15.3	−12.7	−25.8	−21.5	−19.6	6.0	6.2	6.9
San Marino	34.3	34.7	35.7	37.5	36.0	38.4	41.1	−1.4	−2.7	−3.6
Switzerland	....	...	...	...	...	...	...	...	...	...
United Kingdom	114.8	123.2	110.6	108.2	112.8	110.0	112.4	10.4	0.6	−4.2
Emerging European Economies	−4.4	−12.8	−16.2	−19.2	19.7	15.8	12.3	−32.5	−32.0	−31.4
Central Europe	−24.0	−22.2	−19.8	−19.3	−23.7	−21.3	−19.7	1.6	1.4	0.4
Hungary	−58.5	−49.8	−42.2	−39.5	−53.5	−46.7	−44.0	3.7	4.5	4.5
Poland	−62.9	−48.6	−38.0	−30.1	−52.2	−40.3	−32.6	3.6	2.3	2.5
Southeastern European EU Member States	−57.3	−50.1	−43.3	−41.9	−53.8	−48.3	−46.8	3.7	5.1	4.9
Bulgaria	−50.0	−53.4	−48.6	−46.2	−55.8	−50.1	−47.2	2.4	1.5	1.0
Croatia	−44.8	−40.7	−32.0	−26.3	−47.0	−39.5	−34.2	6.3	7.5	8.0
Romania	−66.5	−85.5	−72.2	−65.7	−86.3	−75.6	−69.2	0.8	3.4	3.5
Southeastern European Non-EU Member States	−47.0	−48.6	−47.1	−46.6	−50.3	−46.5	−45.2	1.7	−0.6	−1.4
Albania	−72.3	−75.5	−72.7	−72.6	−74.6	−73.6	−73.4	−0.8	0.8	0.8
Bosnia and Herzegovina	−57.1	−55.9	−51.9	−52.9	−58.8	−59.6	−61.6	2.8	7.7	8.7
Kosovo	−57.1	−64.3	−62.0	−63.3	−56.9	−56.2	−57.0	−7.4	−5.8	−6.3
Macedonia, FYR	0.0	−11.0	−11.7	−14.6	−12.3	−13.2	−17.2	1.3	1.5	2.6
Montenegro	−49.8	−62.6	−58.7	−57.6	−59.2	−57.6	−57.2	−3.4	−1.1	−0.4
Serbia	...	...	...	...	...	...	...	...	...	...
Commonwealth of Independent States	−102.8	−101.3	−98.2	−96.9	−102.8	−100.4	−98.2	1.5	2.2	1.4
Belarus	9.7	13.2	14.7	16.3	11.7	15.5	18.5	1.5	−0.9	−2.2
Moldova	−85.6	−76.5	−72.8	−72.7	−83.1	−85.8	−86.3	6.6	13.0	13.5
Russia	−52.4	−45.8	−37.4	−32.8	−73.7	−63.2	−54.0	27.8	25.8	21.3
Ukraine	17.3	20.4	21.6	23.8	19.2	23.5	27.0	1.2	−1.9	−3.2
Turkey	−41.4	−38.2	−38.7	−39.9	−39.7	−39.7	−38.9	1.5	0.9	−1.0
Memorandum	−42.4	−53.4	−55.2	−57.0	−52.6	−53.4	−54.7	−0.8	−1.8	−2.4
World	...	...	...	...	...	...	...	...	...	...
Advanced Economies	−2.7	−0.9	−0.5	0.1	−0.5	0.4	1.2	−0.3	−0.8	−1.1
Emerging Market and Developing Economies	...	...	...	...	...	...	...	...	...	...
European Union	−3.4	−2.1	−0.3	2.1	1.0	3.5	5.7	−3.1	−3.8	−3.6
United States	−44.7	−40.5	−41.4	−42.9	−43.8	−44.6	−45.6	3.4	3.2	2.7
China	17.4	15.1	14.1	13.9	16.5	16.2	15.9	−1.4	−2.1	−1.9
Japan	60.9	63.8	64.6	66.8	65.9	68.1	70.8	−2.1	−3.5	−4.0

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

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2. European Wage Dynamics and Labor Market Integration

Employment is notably higher across Europe, and unemployment substantially down—there are even labor shortages in some countries. Yet wage growth is stubbornly low in long-standing European Union (EU) countries (EU15), even if it has picked up notably in newer EU members.[1] *The source of these dynamics is explored in this chapter, which looks at the role of labor market slack, inflation, and productivity, as well as crisis legacies. Europe's cross-country varied but highly integrated economy—including for labor—gives a glimpse of possible spillovers across countries.*

An econometric analysis shows that wage developments in long-standing EU members and the newer EU members are driven by different factors. In the EU15, wages typically respond very slowly to changes in unemployment and are closely related to inflation and inflation expectations. Viewed against this evidence, current wage developments are not unusual. Rather, inflation and inflation expectations are unusually low. In the newer EU members, by contrast, the econometric evidence suggests that wage growth responds very quickly to changes in unemployment. This, together with lower importance of inflation and inflation expectations, explains why wage growth in these states is now running much higher. Other factors, such as cross-country labor market spillovers, also play a role in wage growth. For the EU15, this role is smaller than that of labor market slack and inflation. For the newer EU members, it is smaller than the role of slack but larger than that of inflation.

The chapter also documents spillovers between labor markets. Declines in both domestic and foreign slack contributed to the recent higher wage growth in newer EU members. The spillovers from euro area unemployment and wages to wages in newer EU members are likely the result of actual and potential emigration's effects on domestic labor supply and the integration of these countries in pan-European value chains. Also, wages in several old EU members appear affected by wages in Germany.

Conditions for wage growth to pick up in the EU15, this analysis implies, are improving thanks to declining slack in countries and in the region. Some recent wage negotiations have yielded significant increases. Nonetheless, sustained higher wage increases depend to a large extent on inflation and inflation expectations. Continued European Central Bank commitment to raising euro area inflation and inflation expectations is essential for durably higher wage growth.

In the newer EU members, higher wage increases are boosting people's incomes, but competitiveness could come under pressure, requiring reforms to ramp up skills and support labor force participation. Chapter 1 cautions newer EU member central banks with their own currencies to be alert to the inflation risks of higher wage growth and to bear in mind that raising policy rates could trigger capital inflows and exchange rate appreciation. Countries whose fiscal deficits are still relatively large given the state of the economic cycle should strive for more consolidation to help alleviate some exchange rate pressure.

There have been dramatic improvements in labor market conditions in the European Union in recent years. Employment has increased by 12.7 million people since early 2013, exceeding precrisis peaks by 2.2 percent at the end of 2017. In parallel, unemployment fell from 11 percent in early 2013 to 7.3 percent in late 2017.

The chapter was prepared by a staff team comprising Vizhdan Boranova, Jiaqian Chen, Dilyana Dimova, Christian Ebeke, Raju Huidrom, Nemanja Jovanovic, Li Lin, Aiko Mineshima, Jean-Marc Natal, Faezeh Raei, Tiberiu Scutaru, Jesse Siminitz, Yan Sun, Peichu Xie, Sophia Zhang. The team was led by Craig Beaumont and Emil Stavrev. Laura Papi provided useful advice and comments. Lian Veluz provided administrative support.

[1]Newer EU members (NMS) are Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia. EU15 members are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. Cyprus, Ireland, and Malta are not included in this analysis because problems with GDP data distort labor productivity numbers.

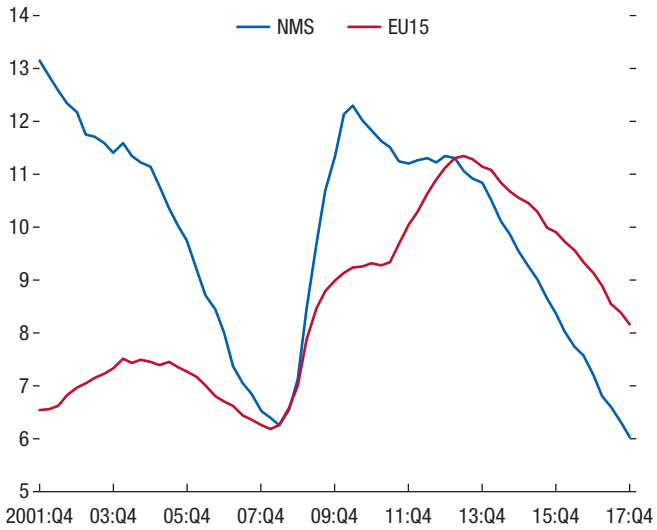
Unemployment dropped faster in the newer EU member states, falling by a total of 5 percentage points on average, yet the 3 percentage point decline in the EU15 average rate is also substantial (Figure 2.1).

However, nominal wage rises remain stubbornly low in the EU15 even as they are picking up in the newer members. Average EU15 wage increases have remained below 2 percent since 2012 and, at 1.8 percent in the fourth quarter of 2017, were only half of precrisis (2001–08) average growth rates (Figure 2.2). In sharp contrast, average wage increases in newer member states accelerated to 6¾ percent in the fourth quarter of 2017, from 3½ percent in 2014, led by the Baltics and southern European countries; central European country wages have picked up more recently. This divergence between the EU15 and newer EU members is also evident in real product wages (deflated by the GDP deflator): growth averaged ½ percent in the EU15 in 2017, little changed from 2014, but surged from 3 to 5¼ percent year over year during the same period in the newer members.[2]

This chapter explores the drivers of these recent divergent wage dynamics, including the potential role of EU integration. As recently analyzed in Chapter 2 of the October 2017 *World Economic Outlook* (WEO), which focused on regions with low wage growth, the bulk of the wage slowdown in advanced economies can be accounted for by reductions in inflation expectations and trend productivity growth, together with expanded measures of labor market slack.[3] The WEO noted that domestic conditions driving wages could have a significant common component—given economic linkages between countries—and that there could also be direct spillovers on wage setting in other countries (see Box 2.2).

The main contribution of this chapter is to discuss wage dynamics in the EU15 and newer

Figure 2.1. Average Unemployment Rates
(Percent)



Source: Eurostat, Labor Force Survey.
Note: Footnote 1 defines EU15 and NMS.

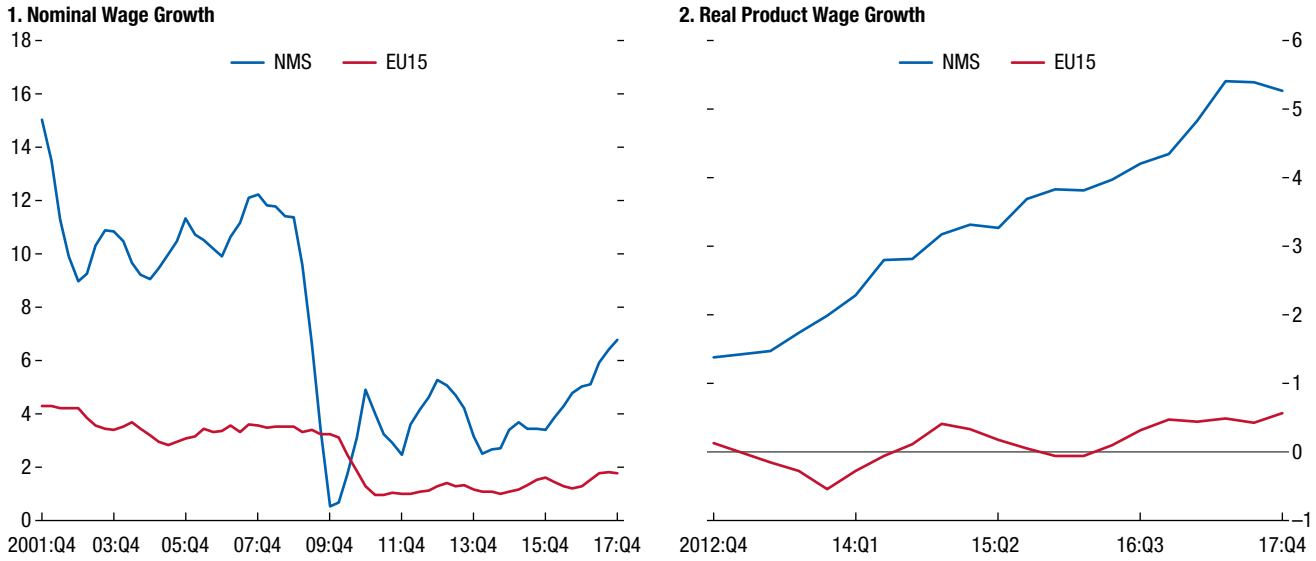
EU members, explore the differences between the two groups, and look at spillovers. The chapter further analyzes the potential need to supplement unemployment with other indicators when assessing labor market slack, while controlling for inflation expectations in a wage Phillips curve. In view of the potential for wages to temporarily be away from equilibrium, especially given Europe's double-dip recession and nominal wage rigidities, the chapter also uses an error correction model (ECM) for wage analysis.

The chapter first describes recent wage developments in the EU15 and newer member states. Trends in EU labor market arrangements are described in the next section of the chapter, which also assesses whether other slack indicators might complement unemployment. The chapter then summarizes the integration of goods and labor markets in the European Union, with a preliminary assessment of the implications for the sensitivity of wages to global shocks. The analysis brings these factors together in a more formal analysis of wage dynamics, starting from the widely used Phillips curve model, evaluating an ECM alternative, and then exploring spillovers via slack, wages, and migration. Wages in the newer

[2]The GDP deflator is used to calculate real wages in this analysis, because it drives the nominal value added available for distribution to labor and capital and allows for the comparison of real wages with labor productivity.

[3]Chapter 2 of the October 2017 WEO.

Figure 2.2. Wage Growth
(Year-over-year percent change, four-quarter averages)



Sources: Eurostat, Labor Cost Index, Wages and Salaries; and IMF staff calculations.
Note: Footnote 1 defines EU15 and NMS.

EU members are found to be more flexible in relation to domestic labor market slack and more responsive to external labor market conditions. Next, the chapter examines any changes in the formation of wages and inflation expectations and the pass-through of wages to inflation. The final section of the chapter puts forth conclusions and discusses implications for policies.

Recent European Wage Developments

Slowing wage growth across EU15 countries has been accompanied by lower inflation and productivity growth (Figure 2.3). Average nominal wage growth has remained around 1½ percent since 2011, down from just over 3 percent during 2003–09.[4] This decline coincides with lower inflation in output prices (down 1 percentage point to about 1¼ percent in recent years) and slower trend productivity growth (down ½ percentage point to 0.6 percent). Average real wage growth has also slowed ½ percentage point to about 0.4 percent since 2011.

Part of the EU15 wage moderation reflects an unwinding of a wage overhang that emerged after the global financial crisis. Panel 6 in Figure 2.3 shows cumulative growth in real wages relative to the trend level of labor productivity.[5] After some decline in the first half of the 2000s, real wages were broadly stable relative to trend labor productivity during 2005–08.[6] The global financial crisis led to a 2 percentage point jump in this ratio during 2009 as nominal wage rises continued at almost 3½ percent despite the sharp fall in inflation and slowing trend productivity. Low real wage increases in the years that followed gradually unwound this overhang. The real wage level returned to its 2005–08 average relative to productivity by 2017, at a time when unemployment was just ½ percentage

[4]Nominal wages are labor compensation (including employers' social security contributions) per employee hour worked.

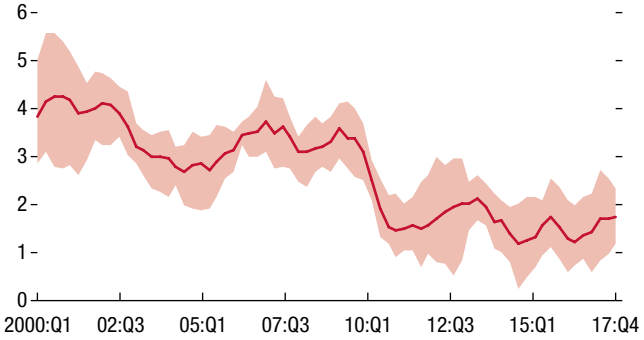
[5]Labor productivity is GDP per employee hour worked. The trend in labor productivity is a more useful benchmark because actual productivity is subject to significant cyclical and temporary volatility, whereas wages are relatively smooth.

[6]This earlier decline was largest and most prolonged in Germany, but there were also adjustments in Austria, Belgium, the Netherlands, and Sweden, along with Portugal and Spain.

Figure 2.3. EU15: Wages and Traditional Drivers

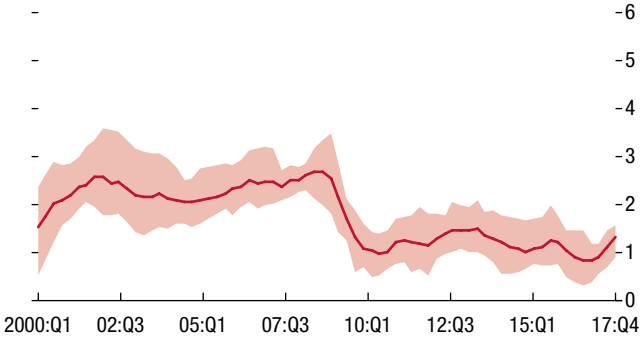
Wage rises slowed sharply in 2010, to average 1½ percent since 2011, down from just over 3 percent in 2003–09 ...

1. Nominal Wage Growth
(Year-over-year percent change, four-quarter average)



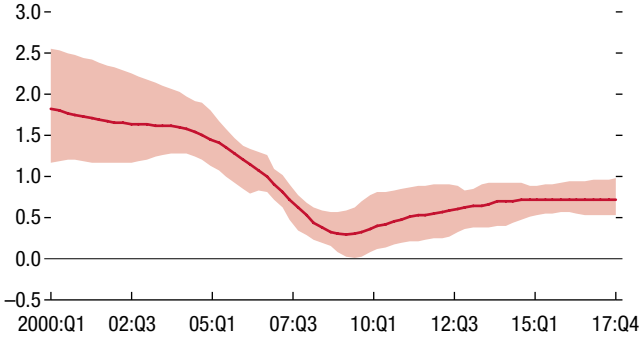
... after a sharp deceleration in price inflation during 2009, to about 1–1½ percent from 2–2½ percent.

2. GDP Deflator Inflation
(Year-over-year percent change, four-quarter average)



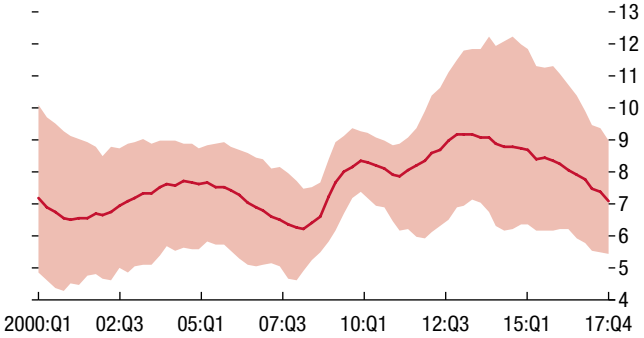
Growth in the estimated trend in labor productivity also slowed substantially ...

3. Trend Labor Productivity
(Year-over-year percent change, four-quarter average)



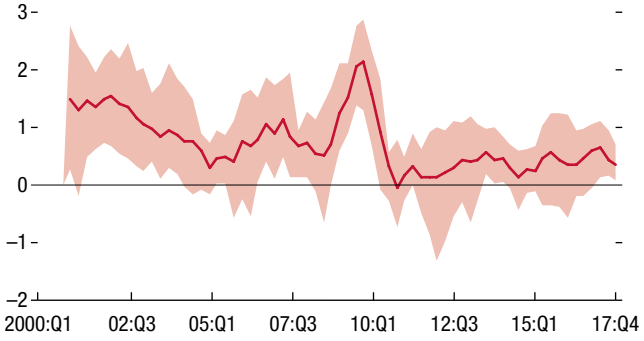
... while unemployment rose in 2008–09 and in 2011–13, before declining from 2014 back toward precrisis levels.

4. Unemployment Rate
(Percent, seasonally adjusted)



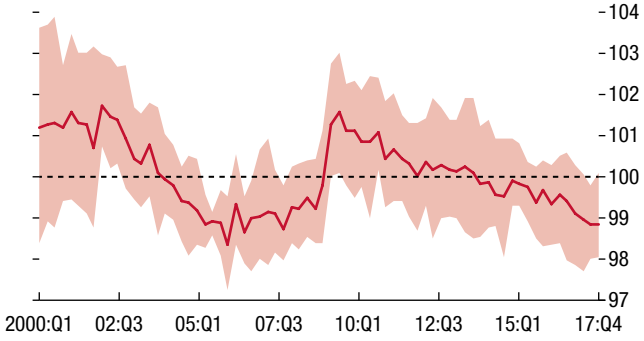
Real wages rose in 2009–10 as nominal wages slowed later than inflation. Subsequently, real wage growth was very low for some years, firming to about ½ percent by 2015–17.

5. Real Product Wage Growth
(Year-over-year percent change, four-quarter average)



The cumulative impact was a sharp rise in real wages relative to trend productivity during 2009, which gradually unwound, to reach 2006 levels in 2017.

6. Real Wage/Trend Labor Productivity
(Index; average for 2000–17 = 100)



Sources: Eurostat; Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: EU15 = long-standing EU members. The average is a trimmed mean to exclude some outliers while avoiding the volatility of the median. The bands are for the 25th and 75th percentiles.

point higher than in 2005–08. Country cases of slow wage growth also display a correction of wage overhangs, although a wage freeze played a significant role in Belgium in recent years. For euro area countries, the direction of wages since the global financial crisis has been broadly consistent with rebalancing of their external positions, although further adjustments will be appropriate in some cases, as discussed in Box 2.1.

In contrast, wage increases in newer EU members have picked up strongly in recent years as unemployment has fallen to low levels (Figure 2.4). A more rapid decline in nominal wage increases since the global financial crisis ensured that there was no lasting wage overhang in the newer members. Nominal wage growth of about 3½ percent in 2011–15 kept real wages stable relative to productivity, at about 1 percent below historical norms—reflecting the period of high unemployment in the newer members following the global financial crisis. But nominal wage growth picked up rapidly in 2016–17, hitting close to 6 percent year over year on average in 2017. This wage acceleration followed a steeper decline in unemployment, averaging 5 percentage points since the end of 2012, bringing unemployment down to an average of 6 percent by the end of 2017, in line with precrisis lows.

As a result, real wages in newer EU members have risen relative to trend productivity to levels comparable to precrisis peaks, when unemployment was similarly low. Inflation has risen in recent years, but only modestly, so that real wage gains also surged to 4.1 percent year over year in 2017, well above estimates of trend productivity growth, which averaged about 2 percent. The cumulative effect is that the average ratio of real wages to trend labor productivity was roughly 2½ percent higher than its historical average in 2017, a level exceeded only in mid-2008 for just two quarters.

Labor markets are notably tighter in newer EU member states, consistent with wage divergence from the EU15. Both unemployment gaps and surveys of labor shortages indicate tighter labor market conditions in the newer members (Figure 2.5).[7] Slack in those countries is estimated to have largely disappeared by about mid-2015, which is consistent with the timing of the wage acceleration in recent years. Labor shortages exceed precrisis peaks in the newer members—and are especially strong in industry, which may help explain the recent very strong pace of real wage growth in these countries. Yet other domestic factors and perhaps spillovers from the EU15 labor market recovery could also be at work.

Typical lags in adjustment between labor slack and wages could also help explain EU15 wage moderation in recent years. In EU15 countries, unemployment only recently fell in line with the estimated nonaccelerating inflation rate of unemployment (NAIRU). Analysis of the correlations between real wages (as deviations from trend productivity) and unemployment gaps finds that these correlations are initially higher in newer EU members and that they peak after six quarters; in EU15 countries these correlations start lower and peak after eight quarters (Figure 2.6).

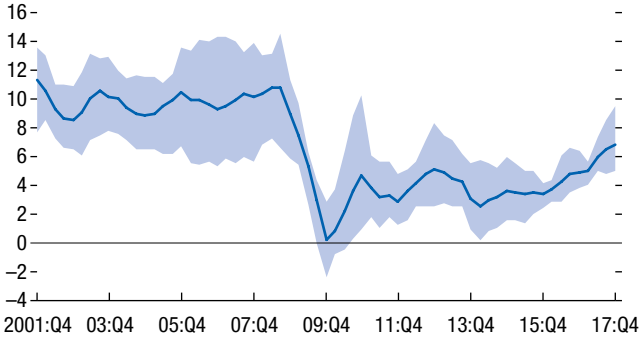
Low EU15 nominal wage growth overall is not clearly underpinned by unusual real wage behavior, but the drivers of rapid wage increases in the newer EU members clearly merit further analysis. After allowing for some correction of earlier wage overhangs and for typical lags in the wage response to declining unemployment, EU15 real wages do not as yet appear out of line with developments in productivity and unemployment. This suggests a need to explore the role of inflation and inflation expectations in driving low nominal wage growth, but it also leaves scope for cross-border spillovers to contribute to wage moderation and low inflation. In newer members, low domestic slack is consistent with the strength of wages, but the role of other factors, such as spillovers from EU15 labor markets, still merits analysis given the recent noticeable pickup in EU15 employment growth. Together with appreciably higher wages, this makes the EU15 an attractive destination for

[7]Unemployment gaps are subject to uncertainty around the NAIRU, which is based on Organisation for Economic Co-operation and Development (OECD) estimates for OECD members and Hodrick-Prescott (HP) filters for other countries. Analytical results are similar when applying an HP filter in all cases.

Figure 2.4. Newer Member States: Wages and Traditional Drivers

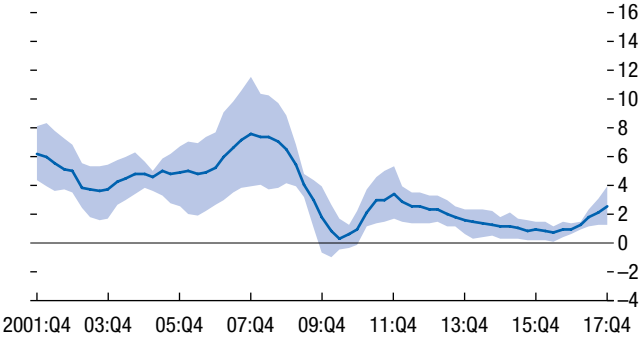
Wage rises slowed sharply in 2009, to about 3½ percent in 2011–15, but had accelerated to 6½ percent by 2017.

1. Nominal Wage Growth
(Year-over-year percent change, four-quarter average)



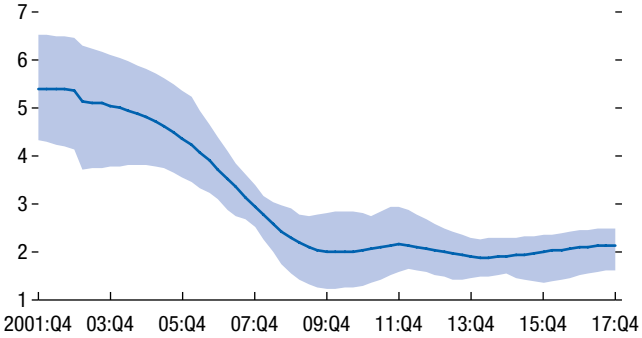
Inflation has moved to a lower level since the global financial crisis, to as low as 1 percent in 2015–16, but has firmed to 2 percent recently.

2. GDP Deflator Inflation
(Year-over-year percent change, four-quarter average)



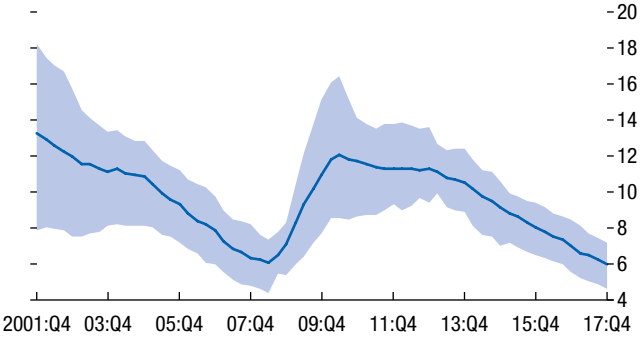
Growth in the estimated trend in labor productivity also slowed substantially to about 2 percent in recent years ...

3. Trend Labor Productivity
(Year-over-year percent change)



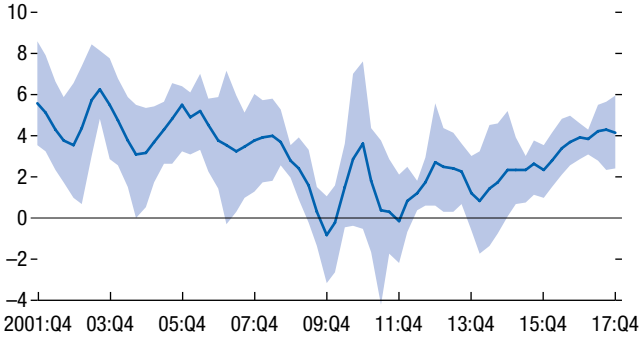
... while unemployment rose in 2008–10, to plateau until 2013, then fell rapidly to reach precrisis lows by 2017.

4. Unemployment Rate
(Percent, seasonally adjusted)



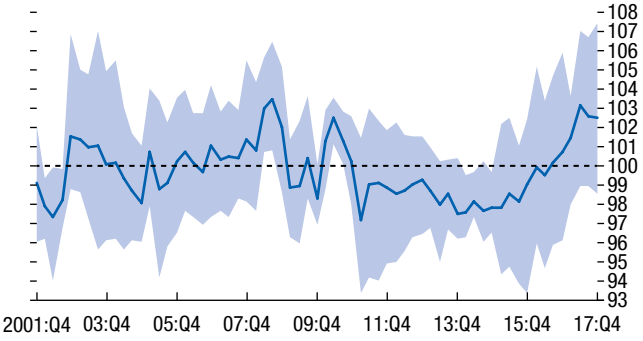
Real wage growth slowed after the crisis, but picked up notably in 2016–17, to about 4½ percent, well over productivity gains.

5. Real Product Wage Growth
(Year-over-year percent change, four-quarter average)



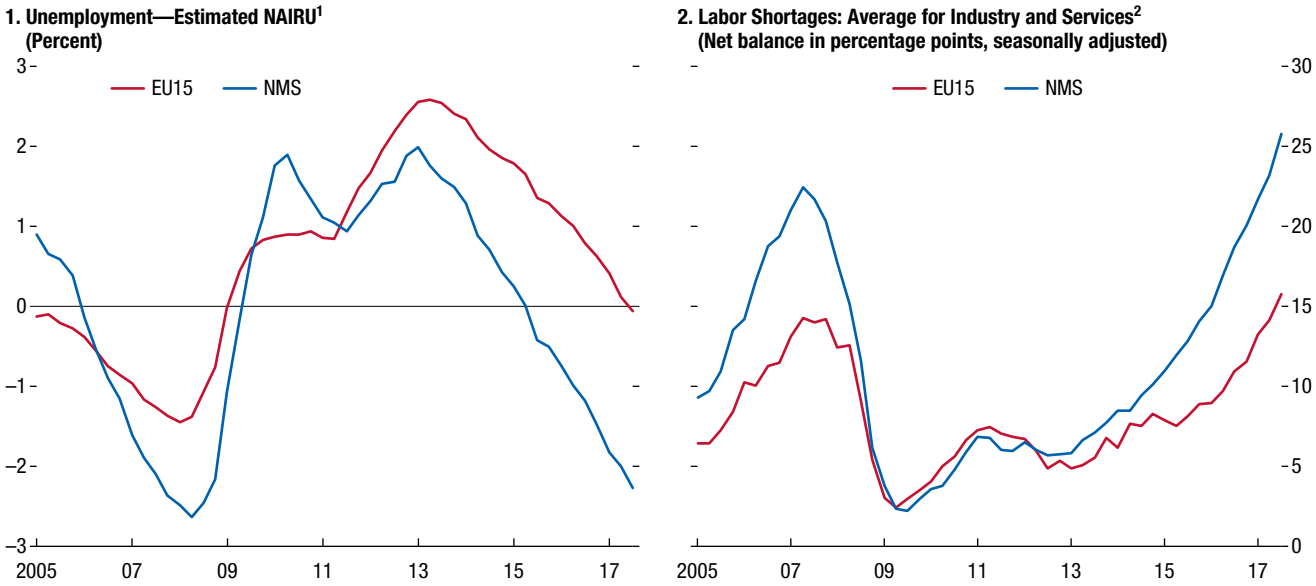
Real wages were stable relative to productivity in 2012–15, but this ratio had risen more than 5 percentage points by 2017, to reach precrisis peaks that lasted only briefly.

6. Real Wage/Trend Labor Productivity
(Index; average for 2000–17 = 100)



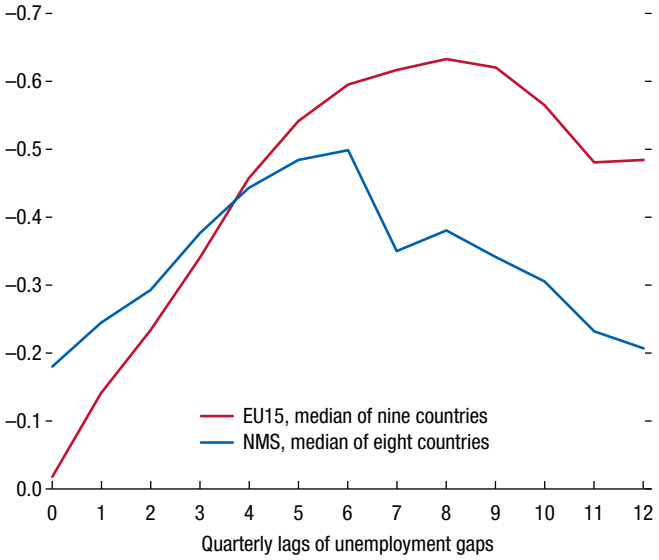
Sources: Eurostat; Haver Analytics; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: The average is a trimmed mean to exclude some outliers while avoiding the volatility of the median. The bands are for the 25th and 75th percentiles.

Figure 2.5. Unemployment and Labor Shortages
(Percent)



Sources: European Commission, Business and Consumer Quarterly Survey; OECD; and IMF staff calculations.
Note: EU15 = long-standing EU members; NAIRU = nonaccelerating inflation rate of unemployment; NMS = newer EU members; OECD = Organisation for Economic Co-operation and Development.
[1]For all OECD countries, OECD estimates of the NAIRU are used. In other cases, a Hodrick-Prescott filter on unemployment is used.
[2]Labor shortage refers to the average of responses for industry and services to the European Commission survey question on labor as a limiting factor to production or business.

Figure 2.6. Correlations of Wage Deviations and Unemployment Gaps[1]



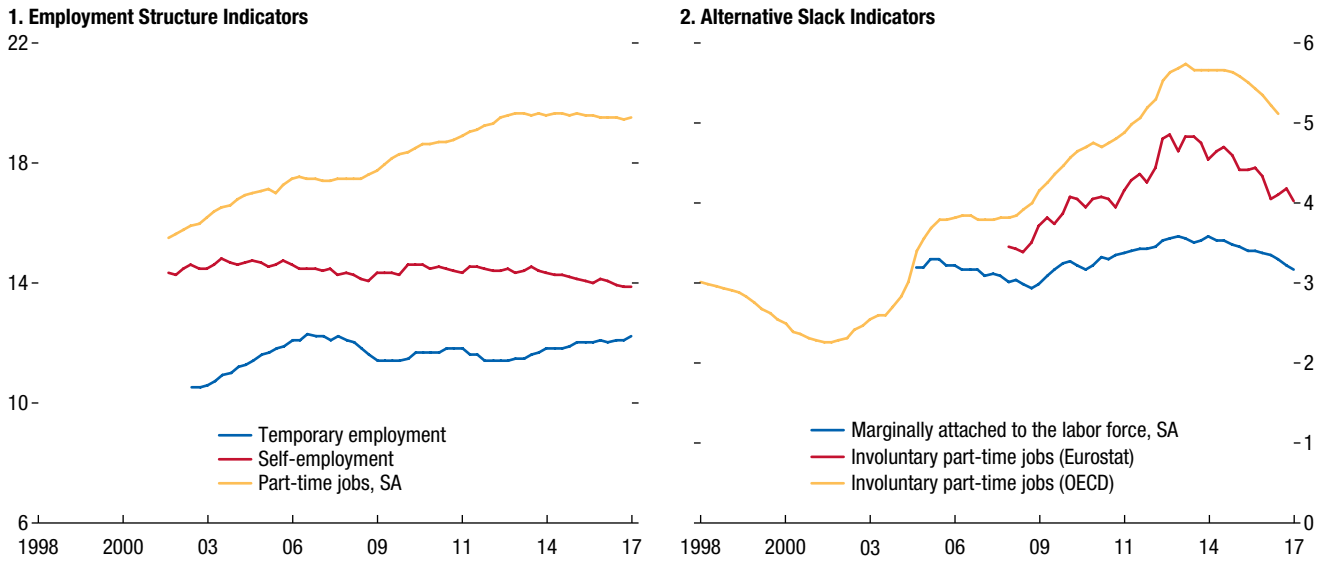
Source: IMF staff calculations.
Note: EU15 = long-standing EU members; NMS = newer EU members.
[1]Correlation between the ratio of real product wages and trend labor productivity with the unemployment gap, with the latter lagged from 0 to 12 quarters, using a 60-quarter window starting in 2002:Q2 for the wage variable.

workers from the newer member states.

Evolving Employment Arrangements and Measuring Slack

Potential explanations of wage moderation include declines in employment security after the global financial crisis and the potential for continued labor market slack despite falls in unemployment. In some EU countries, there has been a shift from regular contracts to self-employment, temporary contracts, and part-time jobs. If these employment arrangements are less secure, they could reduce workers' bargaining power and hence put downward pressures on wages. If such workers are also less fully employed, the underlying slack in the labor market may be larger than previously thought for a given level of unemployment. Chapter 2 of the October 2017 WEO finds that involuntary part-time employment increases slack,

Figure 2.7. Labor Market Structural and Slack Indicators: EU28
(Percent of total employment)



Source: Eurostat.
Note: EU28 = EU members; OECD = Organisation for Economic Co-operation and Development; SA = seasonally adjusted.

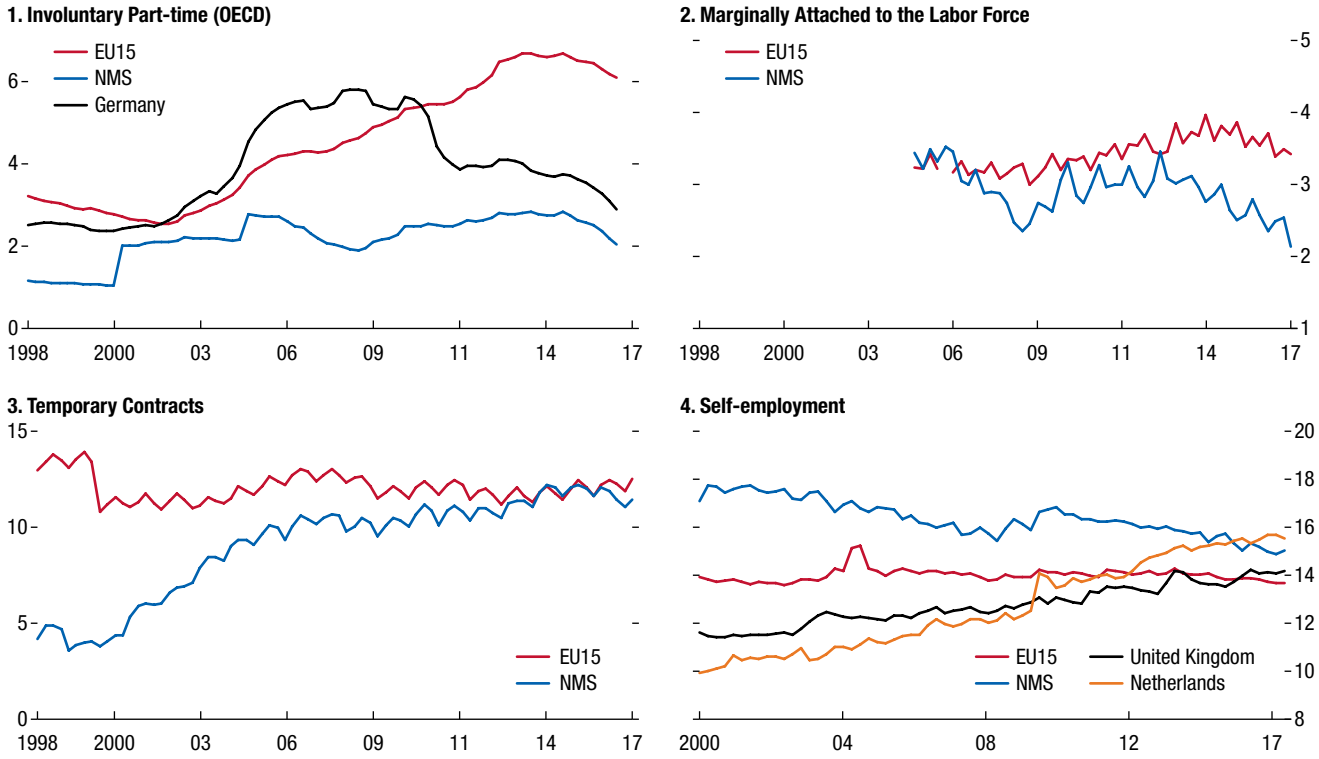
a result confirmed for Sweden (IMF 2017a) and the United Kingdom (IMF 2018), with UK wages also sensitive to cyclical self-employment.

EU employment arrangements remained broadly stable over the past several years, but underemployment indicators, especially involuntary part-time employment changed notably (Figure 2.7). Partly reflecting rising female participation, there has been a trend rise in part-time employment, whereas other indicators of the security of employment arrangements have been mostly stable, including the share of temporary employment and self-employment. The OECD measure of involuntary part-time jobs as a share of total employment rose starting in the early 2000s and peaked in 2014, which could potentially have contributed to wage moderation in recent years. Following the global financial crisis, some increases were also recorded in the share of people marginally attached to the labor force (that is, those who are not unemployed under typical labor force surveys, but who intend to work), but there has been a decline in recent years.

Aggregate EU developments mask some heterogeneities across regions and countries. In contrast with EU-wide developments, Germany managed to bring down involuntary part-time employment following the global financial crisis (Figure 2.8). Newer EU members recorded a declining share of people marginally attached to the labor force, consistent with declining unemployment in those countries, but in the EU15 there has been much less of a decline in the marginally attached. Underneath the relatively stable developments for temporary contracts and self-employment at the EU level, the share of temporary contracts has been rising in newer EU members, particularly in the years before the global financial crisis. Self-employment in the Netherlands and the United Kingdom has been higher as well.

At the EU level, the share of involuntary part-time jobs and the share of those marginally attached to the labor force appear to be useful additional measures of economic slack. Both shares have increased since the global financial crisis, and, across countries, the changes relative to precrisis levels are positively correlated with the

Figure 2.8. Labor Market Indicators
(Percent of total employment)



Source: Eurostat.
Note: EU15 = long-standing EU members; NMS = newer EU members; OECD = Organisation for Economic Co-operation and Development.

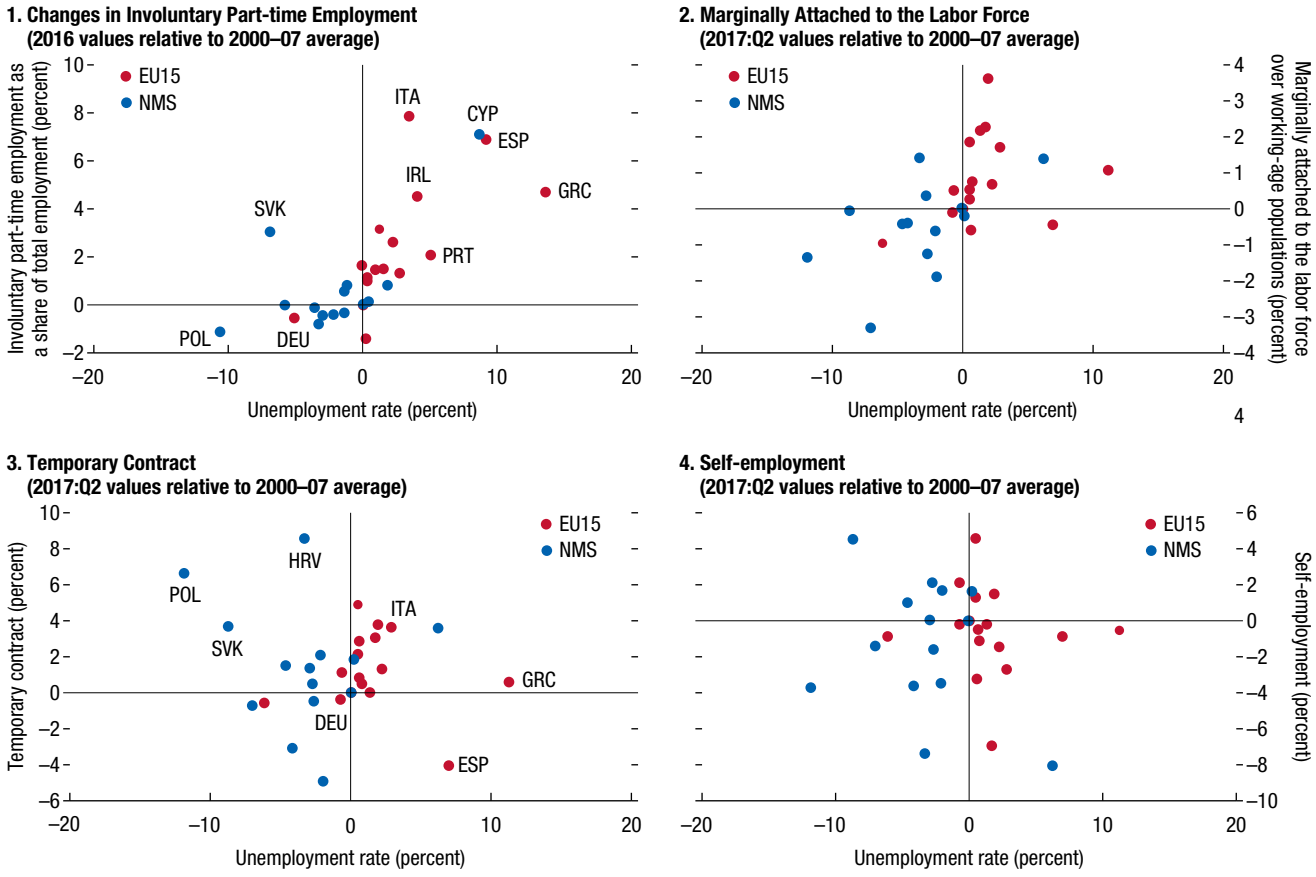
changes in the unemployment rates, suggesting that they may capture cyclical information (Figure 2.9). On the other hand, the shares of self-employment and temporary contracts did not increase visibly after the crisis. Across countries, the changes from precrisis levels have weak or even negative correlation with the changes in unemployment rates.

A nonemployment index, combining the unemployment rate with the measures discussed above, could provide greater information about slack. As discussed in Byrne and Conefrey (2017), the index incorporates potential labor input from those currently unemployed, marginally attached to the labor force, and underemployed. Across countries, changes in the nonemployment index appear somewhat positively correlated with the changes in unemployment rates, although the correlation is not perfect (Figure 2.10). This suggests that the nonemployment index potentially captures additional information that is not embedded in the unemployment rate.

Recent literature suggests using the intensive margin, or hours worked per person, as a further indicator of labor market slack (Figure 2.11). In a Phillips curve analysis of the wages in the euro area and its five largest economies, Bulligan, Guglielminetti, and Viviano (2017) find that the intensive margin of labor utilization is relevant for wage growth. Moreover, they find the shape of the Phillips curve becomes flatter for lower levels of hours per worker. Labor market arrangements in Germany, which tend to reduce hours to limit job losses, may make this indicator particularly relevant.

A simple correlation analysis finds that most of these slack indicators have significantly different information. As expected, the highest correlations

Figure 2.9. Cross Plots of Unemployment and Alternative Slack Indicators



Source: Organisation for Economic Co-operation and Development.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

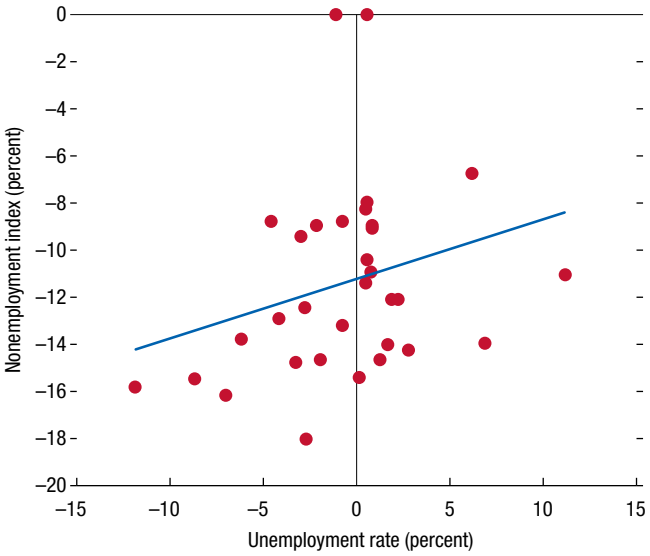
are between unemployment gaps and the nonemployment index gap, but it is envisaged that index gaps are an alternative to unemployment gaps in the econometric analysis. Among the other pairs, there are correlations between involuntary part-time employment and unemployment and nonemployment index gaps. The highest is 0.72, between the unemployment gap and changes in involuntary unemployment in Germany, and the next highest is 0.5, also in Germany, for the nonemployment index gap. The hours per employee indicator has low correlations with the other indicators.

EU Integration and Labor Market Developments

EU integration can shape wage behavior through a number of channels. The integration of EU labor and goods markets could shape wage setting by changing the elasticities of both labor demand and supply.[8] Integration could also influence wages via labor market slack. For example, migrant inflows could initially increase slack in destination countries, although the longer-term impact is likely small. Migration, together with posted workers and workers commuting across borders, redistributes labor supply, while production

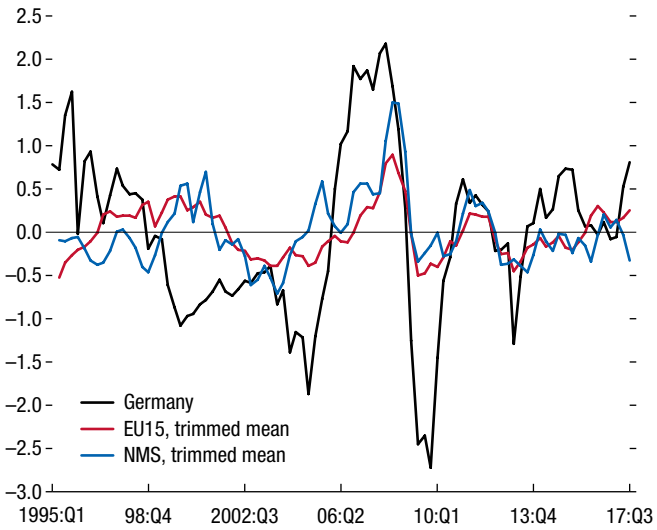
[8]Over the longer term, integration is expected to promote convergence in productivity through the diffusion of technology and management skills (see Chapter 4 of the April 2018 WEO).

Figure 2.10. The Nonemployment Index and Unemployment Rate
(2017:Q2 values relative to 2000–07 average)



Source: Organisation for Economic Co-operation and Development.

Figure 2.11. Hours Worked per Employee
(Percent deviation from trend)



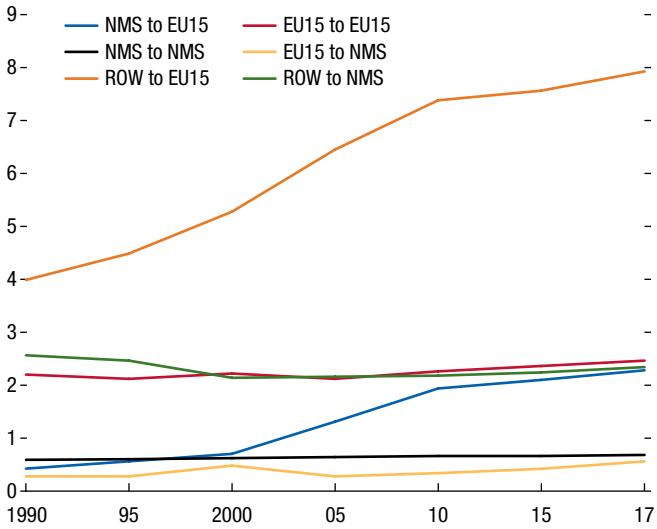
Source: Eurostat.
Note: EU15 = long-standing EU members; NMS = newer EU members.

relocation and outsourcing shift the demand for labor between countries. Accordingly, this section illustrates interconnections between EU goods and labor markets, providing stylized facts on labor movement and global value chains.

Labor Market Integration

New accessions to the European Union since 2004 facilitated a rise in migration from these countries to the EU15, although migration from outside the European Union has also been sizable (Figure 2.12; Box 2.3). Intra-EU migration is largely from new member states to the EU15, driven by differences in wage levels. Between 2000 and 2015, the stock of migrants from new members in the EU15 tripled to 2.1 percent of the EU15 population. In large part this migration took place before the global financial crisis, but it continued over 2010–15, in part as some new members gained free access to key EU15 countries, with a lag.[9] In contrast, migration stocks within new members and from EU15

Figure 2.12. Migration (Stock) to European Union
(Percent of host region's population)



Sources: Eurostat; United Nations, Department of Economic and Social Affairs, Population Division (2017); and IMF staff calculations.
Note: EU15 = long-standing EU members; NMS = newer EU members; ROW = rest of the world.

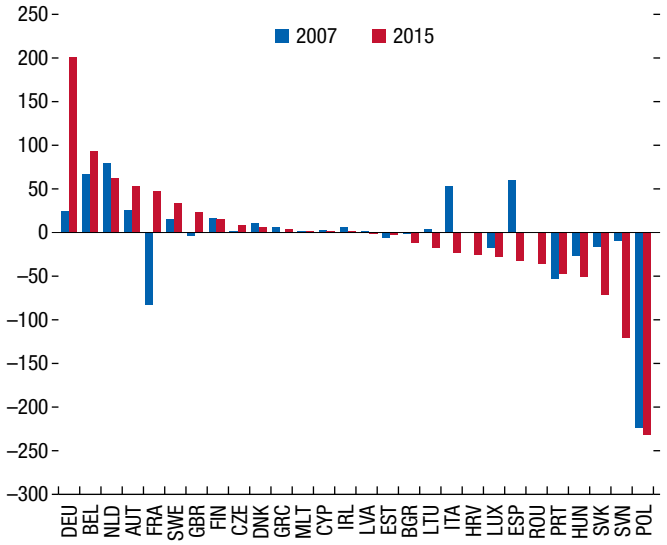
[9]For example, Bulgaria and Romania joined the European Union in 2007, yet their workers gained free mobility to Austria, Belgium, France, Germany, Luxembourg, and the Netherlands only in 2014.

countries to new members remained broadly stable as shares of the respective populations, and within the EU15 migrant stocks, rose gradually to 2.5 percent of the EU15 population.[10] Migration from outside the European Union has been large, with migrants to the EU15 coming mainly from the former Soviet Union in the early 1990s, from former colonial countries, and in recent years as refugees. Migration from outside the European Union to newer members does not appear to be significant, with some exceptions (for example, Poland has seen very large inflows from Ukraine).

Alongside increased migration, EU labor market integration has intensified through posted workers and cross-border workers. "Posted workers" are employees sent by their employer to carry out a service in another EU country on a temporary basis. For example, a service provider may win a contract in another country and send employees there to deliver the services. Posted workers differ from EU mobile workers in that they remain in the host EU country temporarily and do not integrate into its labor market, yet they can still affect the host country's labor market slack.[11] Net inflows of posted workers to some EU15 countries—especially Germany—have increased since 2007, matched by rising net outflows from newer members such as Slovenia and the Slovak Republic (Figure 2.13). In addition, the number of "cross-border workers" who live in one EU country and work in another was estimated at 1.3 million (or 0.6 percent of the total employed) across the European Union in 2015.[12]

Most emigrants from newer EU member countries are highly educated, causing skill shortages in the home countries. The education levels of newer EU member emigrants tend to be higher than their home-country averages (IMF 2016). The prevalence of better-educated and working-age people among emigrants leaving newer member countries has significantly reduced the supply of skilled labor, with the brain drain most prominent in the Baltics, potentially contributing to the recent hikes in wages in these countries. Furthermore, the large-scale emigration may also have slowed growth and income convergence with the EU15, while also contributing to fiscal burdens from the higher dependency ratio.

Figure 2.13. Posted Workers (Net flows)
(Thousands of people)



Source: Eurostat.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

Goods Market Integration

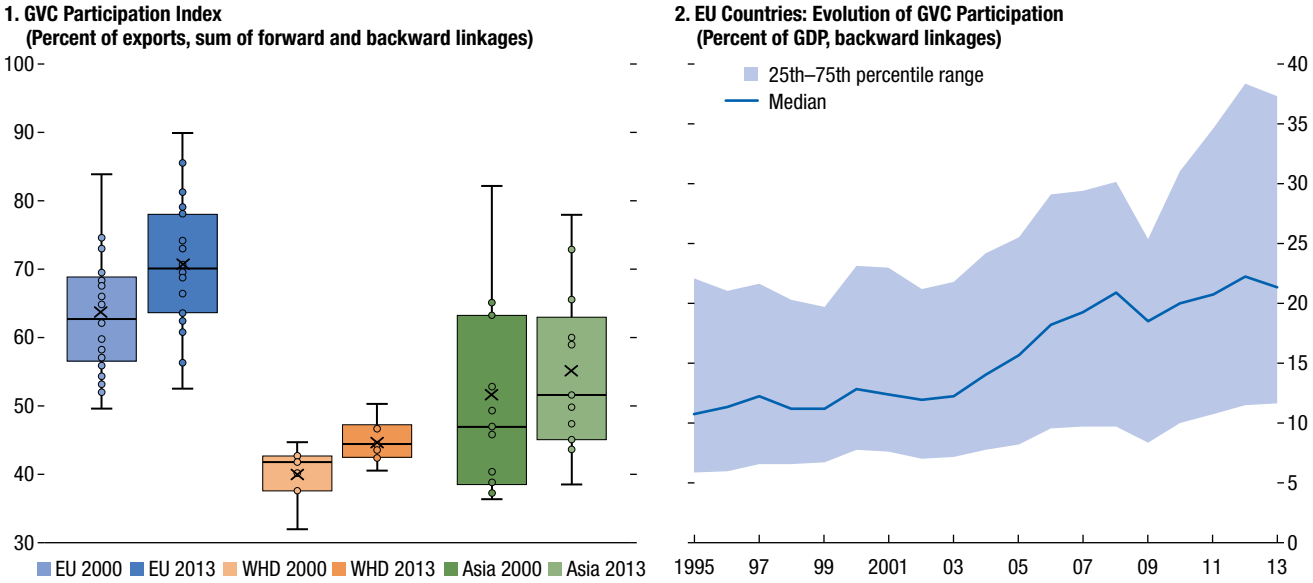
The rise of global supply chains and fragmentation of production across borders affects labor markets in the short and long term. In the short term, for countries that are highly integrated into global supply chains, domestic conditions (such as the demand for labor) become more sensitive to global production cycles, leading to increased business cycle synchronization (IMF 2013). From a long-term perspective, offshoring increases cross-border wage linkages across countries (Feenstra and Hanson 1997; Grossman and Rossi-Hansberg 2008). In addition, offshoring

[10]Migration among the EU15 countries includes retirees who do not increase the labor supply.

[11]On the contrary, EU mobile citizens who go to another member state to seek work are entitled to equal treatment with nationals in access to employment, working conditions, and all other social and tax conditions.

[12]Cross-border workers include "frontier workers" who return to their country or residence daily or at least once a week and "seasonal workers" who work in another EU member state for a limited amount of time.

Figure 2.14. Integration of the European Union into Global Supply Chains



Sources: EORA Database; Ignatenko, Raei, and Mircheva (forthcoming); and IMF staff calculations.
Note: Whisker boxes represent the 25th and 75th percentile of the distribution of the respective variables. Within each box, the line and the cross represent the average and median. Asia = Australia, China, Hong Kong SAR, India, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Vietnam; GVC = global value chain; WHD = Argentina, Brazil, Canada, Chile, Mexico, Peru, United States.

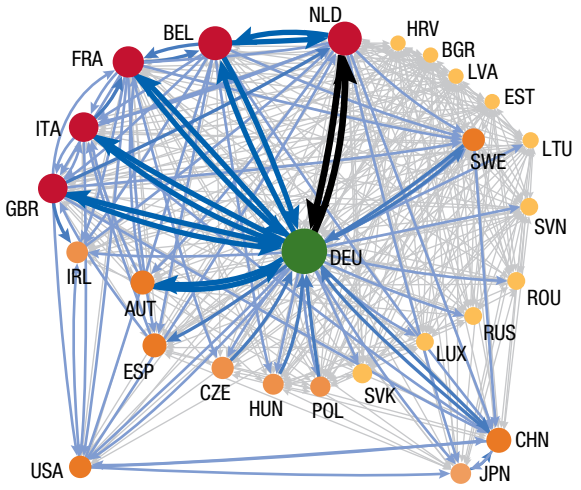
(or the threat of it) further reduces the bargaining power of labor (Harrison 2002). On the other hand, demand for labor in emerging market economies (or the destination of offshoring) becomes increasingly linked to external conditions.

EU countries are highly integrated through pan-European supply chains. On average 70 percent of exports of goods and services of EU countries represents trade in intermediate goods that are part of supply chains (Figure 2.14, panel 1). This share is significantly higher than in other parts of the world and has been on the rise in the European Union, particularly over 2000–07, helped by the expansion of global trade and EU enlargement (Figure 2.14, panel 2). EU linkages are generally stronger than non-EU linkages, as on average two-thirds of foreign value added in EU exports originates from within the European Union.

Germany plays a key role in EU supply chains. Over time, the integration of EU countries has increased the most with Germany, followed by China, and to a lesser extent with France and Italy. Germany is by far the most important source of intermediate inputs for many EU countries, followed by France, the United Kingdom, and Italy (Figure 2.15). A point worth noting is the role of Germany acting as a hub, with large inflows and outflows of intermediate goods and services flowing through Germany to various EU countries. Global value chain linkages outside Europe (to China and the United States) appear fairly small compared with pan-European linkages and possibly go through Germany as well.

Foreign direct investment flows within the European Union mirror these tightly knit supply chains. As supply chains have expanded in newer EU members, the stock of foreign direct investment has also been increasing in those countries over time (Figure 2.16, panels 1 and 3). Within the European Union, newer members are the largest recipients of foreign direct investment; EU15 countries are generally net foreign direct investment exporters, and this pattern has remained broadly the same over time. In line with the tight global value chain integration within Europe, about 90 percent of inward foreign direct

Figure 2.15. EU Integration into Global Supply Chains: Pan-European Supply Chains
(Arrows are proportional to nominal GVC trade flows between countries, 2013)



Sources: EORA Database; Ignatenko, Raei, and Mircheva (forthcoming); and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. GVC = global value chain.

investment to newer EU members is from within Europe and 85 percent from within the European Union. Germany and Austria are major senders of foreign direct investment to central, eastern, and southeastern Europe, while Sweden is the largest financier in the Baltics (Figure 2.16, panel 2).

It appears that supply chain integration has increased the sensitivity of labor markets to external conditions, particularly for highly integrated newer member states. Integration into global supply chains contributes to synchronization of business cycles across economies (Figure 2.17, panel 1). External conditions are transmitted to the domestic economy through various channels. Regarding labor market outcomes, indicators of labor shortages for EU countries are highly correlated with indicators of external demand (for example, aggregate EU industrial production), particularly for more integrated newer member states (Figure 2.17, panel 2). The sensitivity of labor shortages to external conditions has increased over time for both the newer members and the EU15, but labor shortages in the newer members are more sensitive to global shocks than in the EU15 (Figure 2.17, panel 3). Nevertheless, a formal empirical analysis that includes all the various drivers of wage dynamics is needed—this is the subject of the next section.

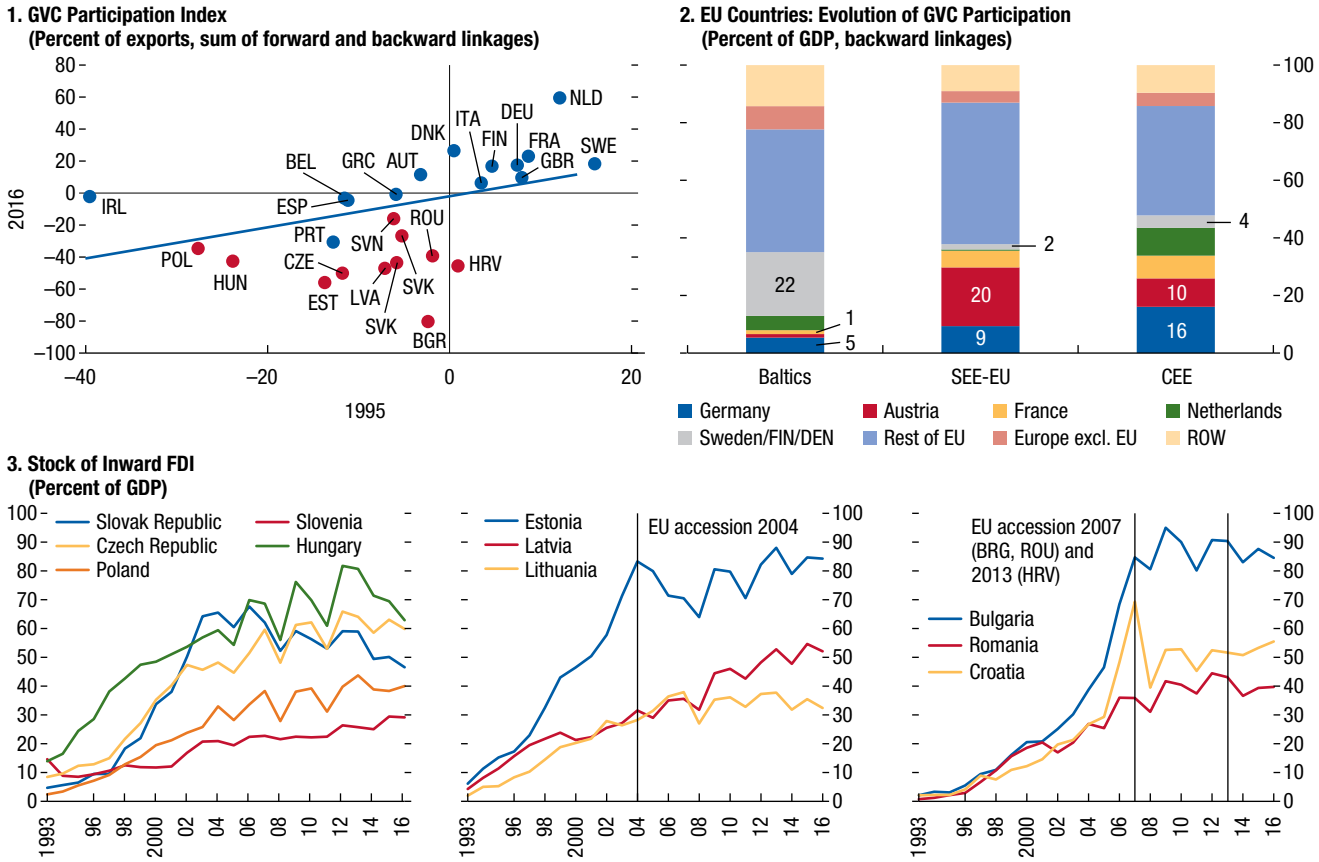
Exploring Drivers of European Wage Behavior

EU integration could make wages in EU countries more dependent on labor market conditions, including wages, in other countries.[13] Firms in different countries across the European Union are often competing in goods markets both within and outside the union, and increasingly in services as these become more tradable. In wage bargaining, firms will seek to preserve cost competitiveness across these markets, while unions and workers will also consider risks to firms' sales and employment. Hence, wage growth in one country may have a direct spillover on wage setting in others. Higher labor market slack in another country could indicate future wage moderation, which may also impact wages elsewhere. Such spillovers could strengthen with the increasing integration of European goods and labor markets through labor movement and relocation of production.

Recent work on wage drivers in some EU countries provides evidence of such spillovers from foreign wages and labor market slack. For Sweden, the IMF (2017a) finds that in the long term real wages are determined by labor productivity. But the growth in Swedish nominal wages shows a sizable spillover from German wage growth, and this linkage became stronger beginning in the early 2000s. A second spillover channel operates via changes in euro area unemployment, with a

[13]Being a member of a currency union could also affect wage dynamics. We tested this for the newer EU members in the empirical analysis by using an interaction dummy on slack for euro area membership. The estimates for the dummy suggest that there is no structural break in the relationship between wages and unemployment in the newer EU economies (Estonia, Latvia, Lithuania, Slovak Republic, Slovenia) after they joined the euro area. But we acknowledge that this test is imperfect, for various reasons. For older euro area members we did not test this because our data only start in 1995.

Figure 2.16. EU Integration into Global Supply Chains



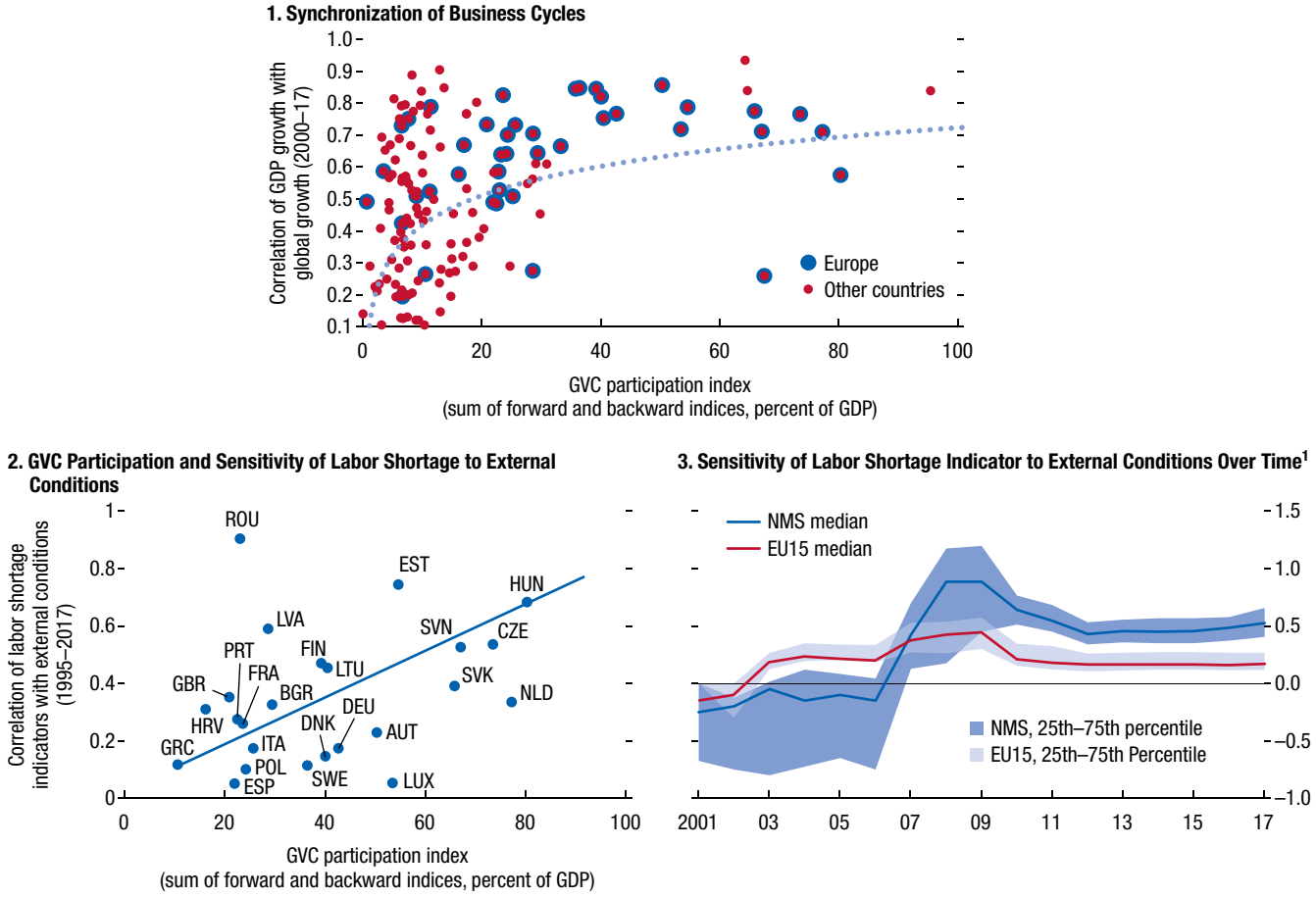
Sources: Haver Analytics; Organisation for Economic Co-operation and Development; United Nations Conference on Trade and Development; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. Baltics = Estonia, Latvia, Lithuania; CEE = central and eastern Europe; FDI = foreign direct investment; GVC = global value chain; ROW = rest of world; SEE = southeastern Europe.

negative effect on wage growth that also increased starting in the early 2000s. For the United Kingdom, the IMF (2018) finds growth in wages to be negatively affected by the EU unemployment gap. These papers also use broader indicators of labor market slack, with involuntary part-time employment having a significant negative impact on wages in both cases, while in the United Kingdom, cyclical increases in self-employment also have negative effects on wages. In addition, the IMF (2016) finds that the large wave of emigration from eastern to western Europe in response to income differentials lowered labor supply in the east in the past quarter century and was associated with higher remittances, which may have eased budget constraints and contributed to higher wages in the east.

This section provides an integrated analysis of drivers of European wages, including

- *Broader indicators of slack:* Starting from the headline measure of unemployment as in the traditional Phillips curve, the analysis also uses the nonemployment gap, hours per employee gap, and involuntary part-time employment.
- *Inflation and inflation expectations:* The analysis includes lags of actual inflation and of Consensus Forecasts (one year ahead) for inflation as a proxy for inflation expectations

Figure 2.17. Supply Chain Participation and Sensitivity to Global Conditions



Sources: Haver Analytics; EORA Database; Ignatenko, Raei and Mircheva (2018); and IMF staff calculations.
Notes: Data labels in the figure use International Organization for Standardization (ISO) country codes. EU15 = long standing EU members; NMS = newer EU members.
[1]For each country and time *t*, the sensitivity of quarterly labor shortage indicator to lagged EU industrial production is calculated over 1995 to year *t*. Lines for New Member States and the EU15 represent the median sensitivity coefficient for each group, and the shaded areas represent 25th–75th percentiles.

to allow for a mix of forward- and backward-looking wage adjustment.

- *Overhangs:* The graphical analysis earlier in this chapter found that EU15 wages rose relative to productivity trends during the global financial crisis, weighing on subsequent wage rises. The analysis explores augmenting the Phillips curve with an error correction term toward long-term equilibrium.
- *Spillovers from foreign wages and labor market slack:* Drawing on research noted above, the analysis brings in foreign labor market slack, foreign wages, and migration flows.

Three groups of countries are used in this analysis:

- Germany is analyzed separately as it is often seen as a wage leader in the region;[14]
- An "other euro area" panel (Austria, Belgium, France, Netherlands, Spain);
- A newer EU member panel (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia).

[14]Ramskogler (2012) finds that wage-following behavior across Economic and Monetary Union members under German leadership has emerged since the introduction of euro.

The EU15 countries outside the euro area are not analyzed given the recent studies on Sweden and the United Kingdom. Italy was initially included in the "other euro area" panel, but the trend level of labor productivity has been almost flat. It has risen only 1 percent cumulatively since 2002, resulting in low explanatory power and unreliable estimates of the long-term impact of productivity on real wage levels.[15] The reported results are for total labor compensation (national accounts) per employee hour—which includes social security contributions of employers—but estimates of the same specifications using data on wages and salaries per employee hour and the labor cost index yield similar results.

The key steps are as follows:

(1) *Long-term models of real wages based on trend labor productivity are estimated.* Labor productivity is the principal driver of real product wages in the long term, as seen in the relatively narrow range of variations in the ratio of real wages to productivity in Figures 2.3 and 2.4, despite substantial variation in productivity growth across time and countries.[16] A trend measure of labor productivity is preferred since wages show inertia through short-term and cyclical productivity swings. Separate ordinary least squares regressions for each country are used to allow for differences in long-term impacts of productivity. In the euro area countries, the effects of reforms are controlled for using a database on major reforms (IMF 2017d). In the case of some small European countries, the potential for a long-term spillover from foreign wages is explored. For newer EU members, the long-term real wage model includes only domestic productivity—the convergence of wages to the EU15 levels in the long term hinges on productivity convergence by the newer EU members since firms must generate adequate profits to remain viable. Newer EU member labor markets tend to be relatively flexible, with no major reforms evident in the sample period.

(2) *Short-term baseline models are estimated for nominal wage growth.*[17] These include a set of core variables that are standard in the Phillips curve literature and Chapter 2 of the October 2017 WEO: lagged inflation, inflation expectations, trend productivity growth, the unemployment gap (both level and change), and lagged wage growth. Adding the fourth lag of the residual from the long-term equation to this Phillips curve gives the error correction model specification. In view of the relatively rich parametrization, panel estimation is used to ensure more robust estimates, except for Germany.

(3) *The impact of broader indicators of slack is assessed*. In both the Phillips curve and the error correction model, the nonemployment index gap is assessed as an alternative to headline unemployment. For Germany, involuntary part-time employment is included separately, similarly to Sweden and the United Kingdom. Based on Bulligan, Guglielminetti, and Viviano (2017), the intensive margin (hours worked per employee) is also included.

(4) *Spillovers from external unemployment and wages and the impact of migration are estimated.* To limit the scope for spillovers to reflect the omission of relevant domestic factors, a preferred baseline specification including broader indicators of slack is used. Variables for external unemployment and foreign wages are added sequentially. Migration flows are the last variable added, in part because data for 2016–17 are not yet available.

Long-Term Analysis

Structural reforms are found to affect the level of real wages in the long term and some long-term

[15]Kangur (2018) finds that Italian wages show low responsiveness to firm-specific productivity, regional disparities, and skill mismatches and that rigid nominal wages imply that adjustment occurs through lower profits and employment.

[16]Modeling the level of real product wages implies a restriction that nominal wages respond to the GDP deflator with a unity coefficient in the long run that is consistent with economic theory. But the short-term error correction models of nominal wage growth allow real wages to be affected temporarily by inflation shocks. In contrast, the Phillips curve without the error correction model term imposes no long-term restrictions on the impact of inflation and productivity on wages (see Blanchard and Katz 1999).

[17]Modeling the four-quarter growth rate is consistent with wage-setting practices and allows dynamics over a one- to two-year period to be modeled with fewer estimated parameters.

Table 2.1. Euro Area: Long-Term Equations for Total Labor Compensation[22]

Variables	(1) Germany	(2) France	(3) Austria	(4) Belgium	(5) Spain	(6) Netherlands
Log Trend Productivity	1.027***	0.932***	0.789***	0.437***	0.868***	0.898***
	(0.0328)	(0.0193)	(0.0300)	(0.152)	(0.0486)	(0.0229)
Log Real German Wage[1]			0.179***	0.117*		0.262***
			(0.0509)	(0.0590)		(0.0353)
Log Real French Wage[1]				0.494***		
				(0.165)		
Hartz Reform Dummy	−0.0546***					
	(0.00541)					
Unemployment Benefit Reform Dummy		0.0319***			−0.0389***	
		(0.00272)			(0.00561)	
Employment Protection Reform Dummy			−0.0299***			
			(0.00507)			
Constant	−5.996***	−5.537***	−4.760***	−2.327**	−5.688***	−4.964***
	(0.147)	(0.0874)	(0.178)	(0.888)	(0.222)	(0.110)
Observations	91	91	87	74	91	86
R-Squared	0.967	0.986	0.973	0.886	0.802	0.949
Dickey-Fuller Test	−2.661	−2.648	−3.880	−1.720	−2.843	−3.660

Source: IMF staff calculations.
Note: Standard errors in parentheses.
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.
[1]Deflated by individual countries' GDP deflator.

wage spillovers are found in smaller euro area countries (Table 2.1):[18]

- *Germany:* The Hartz reforms implemented in 2003–05 are found to lower the equilibrium real wage by 5½ percent, and the long-term productivity coefficient is close to unity.[19] Absent the reform dummy, the latter coefficient is 0.73, which is too low given the near parallel trends in real wages and productivity both before the Hartz reforms and since the global financial crisis.
- *France and Spain:* Long-term real wage developments depend on domestic productivity trends. In Spain, reforms, including unemployment benefits, reduce real wages by an estimated 4 percent.[20] In France, such a dummy has a counterintuitive positive sign, as it was implemented close to the global financial crisis, a period when French real product wages rose about 3 percent relative to productivity, owing to nominal wage growth inertia. In France, this real wage increase has not subsequently unwound, unlike in other EU15 countries.
- *The Netherlands and Austria:* Wages in these two countries are driven principally by domestic productivity, but German wages (deflated by the domestic GDP deflator of each country) also have a long-term impact with a coefficient of about 0.2. This reflects the domestic wage-setting anchor that Germany provides in these two countries, consistent with their high interconnection with the German economy. In Austria, reforms of employment protection are found to reduce real wages by 3 percent.
- *Belgium:* French wages, in addition to German wages, are found to have a lasting effect on Belgian wages. This finding is broadly consistent with a 1996 law that links Belgian wage setting to wage developments in neighboring countries.[21]

[18]A Dickey-Fuller test rejects a unit root in the residuals of most country equations, consistent with a cointegrating relationship between real wages and productivity.

[19]From the outset of reforms in the first quarter of 2003, the Hartz reform dummy rises from 0.1 in steps of 0.1 each quarter to reach 1 in the second quarter of 2015, just after the final stage of these reforms.

[20]An employment protection reform dummy is also statistically significant for Spain, but it results in an implausibly high estimated parameter (about 1.5) on labor productivity. See IMF (2015) for a more comprehensive analysis of the impact of the 2012 labor market reforms.

[21]Further information is provided in the IMF's 2017 Article IV Consultation for Belgium (IMF 2017c, Box 2). The estimated

Table 2.2. Newer EU Members: Long-Term Equations for Total Labor Compensation

Variables	(1) Czech Republic	(2) Estonia	(3) Hungary	(4) Latvia	(5) Lithuania	(6) Poland	(7) Slovak Republic	(8) Slovenia
Log Trend Productivity	1.074***	1.187***	0.598***	1.012***	0.936***	0.696***	1.031***	0.789***
	(0.0163)	(0.0320)	(0.0311)	(0.0245)	(0.0205)	(0.0314)	(0.0159)	(0.0162)
Constant	−4.179***	−8.116***	0.163	−7.549***	−7.211***	−4.770***	−7.323***	−5.557***
	(0.0734)	(0.146)	(0.141)	(0.108)	(0.0911)	(0.146)	(0.0712)	(0.0722)
Observations	87	71	91	91	91	62	91	91
R-Squared	0.981	0.952	0.806	0.950	0.959	0.892	0.979	0.964
Dickey-Fuller Test	−3.512	−2.616	−1.914	−2.034	−2.609	−2.588	−2.922	−3.038

Source: IMF staff calculations.
Note: Standard errors in parentheses.
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

In the newer EU members, productivity gains are generally translated into similar real wage rises over the long term (Table 2.2). In the Czech Republic, Estonia, Latvia, the Slovak Republic, and to a lesser extent Slovenia, the coefficient on labor productivity is close to unity. Poland and Hungary are outliers. In the case of Poland, the low coefficient appears to reflect real wage levels that are exceptionally high relative to productivity in the early years of the sample, a public sector wage freeze after the crisis, and the surge in temporary foreign migrant workers in more recent years—the impact of which is not captured in official statistics. In Hungary, some data issues—including discontinuities in hours worked that affect both wages and productivity—may contribute to the very low coefficient estimate.

Short-Term Regional Panel Analysis

In the regional panel analyses, the preferred baseline model is the error correction model using the nonemployment index gap rather than unemployment, with hours per employee as an additional slack indicator.[22] Baseline Phillips curve model estimates are presented in column (1) of Tables 2.3 and 2.4, with columns (2) and (3) progressively including broader slack indicators. Columns (4) to (6) are similar, but also include the error correction model term. The explanatory variables are lagged four to five quarters, with the exception of changes in unemployment or the nonemployment index, which are often included in wage equations in part to proxy short-term unemployment. The wage Phillips curves have sensible properties, with sizable effects from trend productivity growth, expected inflation, lagged inflation in the case of the other euro area region, and indicators of slack. The notably higher coefficients on slack in the newer member states indicate greater real wage flexibility, which will aid adjustment to asymmetric shocks.[23] Columns (4) to (8) show that the error correction parameter is sizable (–0.36 in "other euro area" and –0.40 in newer member states), and highly significant—further evidence consistent with the above long-term equations being cointegrating relationships.[24] The error correction model with the nonemployment index gap has more explanatory power than that for unemployment, with the gain larger for newer member states than for the "other euro area" panel.[25]

weights on foreign wages are sensitive to changing the dependent variable to wages and salaries (which exclude social security contributions by employers), with the estimated weights on French real wages lower at 0.194 and those on German wages higher at 0.163.

[22]For the euro area excluding Germany, estimation of a six-country panel including Italy gave similar results to those in Table 2.3 column (8), but hours per person are not significant, and the mix of spillovers differs, with a larger coefficient on euro area wage growth and a smaller and insignificant coefficient on changes in euro area unemployment. But, as noted above, the long-term estimates may be less reliable given the near absence of productivity growth since 2002 in Italy.

[23]Panel regressions that replace the nonemployment index gap with both unemployment and changes in involuntary part-time employment, while retaining the hours gap, yield similar results.

[24]Note that the error correction model term is at the fourth lag, so roughly 40 percent of a deviation from long-term equilibrium is corrected each year, or 64 percent after two years and 78 percent after three years.

[25]Although the parameter on trend labor productivity growth tends to be lower in the error correction model, productivity also affects wages through the error correction model term, and in the long run the impact of productivity on real wages is higher in the error correction model.

Table 2.3. Euro Area Excluding Germany: Short-Term Equations: Total Labor Compensation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	Standard Phillips Curve			ECM Wage Curve			Spillover Analysis			
Wage, Log, Four-Quarter Change (t–4)	−0.08*	−0.11**	−0.04	0.04	0.02	0.05	0.06	0.03	0.10*	0.10*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Trend Labor Productivity, Log, Four-Quarter Change (t–4)	0.82***	0.79***	0.76***	0.63***	0.63***	0.63***	0.57***	0.57***	0.17	0.18
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.12)	(0.12)
HICP, Log, Four-Quarter Change (t–5)	0.31***	0.34***	0.33***	0.19***	0.21***	0.21***	0.24***	0.20***	0.20**	0.20**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)
Expected Inflation, One Year Ahead (t–4)	0.50**	0.72***	0.61***	0.58***	0.72***	0.66***	0.63***	0.75***	0.94***	0.90***
	(0.21)	(0.19)	(0.19)	(0.19)	(0.18)	(0.18)	(0.18)	(0.19)	(0.20)	(0.20)
Unemployment Gap (t–4)[1]	−0.34***			−0.23***						
	(0.03)			(0.03)						
Unemployment Rate, Four-Quarter Change	−0.26***			−0.09*						
	(0.05)			(0.05)						
Nonemployment Gap (t–4)[2]		−0.62***	−0.60***		−0.45***	−0.45***	−0.42***	−0.39***	−0.29***	−0.29***
		(0.06)	(0.05)		(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Nonemployment Rate, Four-Quarter Change		−0.32***	−0.30***		−0.09	−0.10	−0.04	−0.05	0.01	−0.03
		(0.06)	(0.06)		(0.06)	(0.06)	(0.07)	(0.07)	(0.08)	(0.08)
Hours Gap (t–4)[3]			0.31***			0.16**	0.16**	0.14*	0.44***	0.50***
			(0.08)			(0.08)	(0.08)	(0.08)	(0.10)	(0.11)
EA Unemployment Rate, Four-Quarter Change (t–2)							−0.15	−0.20**	−0.34***	−0.34***
							(0.09)	(0.10)	(0.11)	(0.11)
EA Wage, Log, Four-Quarter Change (t–3)								0.15**	0.15*	0.18*
								(0.07)	(0.09)	(0.09)
Year-over-Year Change of Net Migrant Inflow (t–5)[4]									−0.44***	
									(0.16)	
Year-over-Year Change of Gross Migrant Inflow (t–5)[4]										−0.31*
										(0.17)
Year-over-Year Change of Gross Migrant Outflow (t–5)[4]										1.23***
										(0.37)
Error Correction Term (t–4)				−0.36***	−0.36***	−0.33***	−0.33***	−0.32***	−0.38***	−0.37***
				(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Constant	0.00	−0.00	0.00	0.00	0.00	0.00	0.00	−0.00	−0.00	−0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	383	380	380	383	380	380	380	380	296	296
R-Squared	0.53	0.54	0.56	0.60	0.61	0.61	0.61	0.62	0.68	0.69
Number of Countries	5	5	5	5	5	5	5	5	5	5

Source: IMF staff calculations.

Note: Standard errors in parentheses. EA = euro area; ECM = error correction model; HICP = harmonized index of consumer prices.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

[1]Calculated as the difference between actual unemployment rate and OECD nonaccelerating inflation rate of unemployment (NAIRU). When NAIRU is not available, a Hodrick-Prescott filter is used to estimate the gap.

[2]Calculated as difference between nonemployment rate and a trend estimated using the Hodrick-Prescott filter. Nonemployment rate is a composite index of unemployment rate, inactive labor force, and involuntary part-time employment.

[3]Calculated as the difference between actual hours per employee and a trend estimated using the Hodrick-Prescott filter.

[4]Percent of total workforce.

Table 2.4. Newer EU Members: Short-Term Equations: Total Labor Compensation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	Standard Phillips Curve			ECM Wage Curve			Spillover Analysis			
Wage, Log, Four-Quarter Change (*t*–4)	0.02	−0.05	0.00	0.19***	0.11**	0.16***	0.20***	0.20***	0.23***	0.23***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Trend Labor Productivity, Log, Four-Quarter Change (*t*–4)	1.20***	1.21***	1.18***	1.05***	1.08***	1.05***	1.03***	0.95***	0.96***	0.96***
	(0.12)	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)	(0.10)	(0.11)	(0.12)	(0.12)
HICP, Log, Four-Quarter Change (*t*–5)	0.13	0.16*	0.10	−0.07	−0.02	−0.07	0.03	0.03	−0.00	−0.00
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Expected Inflation, One Year Ahead (*t*–4)	0.63***	0.58***	0.58***	0.59***	0.54***	0.54***	0.31**	0.34**	0.38**	0.38***
	(0.14)	(0.14)	(0.14)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.15)	(0.15)
Unemployment Gap (*t*–4)[1]	−0.79***			−0.63***						
	(0.09)			(0.08)						
Unemployment Rate, Four-Quarter Change	−1.41***			−0.89***						
	(0.10)			(0.11)						
Nonemployment Gap (*t*–4)[2]		−1.27***	−1.13***		−1.09***	−0.97***	−0.84***	−0.86***	−0.82***	−0.82***
		(0.12)	(0.13)		(0.12)	(0.12)	(0.12)	(0.12)	(0.13)	(0.13)
Nonemployment Rate, Four-Quarter Change		−2.04***	−1.98***		−1.36***	−1.31***	−0.99***	−1.06***	−1.06***	−1.06***
		(0.13)	(0.13)		(0.14)	(0.14)	(0.15)	(0.16)	(0.17)	(0.17)
Hours Gap (*t*–4)[3]			0.31***			0.29***	0.29***	0.28***	0.26***	0.26***
			(0.10)			(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
EA Unemployment Rate, Four-Quarter Change (*t*–2)							−1.21***	−1.36***	−1.22***	−1.22***
							(0.26)	(0.27)	(0.30)	(0.30)
EA Wage, Log, Four-Quarter Change (*t*–3)								0.41*	0.40*	0.40*
								(0.22)	(0.24)	(0.25)
Year-over-Year Change of Net Migrant Inflow (*t*–5)[4]									−0.52*	
									(0.28)	
Year-over-Year Change of Gross Migrant Inflow (*t*–5)[4]										−0.36
										(0.54)
Year-over-Year Change of Gross Migrant Outflow (*t*–5)[4]										0.58*
										(0.32)
Error Correction Term (*t*–4)				−0.40***	−0.40***	−0.40***	−0.44***	−0.44***	−0.45***	−0.45***
				(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Constant	−0.00	−0.00	−0.00	−0.00	−0.00	−0.00	−0.00	−0.01	−0.01*	−0.01*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Observations	576	568	568	576	568	568	568	568	516	516
R-Squared	0.52	0.55	0.56	0.58	0.62	0.62	0.64	0.64	0.65	0.65
Number of Countries	8	8	8	8	8	8	8	8	8	8

Source: IMF staff calculations.

Note: Standard errors in parentheses. EA = euro area; ECM = error correction model; HICP = harmonized index of consumer prices.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

[1]Calculated as the difference between actual unemployment rate and OECD nonaccelerating inflation rate of unemployment (NAIRU). When NAIRU is not available, a Hodrick-Prescott filter is used to estimate the gap.

[2]Calculated as difference between nonemployment rate and a trend estimated using the Hodrick-Prescott filter. Nonemployment rate is a composite index of unemployment rate, inactive labor force, and involuntary part-time employment.

[3]Calculated as the difference between actual hours per employee and a trend estimated using the Hodrick-Prescott filter.

[4]Percent of total workforce.

Spillovers are found to have significant effects on wage growth in the "other euro area" panel and especially in the newer member states. In the other euro area countries, changes in euro area unemployment (lagged two quarters) and the growth rate in euro area wages (lagged three quarters) are both statistically significant (column 8).[26] German wages were not found to be statistically significant, hence they are not reported here. In the newer member states, changes in unemployment in the euro area (columns 8 and 9) have substantial and significant impacts on wage growth, with short lags, suggesting that wages need to respond quickly to improving job opportunities in euro area countries to help retain workers. The growth rate in euro area wages also has a significant impact (column 9), consistent with anecdotal reports that developments in euro area wages are the starting point for wage bargaining in many newer member states.

Increases in net migration inflows are found to weigh on subsequent wage growth in both regions, but the impact is modest and temporary. Column (9) adds the four-quarter change in net migration inflows in the prior year as a share of the labor force. Controlling for domestic slack and regional developments, a rise in inflows by 1 percentage point—which is an exceptionally large shock—is found to reduce wage growth in the following year by 0.4 percent in the "other euro area" and by 0.5 percent in the newer EU members.[27] But in practice, the changes in net migration flows are generally small relative to the labor force, so the wage effects are also small. These effects are also temporary, as they reflect the change in migration flows rather than the level, and wages also converge back to long-term equilibrium over time. Interestingly, when migration is separated into inflows and outflows, the latter have a larger coefficient, although the difference is not statistically significant. Nonetheless, it suggests that at least in the near term, migrants to a country are not perfect substitutes for people in the domestic workforce.

[26]For the smaller euro area economies, there are also spillovers through the error correction model term.

[27]The lag structure helps address concerns that migration is endogenous. However, this parameter does not capture the full impact of migration, as there could also be impacts on domestic demand and growth, with knock-on effects on labor market slack.

Short-Term Analysis of Germany

For Germany, the growth in involuntary part-time employment proved to be a key indicator of slack (Table 2.5). The wage Phillips curve again has sensible properties, with quite high responsiveness to the unemployment gap, trend productivity, and inflation expectations. A nonemployment index was also significant, but the coefficient on the growth rate in labor productivity became negative. Given the longer sample available for Germany, changes in involuntary part-time employment were included separately, with the sizable coefficient perhaps reflecting the more widespread use of changes in employee hours to avoid layoffs. The error correction term is particularly high (about –0.6), and it contributes substantially to explanatory power, making the error correction model with the changes in involuntary employment the best baseline model.

German wage setting appears to be anchored on domestic labor market conditions and less sensitive to spillovers than either of the regional panels. German wages are not found to be responsive to changes in euro area unemployment (column 7 in Table 2.5), while the estimated coefficient on euro area wage growth has the opposite sign (column 8) from that expected from a spillover. Changes in net migration flows also do not have a statistically significant impact on German wages (column 9).

Factors Driving Wages within Regions

In the "other euro area," inflation and inflation expectations have been key factors behind variations in nominal wage growth, together with domestic and external slack, with the correction of past wage overhangs also moderating wages (Figure 2.18). The initial slowing in wage rises (average from the five-country panel) by

Table 2.5. Germany: Short-Term Equations: Total Labor Compensation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Variables	Standard Phillips Curve			ECM Wage Curve			Spillover Analysis		
Wage, Log, Four-Quarter Change (*t*–4)	0.18	0.15	0.37***	0.46***	0.43***	0.44***	0.53***	0.59***	0.62***
	(0.11)	(0.10)	(0.08)	(0.09)	(0.08)	(0.07)	(0.11)	(0.10)	(0.10)
Trend Labor Productivity, Log, Four-Quarter Change (*t*–4)	1.02***	0.63*	0.72***	0.76***	0.43*	0.58**	0.12	0.52	0.45
	(0.35)	(0.34)	(0.23)	(0.26)	(0.24)	(0.22)	(0.33)	(0.32)	(0.32)
HICP, Log, Four-Quarter Change (*t*–5)	0.11	0.24	0.18	0.01	0.16	0.16	0.24*	0.30**	0.27**
	(0.16)	(0.16)	(0.11)	(0.12)	(0.12)	(0.11)	(0.13)	(0.12)	(0.13)
Expected Inflation, One Year Ahead (*t*–4)	0.66*	0.36	−0.77***	0.98***	0.68***	−0.19	0.67***	0.42*	0.44*
	(0.36)	(0.34)	(0.27)	(0.27)	(0.25)	(0.30)	(0.25)	(0.24)	(0.24)
Unemployment Gap (*t*-4)[1]	−1.30***	−0.60**	−0.54***	−0.94***	−0.30	−0.40**	−0.12	−0.46*	−0.50*
	(0.23)	(0.29)	(0.20)	(0.18)	(0.21)	(0.19)	(0.25)	(0.25)	(0.27)
Unemployment Rate, Four-Quarter Change	−0.42**	0.07	0.01	−0.30**	0.13	0.06	0.28	0.12	0.14
	(0.19)	(0.21)	(0.15)	(0.14)	(0.16)	(0.14)	(0.19)	(0.18)	(0.18)
Involuntary PT Employment Four-Quarter Change (*t*–1)		−1.25***	−0.86***		−1.12***	−0.93***	−1.17***	−0.88***	−0.87***
		(0.33)	(0.23)		(0.24)	(0.22)	(0.24)	(0.23)	(0.23)
Hours Gap (*t*–4)[2]			0.81***			0.51***			
			(0.09)			(0.12)			
EA Unemployment Rate, Four-Quarter Change (*t*–2)							−0.26	−0.13	−0.20
							(0.19)	(0.17)	(0.19)
EA wage, Log, Four-Quarter Change (*t*–4)								−0.35***	−0.37***
								(0.09)	(0.09)
Year-over-Year Change of Net Migrant Inflow (*t*–4)[3]									−0.13
									(0.27)
Error Correction Term (*t*–4)				−0.62***	−0.60***	−0.32***	−0.61***	−0.66***	−0.65***
				(0.08)	(0.07)	(0.09)	(0.07)	(0.07)	(0.07)
Constant	−0.00	0.00	0.02***	−0.01**	−0.01	0.01	−0.01	0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Observations	83	81	81	83	81	81	81	81	80
R-Squared	0.45	0.56	0.79	0.70	0.77	0.82	0.78	0.82	0.82

Source: IMF staff calculations.

Note: Standard errors in parentheses. EA = euro area; ECM = error correction model; HICP = harmonized index of consumer prices; PT = part-time.

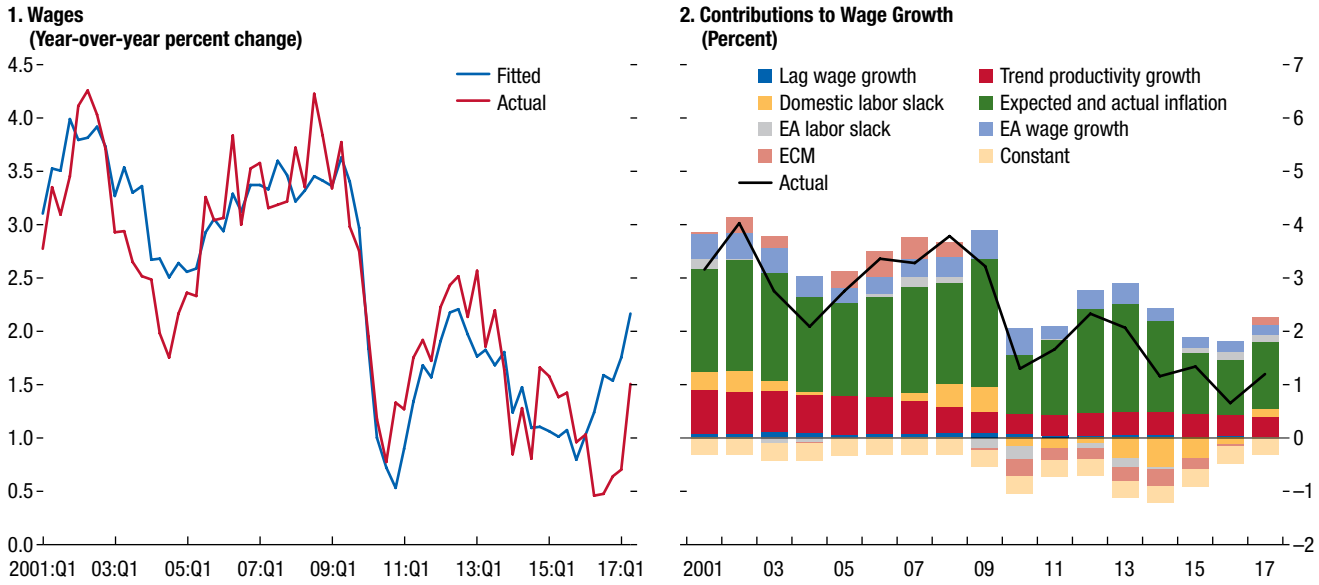
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

[1]Calculated as the difference between actual unemployment rate and OECD nonaccelerating inflation rate of unemployment.

[2]Calculated as the percent deviation of actual hours per employee from the trend estimated using the Hodrick-Prescott filter.

[3]Percent of total workforce.

Figure 2.18. Wages: Euro Area Excluding Germany



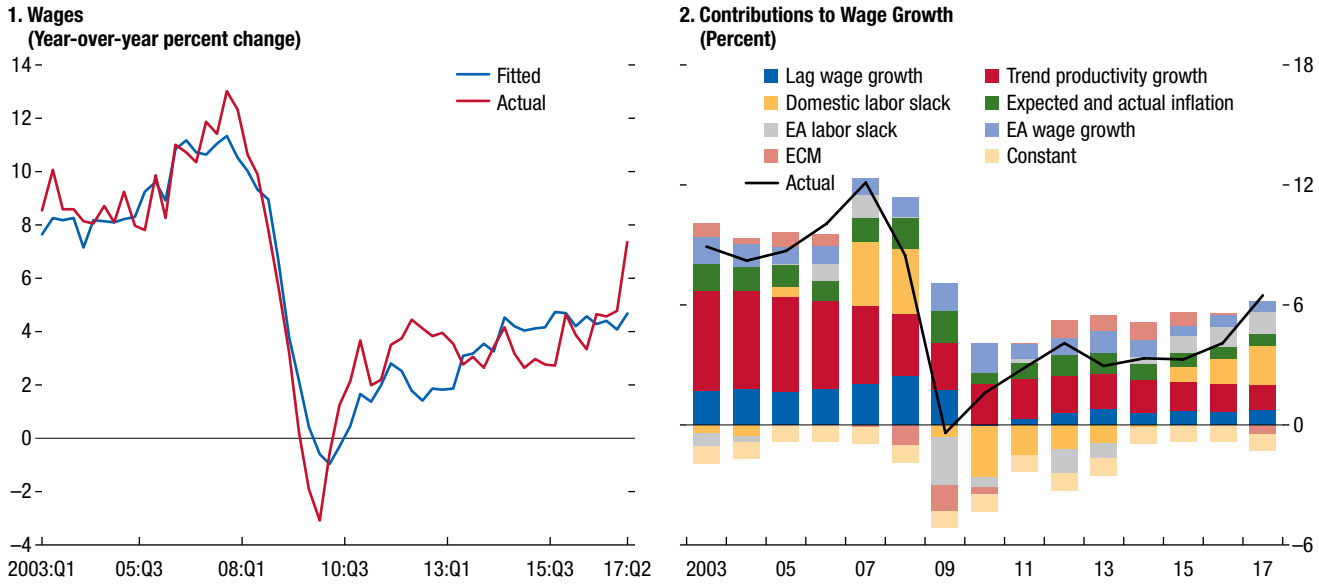
Sources: Eurostat; Haver Analytics; and IMF staff calculations.
Note: EA = euro area; ECM = error correction model.

2.3 percentage points in 2010 is linked to lower inflation expectations (0.8 percentage point), lower past inflation (0.5 percentage point), domestic labor slack (0.6 percentage point), and the error correction (0.3 percentage point), as wage rises remained solid in 2009 even as inflation and productivity growth fell. The error correction continued to weigh on wages by 0.2 to 0.3 percentage point during 2011–15, helping account for wage moderation. During 2011–13, inflation expectations and actual inflation recovered, lifting their combined contribution to wage growth by 0.9 percentage point. But the euro area crisis meant that domestic and external slack began to weigh more heavily on wages during 2012–14, with a total drag of 0.6 percentage point on wage growth in both 2013 and 2014. This drag was amplified by the contributions from inflation expectations and inflation falling sharply during 2014–15 by 0.9 percentage point, with only a slight increase seen by 2017.

In the newer member states, declines in both domestic and foreign slack have contributed to wages picking up in recent years, based on average results from the eight-country panel (Figure 2.19). The sharp halt in wage rises in 2009 reflected large negative contributions from both rising domestic slack and rising euro area unemployment, plus some error correction drag. Even as the high level of domestic and external slack continued to drag on wage rises during 2010–14, by 2011 the declines in domestic slack began to support wages, while declines in euro area unemployment began to support wages beginning in 2014. By 2016–17, the low level of domestic slack began to reinforce wage rises. Yet this combination of domestic and external pressures does not fully account for the extent of wage acceleration during 2016–17, which may be partly due to migration. However, data on migration in recent years are not yet available.

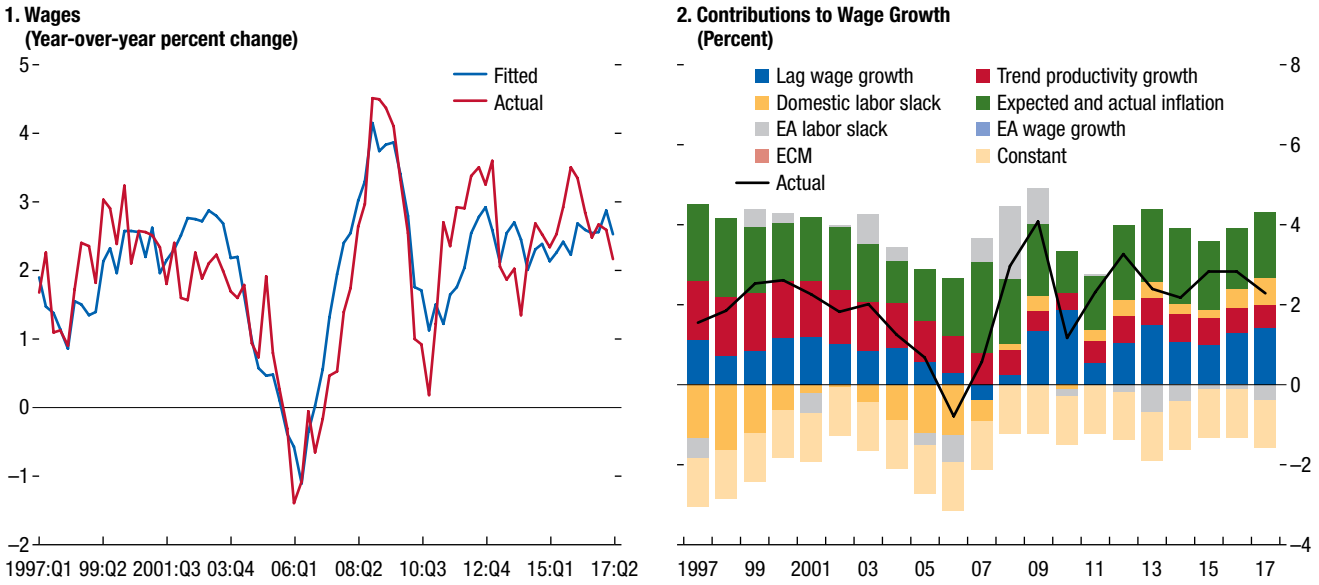
In Germany, domestic labor market conditions and inflation expectations have been key factors behind variations in nominal wage growth (Figure 2.20). The steep initial fall in wage growth by 2.9 percentage points in 2010 is linked to lower inflation expectations (0.9 percentage point), domestic labor slack (0.3 percentage point), and the error correction (1 percentage point). Domestic slack also weighed on wages in 2011,

Figure 2.19. Wages: Newer EU Members



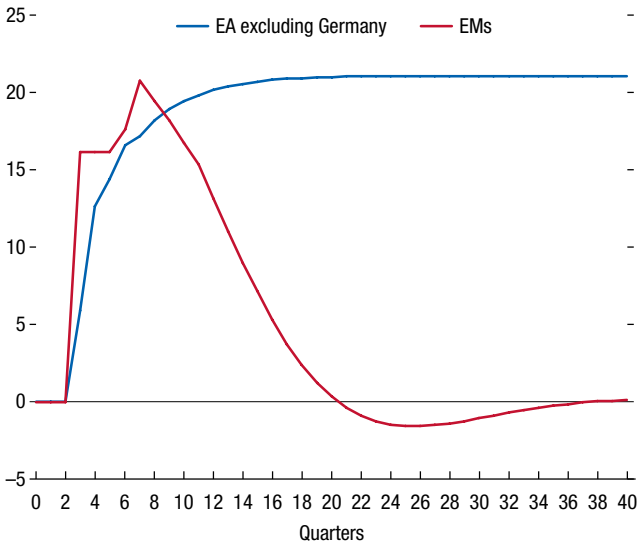
Sources: Eurostat; Haver Analytics; and IMF staff calculations.
Note: EA = euro area; ECM = error correction model.

Figure 2.20. Wages: Germany



Sources: Eurostat; Haver Analytics; and IMF staff calculations.
Note: EA = euro area; ECM = error correction model.

Figure 2.21. Impact on Domestic Wage Growth given 1 Percent Increase in German Wage Growth
(Percent)



Source: IMF staff calculations.
Note: EA = euro area; EMs = emerging markets.

and has not become a source of upward wage pressure in more recent years. During 2011–13, inflation expectations recovered, lifting the contribution of those expectations to wage growth by 0.8 percentage point. Wage growth higher than 3 percent in 2012, despite low inflation and productivity growth, led to a significant error correction drag on wages during 2012–14, peaking at 0.7 percentage point in 2013. This drag was amplified by the contributions from inflation expectations falling during 2014–15 by 0.4 percentage point, with a slight additional decline in 2017.

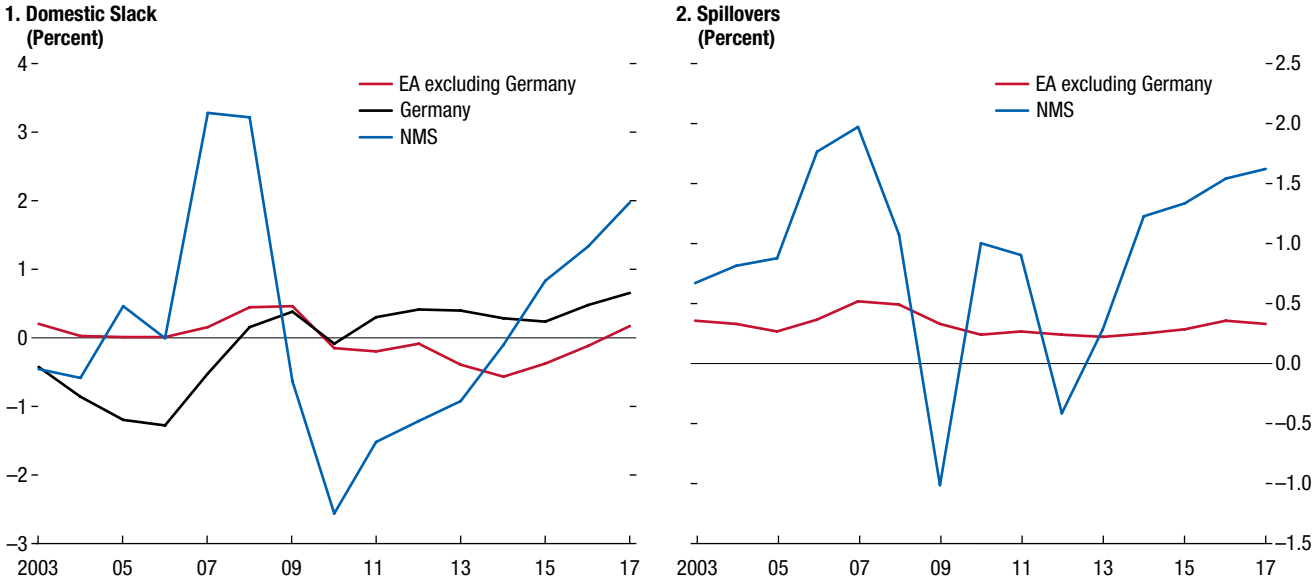
The scale and nature of spillovers can be illustrated through a scenario analysis of a rise in German wage growth (Figure 2.21). For illustrative purposes, hourly wage rates in Germany are assumed to rise 1 percentage point faster than in a baseline, which would raise euro area wage growth by about 0.4 percentage point given Germany's weight in the euro area. This would spill over into the growth of wages in both regional panels. Moreover, higher German wages also spill over through the long-term equations for Austria, Belgium, and the Netherlands. Overall, wage growth in the euro area excluding Germany rises about 0.1 percent after one year and 0.2 percent in the medium term. The impact on newer EU member country wages is slightly larger in the near term (about 0.15 percent after one year), but fades to zero over time because in the long term real wages in the newer member states depend only on domestic labor productivity. To the extent that higher wages lead to higher inflation, through either domestic demand or cost channels, the medium-term impact on wages would be higher than these simulations indicate.

Impacts of Regional Differences in Wage Formation

In newer EU members, greater wage sensitivity to domestic labor slack and external developments help account for the faster wage increases in these countries (Figure 2.22). Wages are found to be more responsive to domestic labor slack in the newer members, with the coefficients on the nonemployment gap and hours gap about two times larger (column 8), and the impact of changes in nonemployment is much larger in the newer members than in the EU15, so wages also respond more rapidly to slack. Hence, in the wake of the global financial crisis, the adverse impact of domestic slack on newer member state wage growth was much larger than in the euro area excluding Germany. In more recent years, as discussed earlier in this chapter, domestic slack has diminished more rapidly in the newer member states, with an estimated contribution to wage growth of about 2 percentage points. In addition, wage dynamics in the newer members are also found to be more sensitive to external labor market developments, with combined spillovers from euro area unemployment and euro area wage rises accounting for about 1½ percentage points of the wage pickup in the newer members, compared with less than ½ percentage point in the euro area excluding Germany during 2015–17.

In the euro area, subdued inflation has been a key factor weighing on wage rises in recent years (Figure 2.23). Compared with the new EU

Figure 2.22. Contributions to Wage Growth

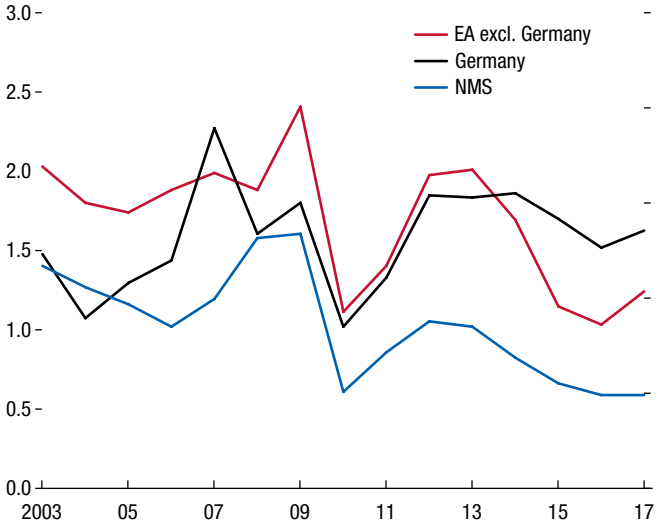


Sources: Eurostat; Haver Analytics; and IMF staff calculations.
Note: EA = euro area; NMS = newer EU members.

members, expected and lagged inflation are much more important factors driving wage formation in the EU15, with the coefficient on lagged inflation much more significant and the contribution from expected inflation more than two times higher in the EU15 than in the newer member states. Despite some recent increases in actual inflation, near-term expected inflation in the euro area remains subdued. Thus, the overall contribution of inflation expectations to wage increases declined by half a percentage point during 2016–17 compared with 2012–13.

To summarize, wage developments in the EU15 and newer EU members are driven by different factors. In the EU15, wages typically respond very slowly to changes in unemployment and are closely related to inflation and inflation expectations. Viewed against this evidence, current wage developments are not unusual, rather, inflation and inflation expectations are unusually low. By contrast, in the newer EU members, the econometric evidence suggests that wage growth responds very quickly to changes in unemployment. This, together with lower importance of inflation and inflation expectations,

Figure 2.23. Contribution to Wage Growth from Inflation and Inflation Expectations
(EA excluding Germany versus EMs, percent)



Source: IMF staff calculations.
Note: EA = euro area; EMs = emerging markets; NMS = newer EU members.

explains why wage growth in these states is now running much higher. Other factors, such as cross-country labor market spillovers, also play a role in wage growth. For the EU15, this role is smaller than that of labor market slack and inflation. For the newer EU members, it is smaller than the role of slack but larger than that of inflation.

Expectations, Wages, and Inflation

Understanding wage dynamics and how the role of key factors, such as slack, inflation, and inflation expectations, has evolved over time is particularly important for policymakers. Has the sluggish wage growth in the euro area been due to a flattening of the wage Phillips curve? Or is it because wages have become more tied to low inflation expectations, which have themselves become less anchored to targets given prolonged low inflation? Did wage moderation contribute to low inflation in the euro area, and what are the implications for getting inflation back to the European Central Bank's target? In the newer member states, would the already strong wage growth accelerate given the tight labor market conditions? How much of this wage growth, given productivity, would be passed to inflation?

To shed light on these questions, this section investigates how the role of slack, inflation, and inflation expectations has changed over time. Specifically, it looks at (1) how anchored inflation expectations have remained over time; (2) how the parameters of the baseline Phillips curve estimated earlier in this chapter have evolved over time; and (3) the extent of the pass-through from wage growth to inflation. Separate analyses are done for the EU15 and the newer EU members, in part because the chapter finds notable differences in wage behavior between these regions.

Anchoring of Inflation Expectations

The anchoring of inflation expectations is analyzed by assessing whether inflation expectations are systematically sensitive to movements in actual inflation. Drawing on similar approaches in the literature (see Chapter 3 of the April 2013 WEO; Strohsal, Melnick, and Nautz 2016; and Lyziak and Paloviita 2017), the equation below is estimated for the euro area countries and newer EU members with quarterly data beginning in the first quarter of 1998, wherever data are available, until the third quarter of 2017:

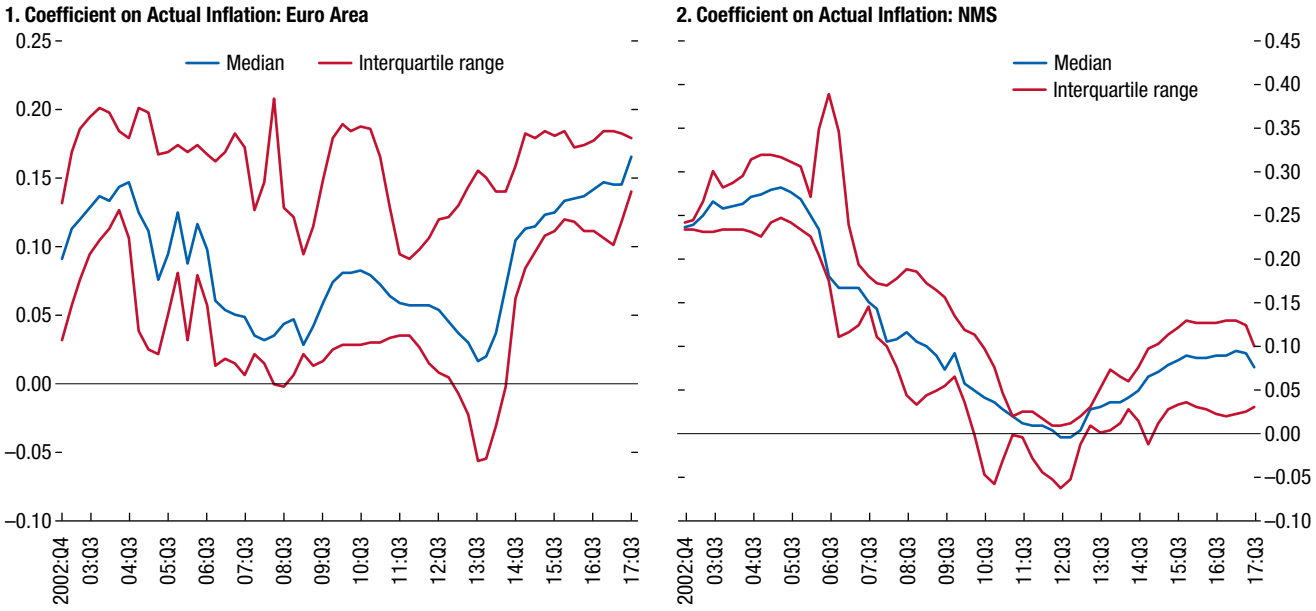
$$\pi_t^e - \bar{\pi} = \alpha + \beta(\pi_t - \bar{\pi}) + \varepsilon_t, \qquad (2.1)$$

in which π_t^e represents a measure of inflation expectations, π_t actual inflation, and $\bar{\pi}$ the inflation target for a given country. Inflation expectations are firmly anchored in the short term if they are not systematically sensitive to movements in actual inflation, that is, when $\beta = 0$ (see Bernanke 2007 for a similar concept). To assess how the anchoring of inflation expectations has evolved over time, five-year rolling regressions of the above equation are estimated.

Consensus Forecasts for inflation are used to measure inflation expectations. More specifically, two-year-ahead forecasts are used in the baseline estimates, and robustness of the results is checked with five-year-ahead forecasts.[28] For the euro area and each member country, the inflation target is taken to be 1.9 percent, in line with the European Central Bank's definition of price stability. For the Czech Republic, Hungary, Poland, and the Slovak Republic, the target is the rate announced by the central bank or the simple average of the announced rates at a given point in time, interpolating linearly wherever necessary.

[28]Market-based inflation expectations are appealing but they are potentially biased due to inflation risk, liquidity risk, and institutional distortions (Lyziak and Paloviita 2017). Such biases are likely significant during times of financial stress and unconventional monetary policy. Market-based measures are not available for all newer member states, or markets tend to be shallow. For the aggregate euro area for which data are available, the results are robust to using market-based measures of inflation expectations (five-year-forward inflation compensation five years ahead).

Figure 2.24. Rolling Regressions of Inflation Expectations over Actual Inflation



Sources: Consensus Forecasts; and IMF staff calculations.
Note: The blue lines denote the point estimates, and the red lines denote the 95 percent confidence bands. The time period shown on the horizontal axis reflects the end of each five-year rolling window. Euro area countries used in the estimation are France, Germany, Italy, Netherlands, and Spain; for NMS countries, Czech Republic, Hungary, Poland, and Slovak Republic. NMS = newer EU members.

In the euro area, there are some signs of a deanchoring of inflation expectations in recent years. The rolling regression estimates show an increase in the coefficient on actual inflation, indicating that inflation expectations have become somewhat more sensitive to movements in actual inflation (Figure 2.24). To address potential endogeneity, the equation is estimated using lagged actual inflation; the headline results remain robust. The results with the one-year-ahead inflation expectations (estimated at the country level) and five-year-ahead inflation expectations (estimated as an aggregate for the euro area) are similar. Overall, the results support the view that low inflation since the global financial crisis contributed to some deanchoring of inflation expectations in the euro area similar to Lyziak and Paloviita (2017).

In newer members, inflation expectations seem to have become more anchored over time. Expectations have become less sensitive to movements in actual inflation than they were during the period preceding the global financial crisis. Although there has been some reversal of this trend in the past five years, the sensitivity remains quite low.

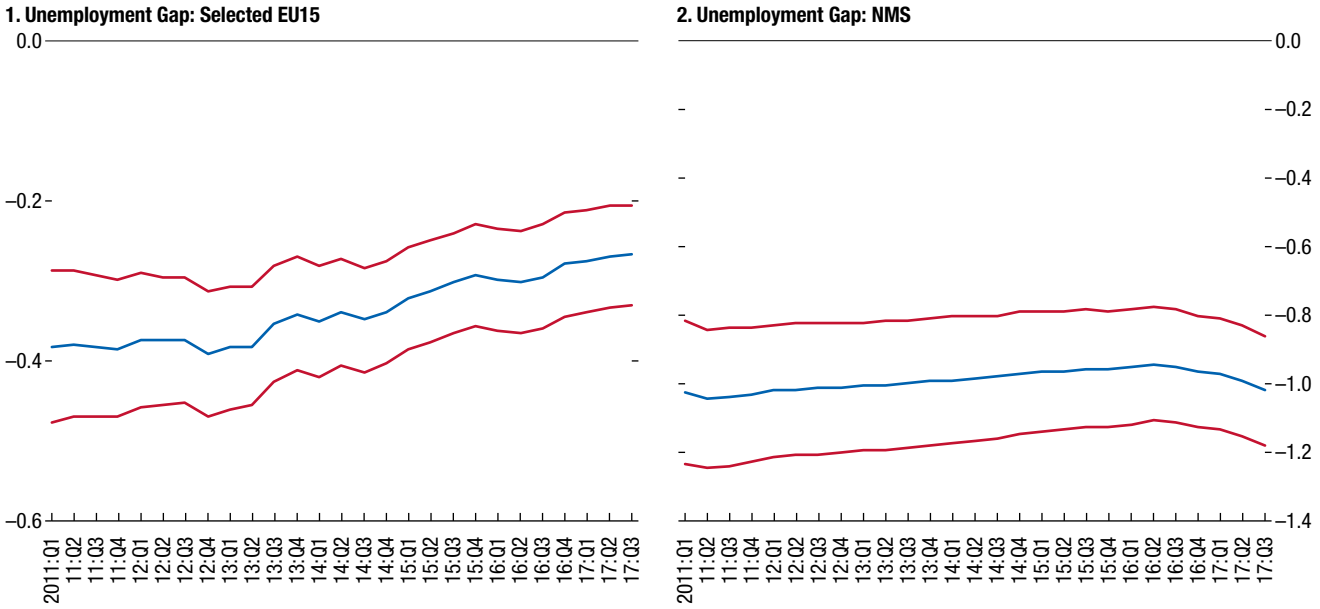
Role of Slack, Indexation, and Inflation Expectations for Wage Growth over Time

The stability of the wage Phillips curve coefficients is tested using rolling regressions. Following the baseline specification presented earlier in this chapter, the following equation is estimated:

$$w_t = \alpha + \beta X_t + \varepsilon_t, \qquad (2.2)$$

in which w_t denotes nominal wage growth and X_t denotes a vector of explanatory variables that includes actual inflation, expected inflation, and the unemployment gap. The vector also includes trend productivity growth and change in the unemployment rate as controls. Taken together, the vector includes a set of core variables in a standard Phillips curve analysis. Lags of the

Figure 2.25. Rolling Estimates of Coefficient before Unemployment Gap



Source: IMF staff calculations.
Note: The blue lines denote the point estimates, and the red lines denote the 95 percent confidence bands. The time period on the horizontal axis denotes the end of each 15-year rolling window. EU15 = long-standing EU members; NMS = newer EU members.

explanatory variables are taken consistent with the earlier analysis in this chapter. To assess how the impact of indexation, slack, and inflation expectations on wages has evolved over time, the above equation is estimated in a panel with 15-year rolling windows using quarterly data from the first quarter of 1996 to the third quarter of 2017, separately for the euro area (excluding Germany) and the newer EU member states, as before.

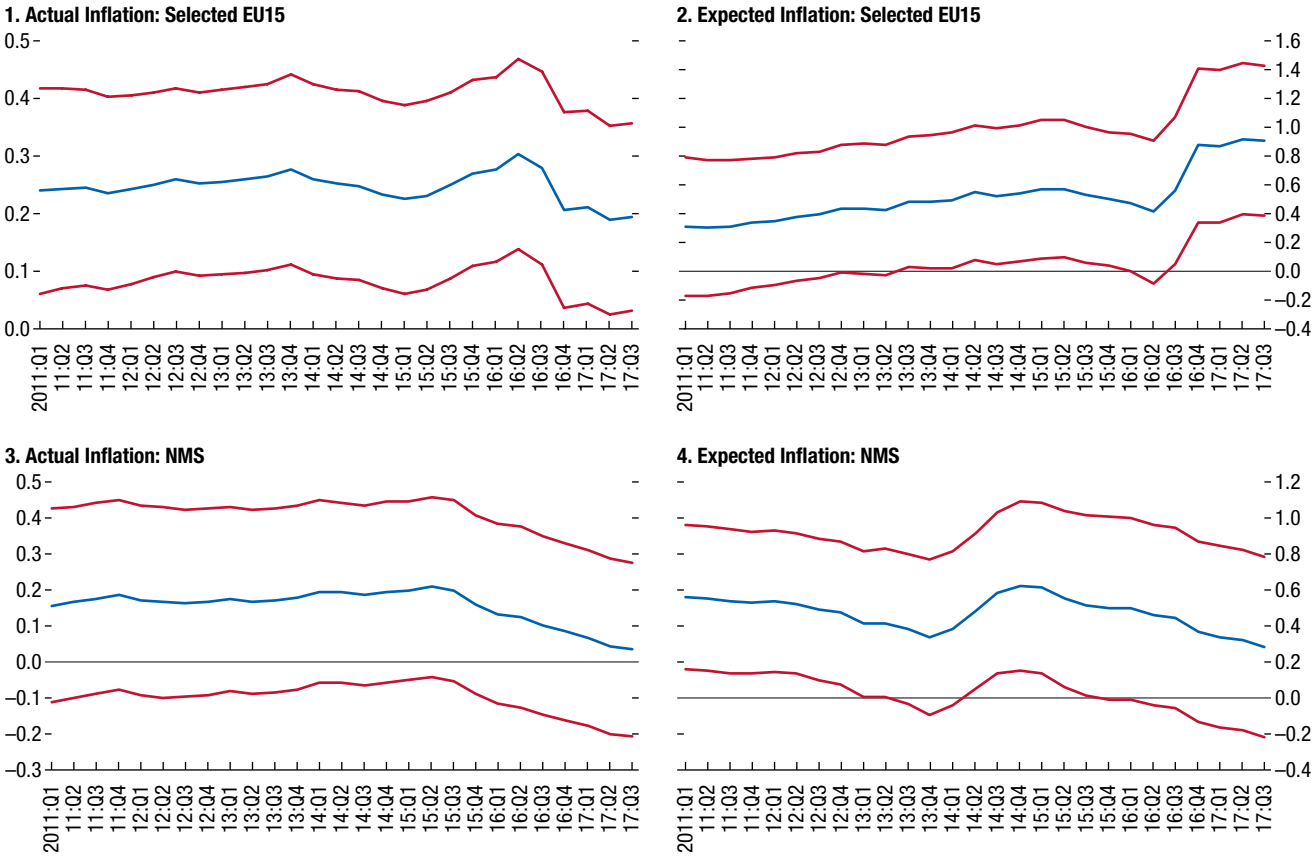
The slope of the wage Phillips curve is found to be broadly stable for both the euro area and the newer member states. For the euro area, the estimated coefficient on the unemployment gap starts at about –0.4 and rises only modestly to –0.3, while for the newer members, the coefficient is stable at about –1 (Figure 2.25). These results use hourly total labor compensation as in the baseline specification earlier in this chapter. Results using hourly wages and salaries paint a similar picture. Thus, the wage Phillips curve has not flattened significantly since the early 2000s. This result is consistent with existing studies that find that much of the flattening of the Phillips curve (for wages and prices) occurred in the 1980s, while the slope parameter has remained broadly stable since then (Blanchard, Cerutti, and Summers 2015; Borio 2017).[29]

In the euro area, wage setting has become notably more forward-looking over time. The coefficient on inflation expectations has increased from about 0.3 in the late 1990s to about 0.8 (and statistically significant) in recent years (Figure 2.26).[30] At the same time, wage adjustment in response to actual inflation has declined modestly in recent years, from about one-quarter to one-fifth. In newer member states, the coefficient on expected inflation has varied without a clear trend, and there is some decline in the impact of actual inflation in recent years.

[29]Recent literature offers little consensus on how the slope of the wage Phillips curve has evolved in recent times (Riggi and Venditti 2015; Constâncio 2017; Bonama, de Haana, and van Limbergen 2018).

[30]To the extent that inflation expectations in the euro area have become more sensitive to actual inflation in recent years, this would tend to increase the effect of actual inflation on wages. That said, the impact is likely minor given the modest estimated sensitivity of inflation expectations to actual inflation (Figure 2.24).

Figure 2.26. Rolling Estimates of Coefficient before Actual and Expected Inflation



Source: IMF staff calculations.
Note: The blue lines denote the point estimates, and the red lines denote the 95 percent confidence bands. The time period on the horizontal axis denotes the end of each 15-year rolling window. EU15 = long-standing EU members; NMS = newer EU members.

Pass-through from Wages to Inflation

The pass-through of wages to inflation is studied using a vector autoregression (VAR) model. Building on Peneva and Rudd (2017), a four-variable VAR is estimated comprising relative import price inflation (ratio of import prices over the GDP deflator), nominal wage growth adjusted for trend productivity growth, consumer price inflation, and an unemployment gap (based on OECD estimates of the NAIRU).[31] The multivariate framework of the VAR allows for assessing the pass-through of wages (adjusted for productivity) to prices while controlling for endogenous feedback effects with prices and slack.[32] The VAR is estimated as a panel separately for the EU15 and the newer members using quarterly data from the first quarter of 1998 to the third quarter of 2017. A Cholesky decomposition is used for the identification of the shocks, with the variables ordered as described above. The ordering reflects a relative exogeneity of the variables, whereby import prices are assumed most exogenous and the unemployment gap the most endogenous (Peneva and Rudd 2017). By ordering wage growth before inflation, it is assumed that movements in wages have an immediate impact

[31]Adjusting wages for productivity produces unit labor costs, which are a key driver of inflation in many economic models; they also shape external competitiveness.

[32]The responses of wage growth to shocks to inflation and the unemployment gap—positive in the former and negative in the latter—are consistent with the panel regression estimates in this chapter.

on inflation, but wages take at least a quarter to respond to price movements.[33] Results are robust to alternative ordering of variables (for example, ordering inflation before wages results in similar medium-term dynamics of inflation to a wage shock, even when the immediate impact is constrained to zero).

The medium-term pass-through from wages to prices, while positive, is less than full in both the EU15 and the newer member states. The immediate impact of a wage shock on price inflation is positive yet small, but the impact rises over time to peak around four to six quarters before dissipating after about three years (Figure 2.27). In the EU15, a wage shock that increases wage growth by 1 percentage point on impact is followed by cumulative increases over three years of 0.6 percent in prices, and 2.4 percent in wages, for a pass-through of 25 percent. For the newer members, the cumulative increase is 0.9 percent in prices, and 3.6 percent in wages, for a similar pass-through of 25 percent. The literature also find a less-than-full and relatively small pass-through from wages to inflation, especially after the 1980s (Mehra 2000; May 2017 *Regional Economic Issues: Central, Eastern, and Southeastern Europe*; Peneva and Rudd 2017).

Conclusions and Policy Implications

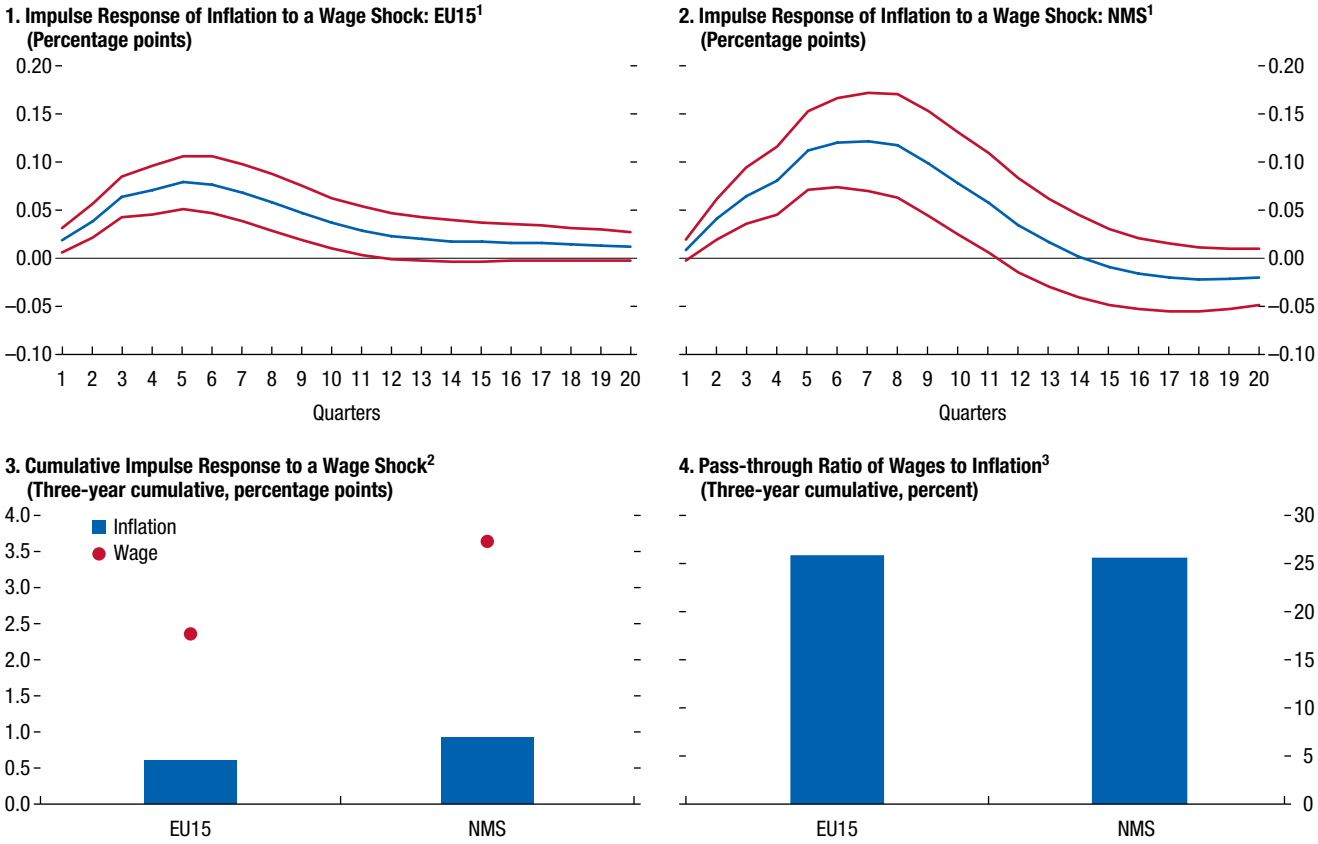
Wage formation in Europe remains principally driven by country-specific conditions, but global and regional factors play a significant role, especially in the newer EU member states. Key points from the analytical work presented in this chapter are the following:

- The wage Phillips curve appears alive and well, having broadly stable parameters, with a modest slope in EU15 countries, and especially strong wage responses to slack in the newer EU member countries. This contributed to the much faster deceleration of wages in the latter countries after the global financial crisis, together with the more recent wage acceleration.
- Real wages are anchored by labor productivity, but deviations from equilibrium can develop. Incorporating such deviations into the analysis facilitates understanding of wage moderation, especially in the wake of major shocks (global financial crisis and the euro area crisis) to regions with nominal wage inertia, such as the EU15.
- While unemployment remains the main indicator of slack, it is also useful to monitor involuntary part-time employment and hours worked per person. A nonemployment index can usefully summarize the first two variables plus marginally attached workers.
- Spillovers can operate via both wage and slack developments in other countries. Spillovers are especially strong in the newer EU members, which may reflect the positions of many of those countries in global supply chains and migration effects on domestic labor supply. Migration effects on wages appear to be statistically significant, but small and temporary.
- Inflation expectations are a key driver of nominal wage developments, especially in the euro area. Some deanchoring of these expectations has appeared in recent years owing to prolonged low inflation.

Although the models can broadly account for wage trends, wages in the newer EU member countries are growing somewhat faster than the models would indicate. The moderation of nominal wages in the EU15 is found to reflect principally low inflation expectations and slower productivity growth, together with the relatively modest and lagged impact of slack on wages. Accordingly, provided unemployment continues to fall and inflation gradually increases in line with projections in the April 2018 WEO, wage rises are also projected to pick up in the EU15,

[33]This distinguishes only between orthogonalized shocks to wages and inflation in the VAR system. A deeper structural interpretation of the fundamental drivers of wage and inflation shocks is beyond the scope of the chapter.

Figure 2.27. Pass-through from Wages to Inflation



Source: IMF staff calculations.
Note: EU15 = long-standing EU members; NMS = newer EU members.
[1]Impulse responses of inflation, for different horizons, to a wage shock that increases wage growth by 1 percent on impact. The blue lines denote the point estimates of the impulse responses, and the red lines denote the two standard deviations confidence bands.
[2]Cumulative impulse responses of inflation and wage growth to the wage shock at the end of three years.
[3]Pass-through ratio from wage growth to inflation at the end of three years. The pass-through is defined as the ratio of the cumulative change in inflation at the end of three years over the respective cumulative change in wage growth.

but the process will take much longer than in the newer EU members. In contrast, even with contributions from declining domestic slack in the newer members, and spillovers from declining euro area unemployment, the recent acceleration in new member state wages is not fully accounted for. Migration of skilled workers from the newer members and hikes in minimum wages and public sector wages are potential contributors to these developments, which have lifted wages to relatively high levels compared with trends in labor productivity.

For the euro area, the central policy implication is to underpin a firm reanchoring of expectations to the inflation target. The analysis suggests that the negative impact of slack on wages was deepened and prolonged by downward adjustments in inflation expectations, which have become more sensitive to actual inflation developments as inflation remained below target in recent years. Accordingly, to ensure the effectiveness of the inflation target in promoting macroeconomic stability, it remains essential for the European Central Bank to stay committed to its strategy to durably raise inflation to target. Regarding current account rebalancing within the euro area, the analysis suggests that although the wage and real exchange rate adjustments following the global financial crisis were sizable, they do not fully account for the major adjustments in current

accounts, which were principally the result of swings in domestic demand financed by capital inflows. Nonetheless, wage developments in the euro area are broadly consistent with promoting adjustment in current account imbalances, with room for further unit labor cost rises in Germany and perhaps also in the Netherlands.

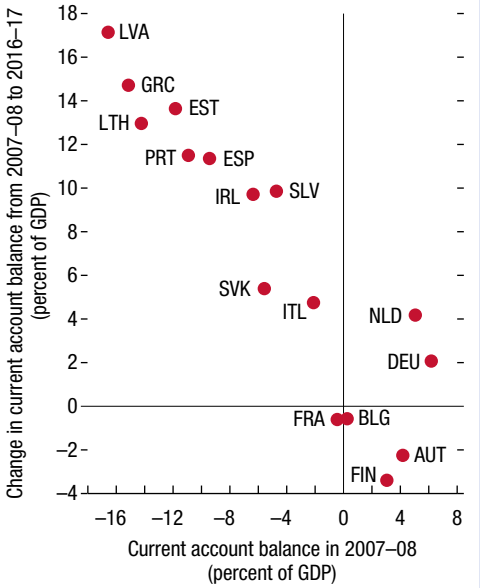
Recent wage developments in newer EU member countries increase the urgency for implementation of reforms to reduce skill mismatches and support labor force participation. The sharp acceleration of wages during 2016–17 lifted the average ratio of real wages to trend labor productivity to roughly 2½ percent over its historical average in 2017, a level only exceeded temporarily in mid-2008 for two quarters. There is naturally a concern that the impact on profitability will undermine investment and growth. Mobilizing labor supply through measures to reduce skill and locational mismatches could usefully help contain wage pressure and support employment and growth. Given unfavorable demographics and emigration, active labor market policies aimed at increasing participation rates and reducing structural unemployment are needed to boost labor supply. More retraining courses for the unemployed and apprenticeship systems would help systematically develop the necessary skills and alleviate skill mismatches. Also, structural reforms focusing on strengthening institutions and improving public sector efficiency would not only help convergence, but would also encourage potential emigrants to stay.

Box 2.1. Euro Area Wage Developments and External Rebalancing

Wage developments in the euro area are broadly consistent with promoting adjustment in external imbalances, with a need for further unit labor cost rises in Germany and the Netherlands. Other countries should seek higher productivity growth, including improvement in competitiveness.

There have been substantial reductions in external imbalances within the euro area since the global financial crisis. Countries with large external deficits in 2007–08 (Estonia, Greece, Latvia, Lithuania, Portugal, Spain) have seen the largest increases in their current account balances. Italy's balance also rose notably, though its initial deficit was modest (Figure 2.1.1). In some countries with surpluses of 3 to 4 percent of GDP balances declined (Austria and Finland). Outliers from this perspective are Germany and the Netherlands, whose large intial surpluses continued to increase after the global financial crisis.

Figure 2.1.1. External Adjustment Relative to Initial Conditions in Euro Area Countries



Source: IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

Developments in unit labor costs are mostly supportive of this external adjustment. Unit labor costs in Greece, Portugal, and Spain have fallen 10 percent or more relative to the euro area average since the global crisis. This adjustment reflects labor shedding at first and below-average wage rises more recently (Figure 2.1.2). In some countries with declines in their external balances, relative unit labor costs increased (Austria and Finland). Beginning in 2011, Germany's wage growth appropriately drove an increase in its relative unit labor costs, although its external surplus continued to rise. However, the relative unit labor costs in the Netherlands declined in recent years despite its strong initial surplus.

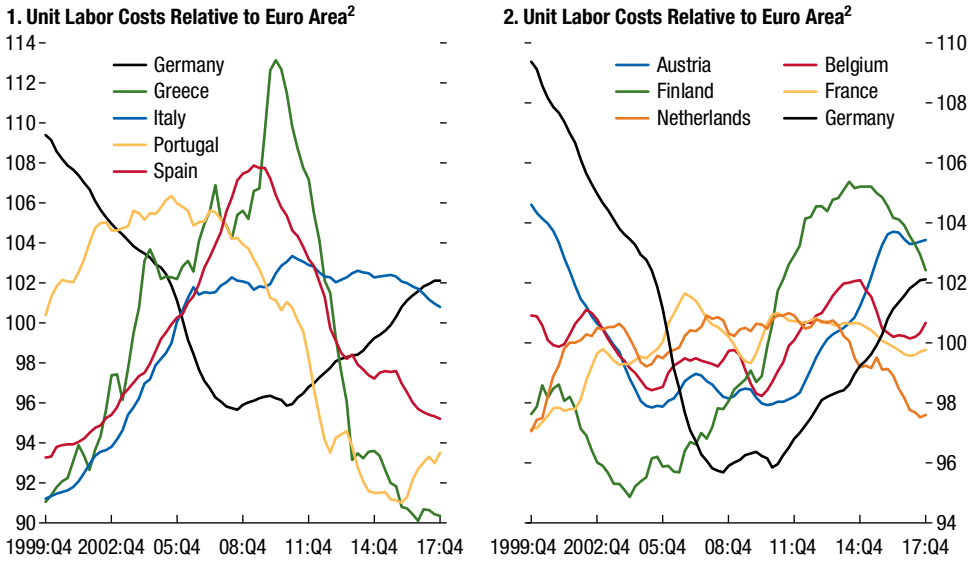
These adjustments in relative unit labor costs within the euro area have also supported adjustments in multilateral indicators of competitiveness. Recent research finds that the unit-labor-cost-basis real effective exchange rate has a strong negative correlation with the external balance, whereas there is no such relationship for measures based on the consumer price index or the GDP deflator (Ahn, Mano, and Zhou 2017). The very high unit-labor-cost-basis real effective exchange rates in Portugal and Spain have unwound and are close to 30-year averages, although Portugal remains a little above that.[1] Real effective exchange rates in France and Italy have declined more modestly, and in Austria and Belgium they are broadly stable. Despite the significant rise in Germany's unit labor costs relative to the euro area, the multilateral unit-labor-cost-based real effective exchange rate still appears low, as is true in the Netherlands, albeit to a lesser extent.

But changes in competitiveness account for only a fraction of the very large current account adjustments. An analysis of the linkage between the exchange rates and the trade balance finds that on average a 10 percent depreciation is associated with a rise in real net exports of 1.5 percent, or a 0.15 elasticity (see Chapter 3 of the October 2015 *World Economic Outlook*). Country-specific elasticity estimates are provided in IMF (2017b),

[1]Data for Greece could not be calculated on this basis as it starts only in 2000.

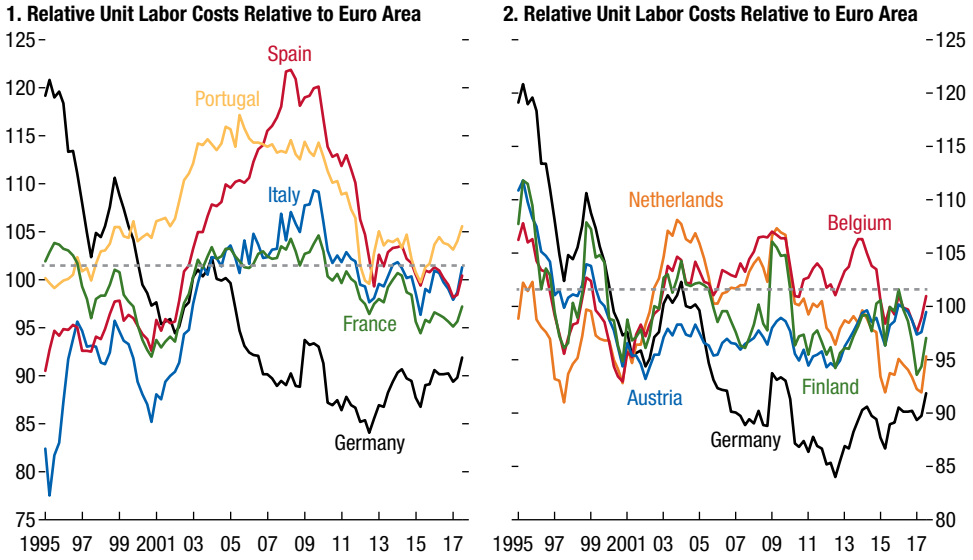
Box 2.1 *(continued)*

Figure 2.1.2. Unit Labor Costs Relative to Euro Area[1]
(Average for 2000–16 = 100)



Source: IMF staff calculations.
[1]Using the historical average as the base for unit labor cost-based real effective exchange rate aims to allow for differences in competitiveness at a time of entry to the euro area, without implying this is a long-term equilibrium exchange rate. For each country, the index is computed relative to the euro area and then averaged over 2000–16.
[2]Unit labor costs are the ratio of wages and salaries per hour (national accounts) to the trend in hourly labor productivity from a Hodrick-Prescott filter.

Figure 2.1.3. Relative Unit Labor Costs Relative to Euro Area Average
(Average for 1985–2015 = 100)



Sources: Organisation for Economic Co-operation and Development; and IMF staff calculations.
Note: Unit labor costs are the ratio of wages and salaries per hour (national accounts) to the trend in hourly labor productivity from a Hodrick-Prescott filter.

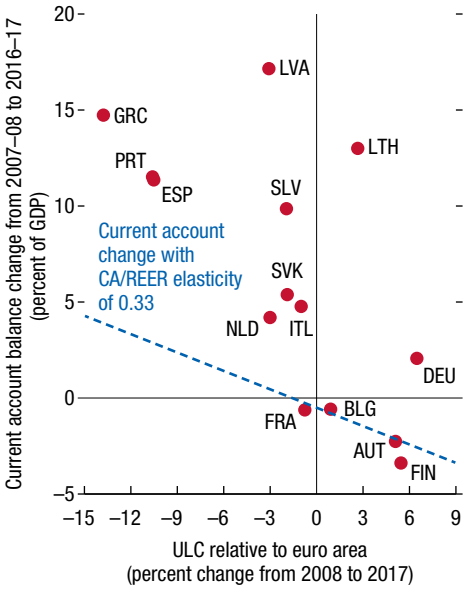
Box 2.1 *(continued)*

with a median of 0.33 for the euro area countries identified. Applying this elasticity to either (1) the change in relative unit labor costs relative to the euro area average or (2) the change in the multilateral real effective exchange rate on a unit labor cost basis, generates implied current account adjustments well short of those in the countries with large adjustments.

This observation is consistent with the view that a sudden stop in capital inflows drove the sharp adjustment in external balances within the euro area (Baldwin and others 2017). From this perspective, the pre-global-financial-crisis external deficits to a large extent resulted from capital inflows driving aggregate demand via credit growth and/or fiscal deficits. When these inflows ended—as a result of the global and euro area crises and the unwinding of distorted asset prices, risk premiums, and private sector expectations—saving and investment also shifted in a manner that increased the current account balance consistent with full employment. The labor market slack arising during the adjustment process, to varying degrees in different countries, also supported a decline in wages relative to productivity and hence declines in unit labor costs. Although these relative declines were supportive of an external adjustment feasible with a smaller than otherwise reduction in domestic demand, their co-movement with the external balance does not make them the primary driver.

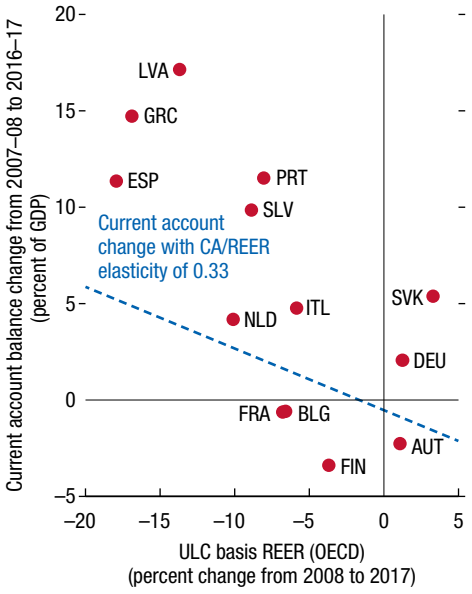
Real exchange rate adjustment remains appropriate in countries with large current account deficits before the crisis. The external balances of Greece and Portugal are now at or above their External Balance Assessment norms, with Spain in surplus yet below its norm (see IMF 2017b). Nonetheless, these three countries have large negative international investment positions, adding to the importance of aiming for higher productivity

Figure 2.1.4. External Adjustment and Euro Area Relative Unit Labor Cost Developments



Source: IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. CA/REER = current account/real effective exchange rate; ULC = unit labor cost.

Figure 2.1.5. External Adjustment and Multilateral Relative ULC Developments



Source: IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. CA/REER = current account/real effective exchange rate; OECD = Organisation for Economic Co-operation and Development; ULC = unit labor cost.

Box 2.1 *(continued)*

growth to boost competitiveness.

The continued sizable surpluses in Germany and the Netherlands call for policy adjustments to promote a greater balance of saving and investment. Such policies should include supporting continued relative gains in unit labor costs in Germany and a shift toward relative increases in the Netherlands.

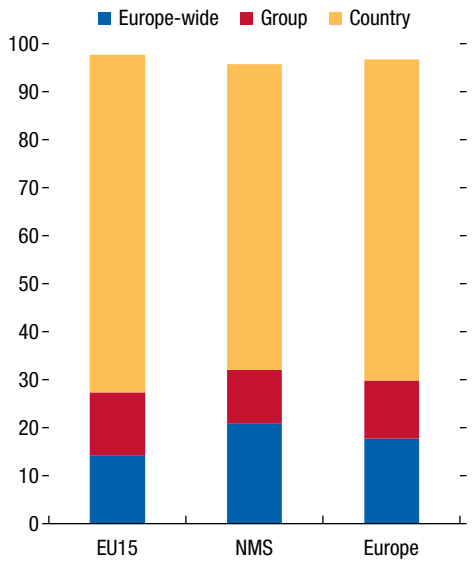
Box 2.2. Wage Dynamics: How Important Are Common Factors?

Wages across Europe can have common underlying drivers. Domestic drivers of wages—such as unemployment and inflation—could have a significant common component either due to common shocks (for example, commodity price shocks) or through spillovers (given trade and finance channels). Common factors could be even more important in European countries. For instance, European Union (EU) trade and labor market integration could make wages in EU countries more dependent on labor market conditions, including wages, in other countries due to the threat of production relocation or migration. The common monetary policy in the euro area could increase wage co-movement in these countries as well. Thus, it is important to understand the extent to which movements in domestic wages stem from forces beyond borders.

The objective of this box is to quantify the role of common factors in driving wage dynamics in the EU15 and newer EU member states. It addresses the following questions: (1) How important are common factors in driving wage dynamics in European countries? (2) To what extent are these common factors Europe-wide; that is, common to both EU15 and newer members, and, given their structural differences, specific to EU15 and newer member states? (3) How has the role of these common factors evolved over time?

This box uses a multifactor dynamic factor model to analyze the cyclical drivers of wage growth across European countries. The model decomposes wage growth (year-over-year growth of quarterly wages, demeaned) at the country level into the following factors: (1) a Europe-wide factor that captures fluctuations common across all European countries; (2) two group-specific factors that capture fluctuations common across the EU15 and the newer EU members; and (3) idiosyncratic terms or country factors that are specific to each country.[1] The common factors capture wage co-movement due to either common shocks or spillovers, but cannot distinguish between the two. Given structural differences across the EU15 and newer EU member countries that could produce different wage dynamics, the group-specific factors are designed to capture commonalities specific to each group. The model is estimated using Bayesian techniques for 26 European countries (the EU15 countries and 11 newer EU members) for the first quarter of 2002 to the third quarter of 2017. To assess how common factors have evolved over time, the model is estimated using five-year rolling windows.

Figure 2.2.1. Variance Explained by Europe-wide, Group, and Country Factors: Full Sample
(Percent)



Source: IMF staff calculations.
Note: Variance in wage growth explained by the estimated Europe-wide, group, and country factors using the full sample estimate of the dynamic factor model. Numbers are unweighted averages across countries in each group. EU15 = long-standing EU members; NMS = newer EU members.

Common factors explain a significant portion of wage growth in European countries. More precisely, the Europe-wide and group-specific factors combined explain more than a quarter of the variance of wage growth during 2002–17 (Figure 2.2.1). The role of the Europe-wide factor is larger for the newer members, consistent with the fact that they are small

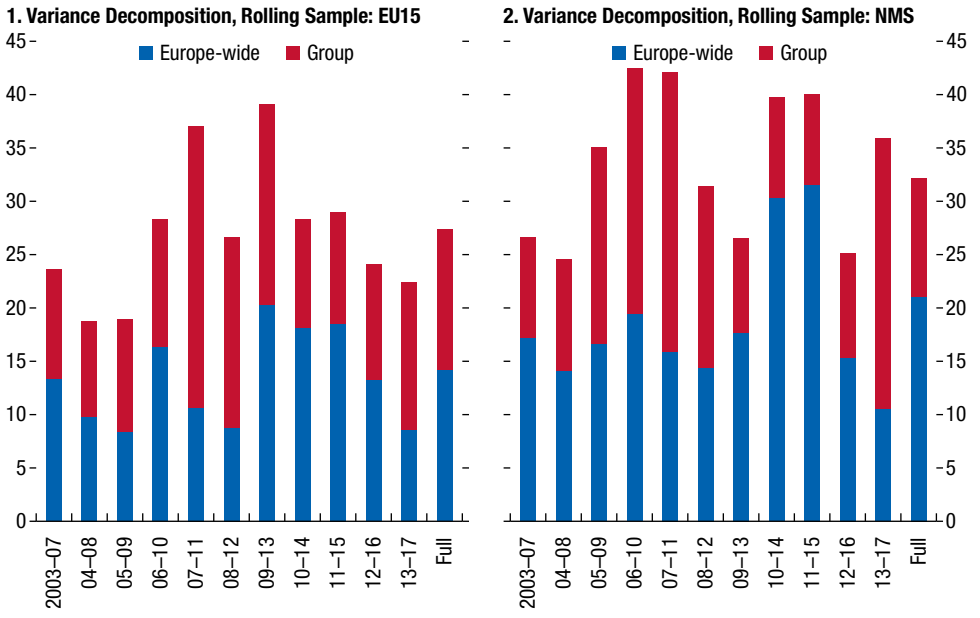
[1]To the extent that Europe-wide factors evolve as part of a broader global phenomenon, the Europe-wide factor could represent global developments as well. For a detailed discussion of the model and estimation, see Kose, Otrok, and Whiteman (2003).

Box 2.2 *(continued)*

open economies. On the other hand, the group-specific factor has a somewhat larger role for the EU15. This can be rationalized in terms of more synchronous business cycles in a monetary union that characterize the EU15. Even though common factors play an important role, country-specific factors remain the most significant driver of wage dynamics, explaining about three-quarters of their variance. The results are robust to using a simpler Principal Components Analysis to estimate the common factors. Also, while work on wage co-movement is scant, the above findings are broadly in line with the literature on inflation co-movements. For instance, the European Central Bank (2017) finds that common factors explain about a quarter of the variation in core inflation based on a comparable sample used in this box.[2]

The rolling estimates suggest that wage co-movement increased during crisis periods (Figure 2.2.2). This is in line with Chapter 2 of the October 2017 *World Economic Outlook*, which attributes increased wage co-movement to downward pressure on wage demands due to synchronized recessions and elevated concerns about job losses in the aftermath of the 2008–09 global financial crisis and the European sovereign debt crisis. More generally, Chapter 3 of the April 2013 *World Economic Outlook* finds that activity and financial variables are more correlated during crisis periods. While wage co-movement in recent years was somewhat smaller than during these crisis episodes, it nonetheless remained sizable.

Figure 2.2.2. Variance Explained by Europe-wide and Group Factors: Rolling Samples
(Percent)



Source: IMF staff calculations.
Note: Variance in wage growth explained by the estimated Europe-wide, group, and country factors using the rolling sample estimates of the dynamic factor model. Numbers are unweighted averages across countries in each group. EU15 = long-standing EU members; NMS = newer EU members.

[2]Several studies also find a significant role of common factors in driving inflation (Ciccarelli and Mojon 2010; Mumtaz, and Surico 2012; Kamber and Wong 2018). Admittedly, our quantitative findings are more in line with the co-movement of core inflation than headline inflation. See ECB (2017) for a survey.

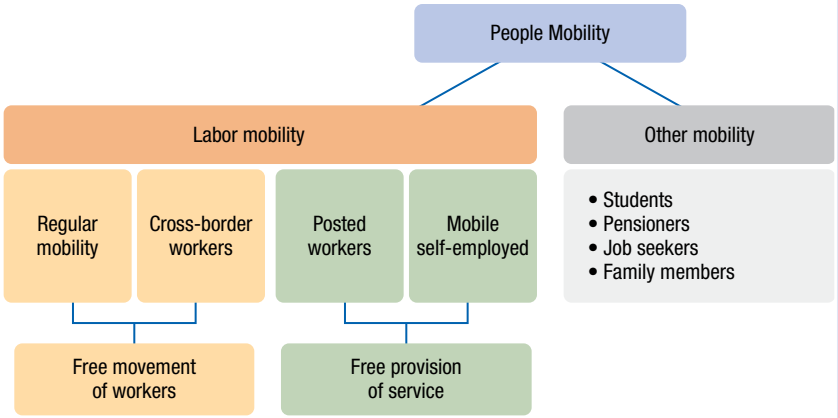
Box 2.2 *(continued)*

Overall, these results attest to an important role of common factors for wage dynamics in European countries. Common wage drivers, such as slack and inflation—given strong economic integration among European countries, and direct spillovers from wage setting in one country to others as a result of product, labor, and financial markets—likely explain a significant portion of European wage dynamics in recent years.

Box 2.3. Labor Mobility in Europe

Freedom of movement for workers is a fundamental principle enshrined in Article 45 of the Treaty on the Functioning of the European Union (EU). Labor mobility also occurs via the free cross-border provision of services as illustrated in Figure 2.3.1:

Figure 2.3.1. Mobility of People in the European Union



Source: Barslund and Busse (2016).

Under the Treaty:

- EU citizens are entitled to (1) look for a job in another EU country; (2) work there without needing a work permit; (3) reside there for that purpose; (4) stay there even after employment has finished; and (5) enjoy equal treatment with nationals in access to employment, working conditions, and all other social and tax advantages.
- EU nationals may also have certain types of health and social security coverage transferred to the country in which they go to seek work.
- People working in some occupations may also be able to have their professional qualifications recognized abroad.
- Free movement of workers also applies, in general terms, to the countries in the European Economic Area, which covers Iceland, Liechtenstein, and Norway.

EU social security coordination provides rules to protect the rights of people moving within the European Union, Iceland, Liechtenstein, Norway, and Switzerland.

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