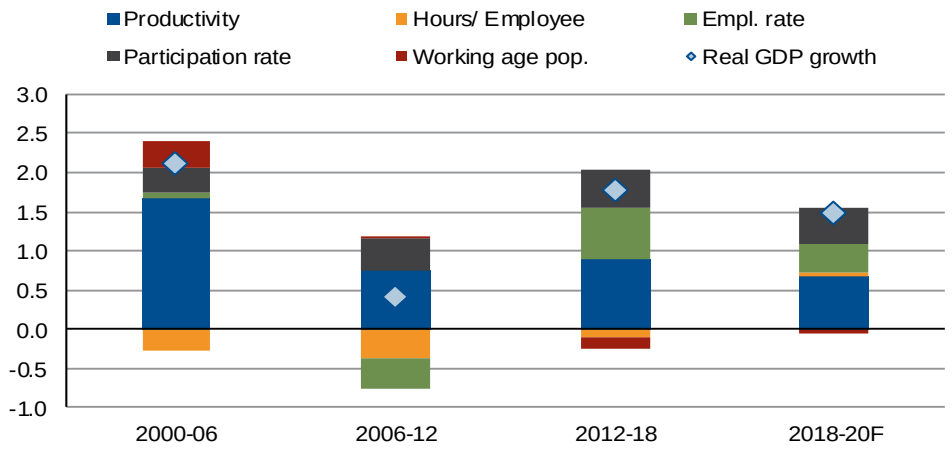
EU-28: A supply-side approach to explaining growth differences across member states since 2000

In this report, we analyse the reasons behind growth differences across the EU-28 from a supply-side perspective. By decomposing the drivers of real GDP growth to capture labour market, demographic and productivity developments over 20 years, we can identify structural differences and reform priorities for governments. In the context of declining benefits from additional monetary stimulus, a decade of subdued investment and rising demographic pressures, productivity-boosting investments and labour market reforms aimed at enhancing people's skills and labour utilisation are needed to increase Europe's growth potential.

While growth results are heterogenous among the EU-28, overall growth contributions show that increases in employment and participation rates have offset declines in both average hours worked per employee and the working age population. Productivity growth has meanwhile remained markedly lower than prior to the great financial crisis (GFC).

Figure 1: EU-28: average annual growth, by supply-side contribution, by period, %



Growth rates are approximated via natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

Key takeaways are summarised below for each region analysed over the 20-year period:

- **Euro area (EA) periphery:** This group of countries displays very heterogenous developments. Italy and Greece have displayed the lowest growth rates in the EU, reflecting low productivity growth and adverse demographics, which are the main factors differentiating them from other crisis-hit countries such as Spain and Cyprus. Employment growth has become the main growth driver, reflecting the cyclical recovery. Policy priorities include vocational training and product market regulation.
- **Central and Eastern Europe (CEE):** Reflecting their ongoing convergence with the rest of the EU, this group of countries have posted the highest cumulative growth since 2000, driven mainly by higher productivity, especially in the period to 2006. However, growth rates are set to moderate, with lower productivity gains and sustained declines in the working age population expected. Policy priorities include raising education and skill levels as well as investments in infrastructure.
- **Core European economies:** A comparatively homogenous group in terms of growth rates. Core EA countries, the Nordic region and the UK have seen modest growth since 2000, driven equally via productivity and labour market growth. Still, the study of France vs. Germany shows how growth drivers vary widely within the EA. Policy priorities include reducing the labour tax wedge, increasing labour market inclusiveness and liberalising service markets.

Analysts

Alvise Lennkh, CFA
+49 69 6677389 85
a.lennkh@scoperatings.com

Giulia Branz
+49 69 6677389 21
g.branz@scoperatings.com

Team Leader

Dr Giacomo Barisone
+49 69 6677389 22
g.barisone@scoperatings.com

Related Research

Q3 2019 Sovereign Update: Easing monetary policies and institutional uncertainties
1 July 2019

The rise of central banks as sovereign debt holders: implications for investor bases
27 August 2019

EU funds for Central and Eastern Europe: 2021-27 budget matters for sovereign outlooks
31 July 2019

Scope Ratings GmbH

Neue Mainzer Straße 66-68
60311 Frankfurt am Main

Phone +49 69 6677389 0

Headquarters

Lennéstraße 5
10785 Berlin

Phone +49 30 27891 0
Fax +49 30 27891 100

info@scoperatings.com
www.scoperatings.com

Bloomberg: SCOP

EU-28: A supply-side approach to explaining growth differences across member states since 2000

Comparing growth performance in the EU over a 20-year period

Real GDP growth rates based on supply-side decomposition

This analysis examines the supply-side drivers of economic growth by decomposing real GDP growth into five components: four related to key labour market and demographic indicators and one related to productivity, with the latter determined implicitly as the residual to reach observed growth rates1. Productivity growth, as defined in our analysis, captures all growth factors not related to total hours worked by the labour force – among them, physical capital accumulation, technological innovation, institutional quality and financial system efficiency. Our analysis is based on AMECO data over a 20-year period, from 2000 to 2020F. Growth rates are expressed in natural logarithmic form to ensure additivity of the components. The differences between logarithmic approximations and actual cumulative growth rates are explained in detail in Annex I and Annex II.

Figure 2: Real GDP growth, supply-side decomposition

Source: Scope Ratings GmbH

Analysing growth by component and over time

This supply-slide approach allows us to analyse growth performance from two perspectives: i) cumulative growth since 2000; and ii) growth drivers during four different time periods –2000-06 (pre-crisis and EU-accession for many countries), 2006-12 (crisis), 2012-18 (recovery), and 2018-20F (the near future).

Table 1: Cumulative growth (%) by supply-side contribution component, 2000-20F

		Productivity	Hours/ Employee	Empl. rate	Participation rate	Working age pop.	Real GDP growth
EA-periphery	IT	1.5	-7.1	-1.1	10.8	0.4	4.6
	GR	7.0	-2.6	-5.3	14.9	-9.0	4.9
	PT	15.3	-1.5	-0.8	5.0	-4.9	13.1
	ES	14.8	-2.3	-1.1	11.9	10.4	33.7
	CY	17.7	-7.6	-0.4	8.1	25.0	42.9
CEE	HR	33.4	-5.3	9.6	8.2	-8.1	37.8
	SI	38.0	-6.9	0.9	19.0	-4.8	46.2
	HU	44.3	-7.7	-2.3	22.1	-9.2	47.3
	CZ	46.5	-5.2	7.0	10.6	-4.9	54.0
	EE	65.2	-8.6	7.9	14.7	-11.8	67.5
	BG	60.9	0.3	11.6	20.2	-23.2	69.7
	LV	77.7	-4.0	7.5	18.1	-27.8	71.4
	PL	65.8	-4.3	13.4	3.2	-4.3	73.8
	LT	77.1	0.6	11.8	13.4	-26.9	75.9
	RO	101.2	-2.2	4.0	-6.1	-19.2	77.7
	SK	65.5	-6.7	12.7	7.2	-0.9	77.8
EU-core	DK	20.0	-6.2	0.8	4.1	4.6	23.4
	FR	16.6	-2.4	-0.2	5.9	5.3	25.2
	DE	18.9	-6.5	4.9	11.4	-3.4	25.3
	FI	20.2	-7.1	4.3	10.1	-0.1	27.5
	NL	15.3	-2.2	1.6	9.2	4.2	28.1
	BE	13.7	-2.2	1.7	6.1	9.0	28.2
	AT	22.0	-10.5	2.2	6.8	10.4	31.0
	UK	17.4	-1.6	1.2	4.7	12.2	33.9
	SE	24.7	-1.8	-2.6	8.8	12.2	41.3
Others	MT	38.0	-17.0	2.6	28.4	23.2	75.3
	IE	66.1	-7.1	-0.4	7.6	23.1	89.4
	LU	-0.7	-6.2	15.8	2.5	40.5	51.9

Growth rates are approximated via natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

[1] A similar approach has been used by: Botelho, V. and Dias da Silva, A., "*Employment growth and GDP in the euro area*", ECB Economic Bulletin, Issue 2/2019; Stock, J., "*The Slowdown in GDP Growth: Decomposition and Some implications*", Harvard Macroeconomic Policy Seminar, February 2015

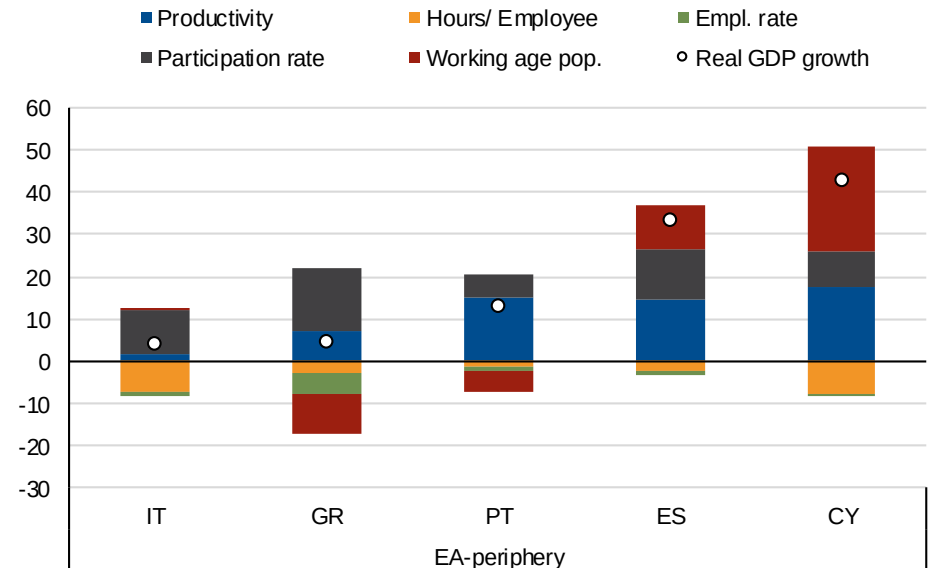
Overall results and rationale for clustering

We find that growth performance in the EU over the 20-year period varies widely. Cumulative growth, estimated with natural logarithms, over the period ranges from a low of 4.6% (Italy) to almost 90% (Ireland). In addition, reflecting the different economic structures and wealth levels, we observe large differences in growth drivers both across countries and over time.

As a result, the remainder of the analysis is based on regional comparisons, which also account for differences in GDP per capita[2], as highlighted in Annex III. On this basis, we analyse in more detail i) cumulative growth since 2000; ii) growth drivers over time; and iii) a topic of particular interest for each region[3].

Euro area periphery

Figure 3: EA periphery: cumulative growth (%) by supply-side contribution components, 2000-20F



Growth rates are approximated via natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

➢ **Overall**

In terms of cumulative growth, the EU's worst performing country over 2000-20F is Italy (4.6%), followed by Greece (4.9%) and Portugal (13.1%). Spain (33.7%) and Cyprus (42.9%) performed significantly better, with growth rates even surpassing that of other advanced EU economies.

In the EA periphery, over 2000-20F, cumulative productivity growth is weak – almost non-existent for Italy and Greece and around 10% for Portugal, Spain and Cyprus. Consequently, growth relied on labour market and demographic expansion (except in the case of Portugal). Cumulative growth in the employment rate has been almost zero across the region, with crisis-induced losses offsetting gains during the recovery.

However, all of the countries saw gains in labour force participation rates, offsetting a common decline in average hours worked. Finally, working age population dynamics were negative in Greece and Portugal, positive and high for Spain and for Cyprus especially, and neutral in the case of Italy.

[2] It is desirable to compare countries with similar GDP per capita levels, as developing economies have different growth patterns than developed economies.
[3] Malta, Ireland and Luxembourg are analysed separately due to their very specific growth patterns and statistical difficulties.

➢ **Changes over time**

Growth over time: marked effects of the GFC on employment and population dynamics

Relatively high growth was seen over 2000-06 in the cases of Greece, Spain and Cyprus, averaging around 4% annually, but much lower growth was seen over this period in the cases of Italy and Portugal (1% average). The financial and sovereign debt crises left a mark during 2006-12, when average annual growth was mostly negative, especially owing to falling employment rates. In the subsequent period (2012-18), employment was the biggest growth contributor (except in Italy), though this was offset by the declining working age population due to ageing and emigration.

The effects of the GFC lasted longer in the EA periphery than in other EU regions, highlighted by the former's weaker recovery during 2012-18. Conversely, for the 2019-20 period, average annual growth is expected to average around 2% in this country group (excluding in Italy), thus outpacing that in other advanced EU economies (where growth is projected to slow down). However, this growth in the periphery will be driven mainly by recovering employment rates rather than via productivity gains. A table showing the average annual growth structure by period is included in Annex IV.

➢ **Policy priorities**

Our analysis suggests the need to increase the quality of employment, in order to obtain higher productivity gains together with employment growth. Reforms in this direction, as suggested by the OECD (Annex V), include improvements in vocational training to reduce skills mismatches, investments in primary and secondary education, changes to the labour taxation and social security contributions but also product market reforms addressing professional services and network sectors.

➢ **Focus topic: Italy versus Spain**

***Focus*: Italy and Spain faced similar challenges but recorded different growth rates**

Italy (BBB+/Stable) and Spain (A-/Stable) have faced similar structural challenges over the past two decades: both adopted the euro in 1999 and navigated the euro area crisis during 2008-12. However, cumulative real growth rates between the two countries have differed substantially over the 20-year period: Italy's will not reach 5% compared to almost 34% in the case of Spain.

Figure 4: Italy: cumulative growth (%) by supply-side contribution components, 2000-20F

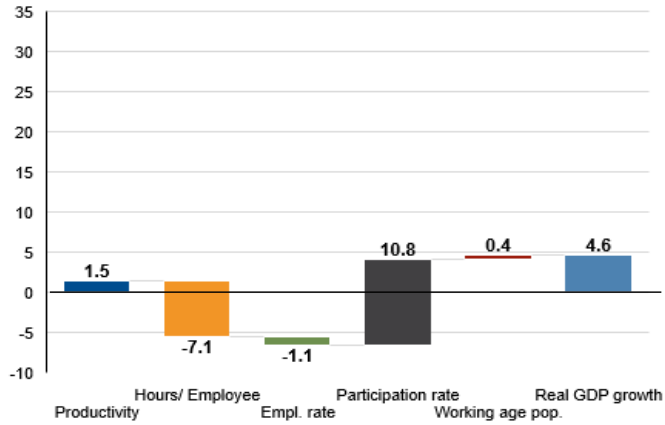
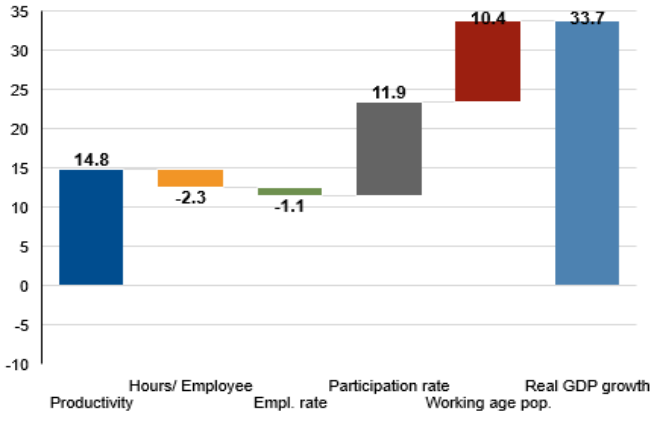


Figure 5: Spain: cumulative growth (%) by supply-side contribution components, 2000-20F



Growth rates are approximated in natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

What explains the difference from a supply-side perspective?

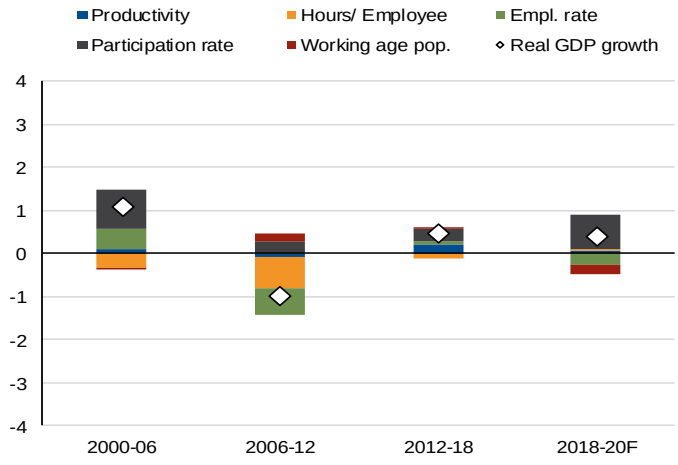
Productivity growth in Italy will have remained flat over the 20-year period, totalling just 1.5%, whereas Spain's totalled almost 15% – even if the latter's figure remains modest compared to that in other EU countries. The two countries see similar changes in

employment rates (-1%) and participation rates (+11%). The decline in hours worked is more pronounced in Italy's case (-7.2%) than in Spain's (-2.3%). Finally, Spain's comparatively favourable demographics result in its working age population rising by about 10%, compared to only 1% in Italy.

Spain's growth is mainly driven by the employment recovery after the crisis

Looking at growth contributions by period, Spain considerably outperformed Italy across all periods. While employment losses during and after the GFC were much more severe in Spain than in Italy, the former's economic recovery was substantially stronger and is expected to continue. For Spain, the key questions are whether the next government can implement reforms to i) maintain steady employment creation (given the still very high structural unemployment rate of around 14%) and increase labour force participation; and ii) raise productivity, which is projected to remain flat over the coming years.

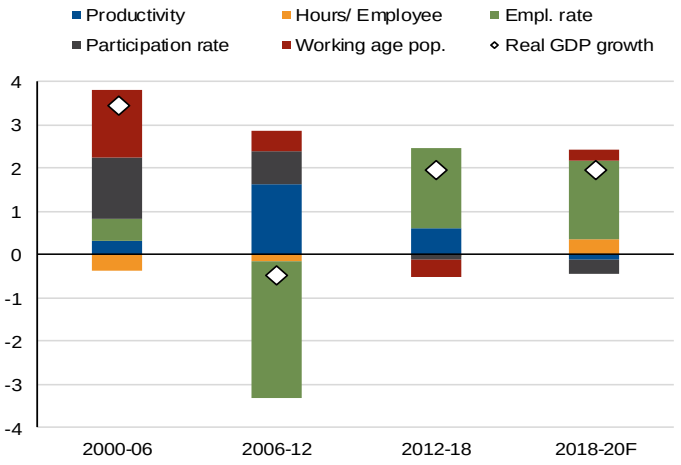
Figure 6: Italy: average annual growth, by supply-side contribution, by period



Growth rates are approximated via natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

Figure 7: Spain: average annual growth, by supply-side contribution, by period

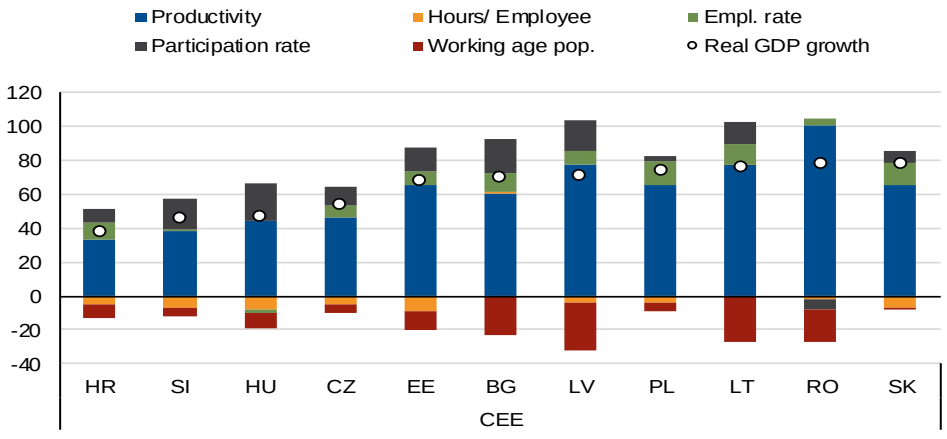


Italy still trapped in crisis, with flat productivity growth over a 20-year period

In Italy, however, average annual growth in employment during the recovery phase has been much slower. The main growth driver has been increased labour force participation (with the participation rate still at 66%, far below a EU average of 74%). Over the next two years, Italy's growth will be further challenged by its declining working-age population (owing to ageing and the ongoing emigration of younger workers).

Central and Eastern Europe

Figure 8: CEE: cum. growth (%) by supply-side component contributions, 2000-20F



Growth rates are approximated in natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

➢ **Overall**

Integration with core Europe has resulted in record productivity growth, but also emigration

Central and Eastern European countries have recorded the highest cumulative growth since 2000 in the EU (excluding Ireland and Malta (both A+/Stable) and Luxembourg (AAA/Stable)), ranging from 38% for Croatia (BBB-/Stable) to almost 78% for Slovakia (A+/Stable). The main reason is productivity gains facilitated via integration with Western European economies, resulting in technological and human capital improvements. Cumulative increases in participation and employment rates also boosted real GDP growth in all CEE countries.

On the other hand, average hours worked and the working age population declined, reflecting the ageing population but especially owing to the outflux of younger workers following their countries' respective EU accessions.

➢ **Changes over time**

Robust growth going forward after ultra-rapid growth at the beginning of the 2000s

Over 2000-06 – the initial phase of economic convergence – elevated average annual growth rates ranged between 3.5-8.5%, mainly due to productivity gains. During the GFC, average annual growth rates in CEE were much lower, sometimes even negative, with the main causes being weak employment and productivity growth. The subsequent recovery, with more modest growth rates (2-4%), was mainly driven by productivity and employment gains, which offset the ongoing decline in the working age population.

Looking ahead, this group of countries is expected to grow more homogeneously going forward than in previous periods, at 2.5-3.5% annually, supported by labour force participation rate and productivity gains but constrained by population dynamics. While we still foresee convergence with advanced EU countries, this is likely to occur moving ahead at a more modest rate.

➢ **Policy priorities**

Our analysis suggests the need to maintain productivity gains via spill-overs from Western Europe by attracting investments but also retaining the labour force. In this regard, the OECD (Annex V) highlights investments in infrastructure and R&D, product market reforms to strengthen competition and regulatory authorities, as well as reforms in vocational training to raise skills, addressing labour taxation and social security and increasing labour market inclusiveness as key reform priorities.

➢ **Focus topic: per-capita convergence**

***Focus*: has high cumulative growth led to convergence?**

Even though all CEE countries have grown significantly since 2000, their per-capita-GDPs (measured on a purchasing power parity (PPP) basis) remain well below the EU-28 average. As expected, we note a strong positive correlation between cumulative real growth and convergence as measured by per-capita GDP. Even so, differences in wealth among CEE countries remain significant: the Czech Republic's (AA/Stable) per-capita level is now at around 90% of the EU average while Bulgaria's (BBB/Positive) is still at only around a half of the EU average.

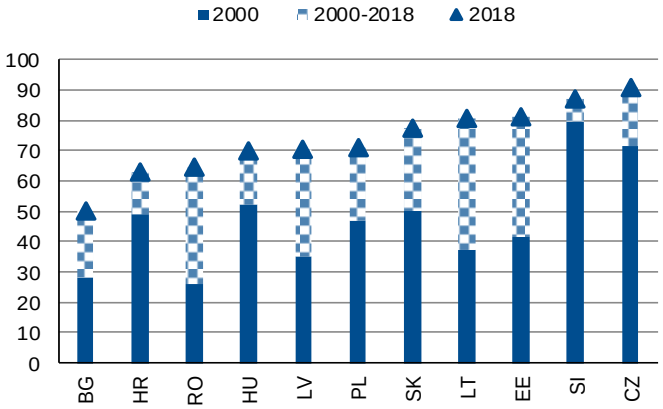
***Answer*: Yes, but not evenly across CEE**

In terms of wealth convergence during 2000-18 (as measured by the change in the per-capita GDP index), the Baltic states and Romania (BBB-/Negative) grew the most and recorded the greatest wealth convergence in CEE with Western Europe. Conversely, the lowest cumulative growth rates corresponded to countries that converged the least: the Czech Republic (AA/Stable) and Slovenia (A/Stable), which already had relatively high wealth levels in 2000, and Croatia (BBB-/Stable) and Hungary (BBB/Positive), which have wealth levels far under EU averages.

Finally, Bulgaria (BBB/Positive), Poland (A+/Stable) and Slovakia (A+/Stable) converged less than Baltic countries, despite similar cumulative growth rates over the period.

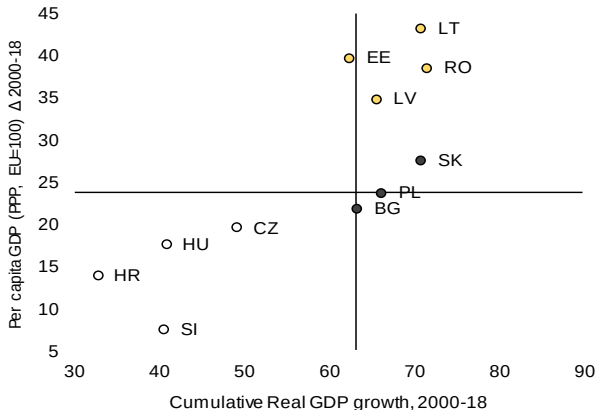
Slovakia and Poland started the convergence process from per-capita-GDP levels that were at CEE averages, while Bulgaria was and remains the lowest-average-income EU member state, despite relatively high growth rates.

Figure 9: Per-capita GDP (PPP), EU=100



*2018 data for Croatia are estimated by applying two-year average growth rates onto 2017 figures

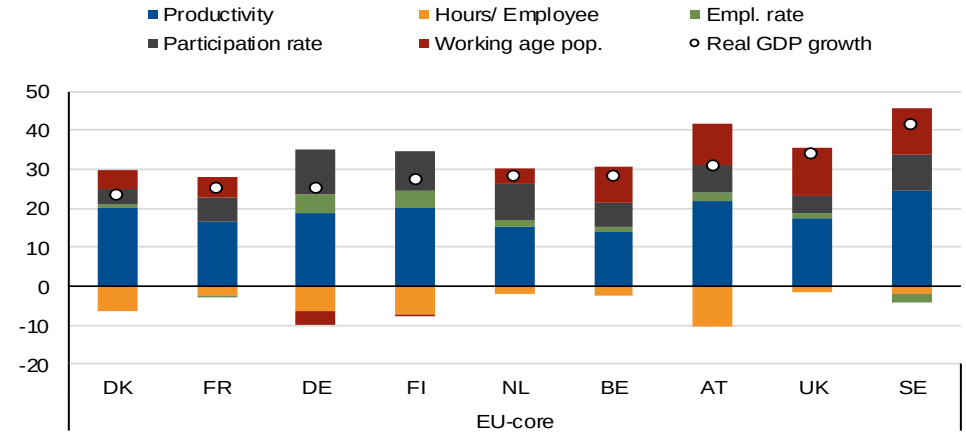
Figure 10: Cumulative growth and per-capita convergence



Source: Eurostat, Scope Ratings GmbH

Core European economies

Figure 11: EU core: cumulative growth (%) by supply-side component contributions, 2000-20F



Growth rates are approximated via natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

➢ **Overall**

Equilibrium between labour-market and productivity-led growth

Since 2000, cumulative growth among core EU economies has been comparatively homogeneous, at around 25-30% in total, with the most significant exception being Sweden (41%). Growth has had similar drivers, with productivity growth being the most important one, accounting for about half of each country's growth. Looking at labour market dynamics, the participation rate's cumulative increase has been important for all countries, as has been increases in employment, albeit to a lesser extent. The working age population increased in all countries except in Germany and Finland, with the inflow of workers from other regions (e.g. CEE) balancing out negative demographic dynamics.

Finally, despite different policy frameworks, the Nordic region and core EA countries are fairly similar in terms of growth and growth contributions. The exception is Denmark (AAA/Stable), where productivity growth has contributed slightly more to economic growth than increases in the labour market have. Sweden (AAA/Stable) stands out in terms of cumulative growth (41%), reflecting highest productivity gains and healthy demographics, resulting in higher average growth rates than peers' in all periods (Annex IV).

➢ **Changes over time**

Stable growth pattern over time

With its mature and stable economies, this cluster of countries has averaged robust annual growth rates of around 1%-2.5% since 2000, even after incorporating weaker growth rates during the GFC. Interestingly, core EA countries suffered less during the GFC than the Nordic economies did, with higher annual average growth rates over 2006-12. However, growth drivers have changed over time. Productivity gains had driven annual growth over 2000-2006 while, in subsequent periods, growth was mostly driven by growth in the size of the labour market. This resulted in stable growth over time, evenly attributed to labour-market and productivity gains.

Over the 2019-20 period, we project lower gains in productivity and employment, increased labour force participation rates, and working age population growth of near zero. With labour-market-related factors either stagnating or declining, growth needs to come from higher productivity. However, productivity growth is not expected to pick up over the next two years. As a result, we expect lower overall growth for core EU economies in the medium term, of between 1% and 1.5%.

➢ **Policy priorities**

Our analysis shows that future growth will thus depend on higher productivity and participation rates and a greater number of hours worked. This may be achieved, as highlighted by the OECD (Annex V), via product market reforms to streamline permits and reduce the regulatory burden for services as well as reducing disincentives to full-time work, especially for lone parents and second earners. In addition, priorities include reducing labour taxation and social security contributions, tackling labour market dualism and improving the integration of immigrants and minorities.

➢ **Focus topic: France versus Germany**

Focus: France versus Germany, similar growth, but different drivers

Despite similar cumulative growth for France and Germany since 2000 (totalling around 25%), growth has been the result of different drivers. Germany has compensated for a large decline in average hours worked and negative population dynamics with gains in productivity, participation rates and employment rates. France has also benefitted from increases in productivity and participation rates but, in contrast to Germany's, France's employment rate has not changed substantively and the growth contribution from changes in its working age population has been positive.

Figure 12: France: cumulative growth (%) by supply-side component contributions, 2000-20F

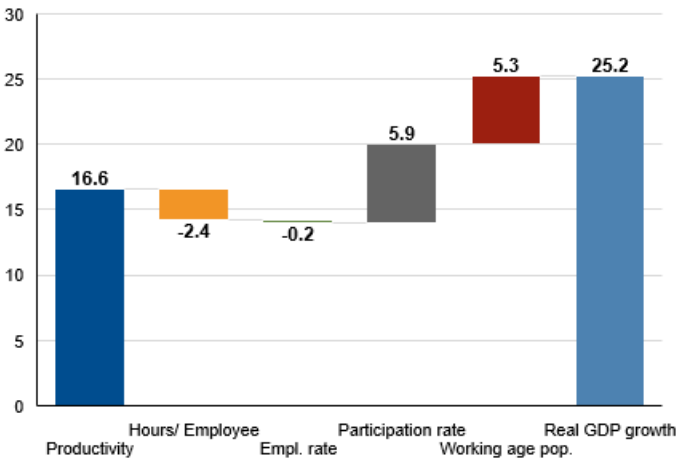
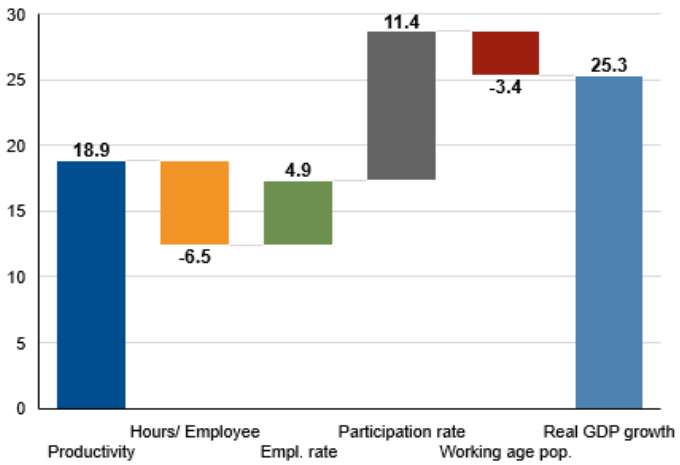


Figure 13: Germany: cumulative growth (%) by supply-side component contributions, 2000-20F

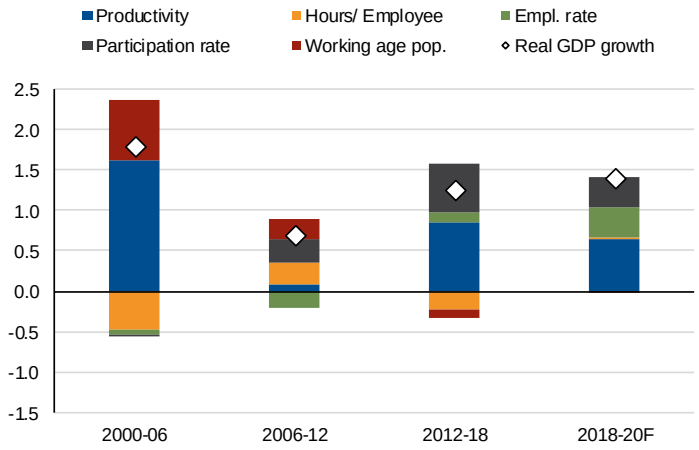


Growth rates are approximated via natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

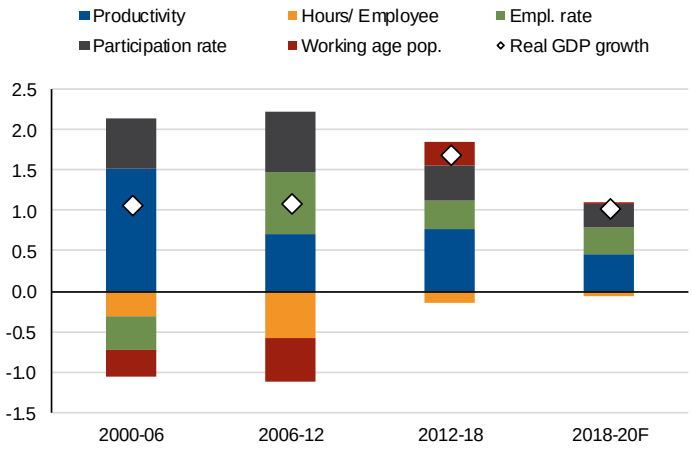
Looking at contributions to average annual growth (**Figures 14** and **15**), we see that Germany has maintained a high and positive growth contribution from employment and participation rate gains, including during the GFC, possibly due to labour market reforms enacted over 2002-05. However, looking ahead, average annual growth forecasts are more favourable in the case of France, due to higher projected increases in productivity, employment, and participation rates.

Figure 14: France: average annual growth, by supply-side contributions, by period



Growth rates are approximated via natural logs to ensure additivity

Figure 15: Germany: average annual growth, by supply-side contributions, by period

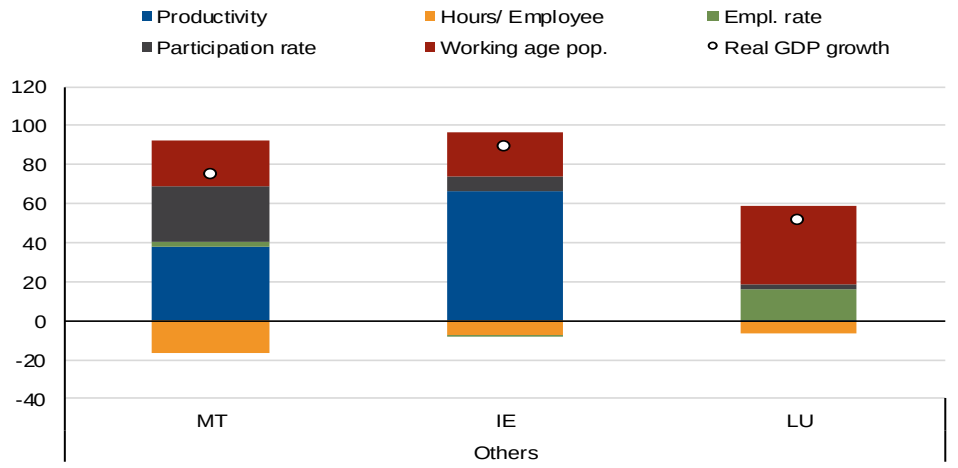


Source: AMECO, Scope Ratings GmbH

Malta, Ireland and Luxembourg (‘*Other*’)

Malta (A+/Stable), Ireland (A+/Stable) and Luxembourg (AAA/Stable) are analysed separately due to their idiosyncratic growth patterns and statistical revisions.

Figure 16: Other: cumulative growth (%) by supply-side component contributions, 2000-20F



Growth rates are approximated via natural logs to ensure additivity

Source: AMECO, Scope Ratings GmbH

➢ **Malta**

Malta’s cumulative growth since 2000 has been very high, totalling around 75%. This reflects its economic catch-up process with core Europe, supported by very high cumulative productivity gains (38%), a significant increase in participation rates (25.4%)

and favourable population dynamics (23.2%). As displayed in Annex IV, growth was at its strongest during 2012-18, averaging almost 7% annually.

- **Ireland**

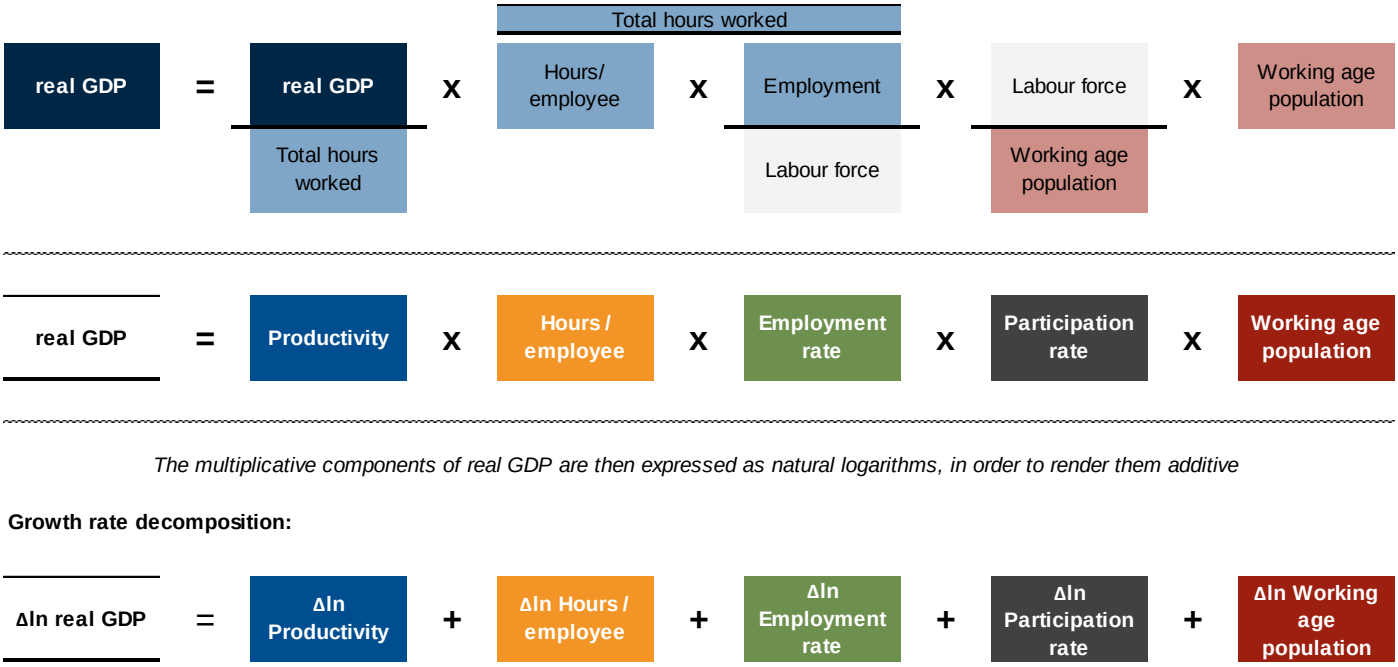
As Irish GDP data include the activities of US-based multinationals, this adds uncertainty to the analysis, especially regarding the component relating to productivity growth contributions, which we derive as a residual term in summing to real GDP growth. Therefore, we focus on labour market and population change variables, which are not affected by statistical aberrations. Here, we note the cumulative growth contribution from the participation rate of 7%, in line with that in other advanced EU economies, and the negative cumulative contribution from changes in Irish employment rates.

However, demographic trends in Ireland have been among the most favourable in the EU, contributing over 23% to growth over the relevant period. Looking at the annual growth contributions by period (Annex IV), we observe the expected cyclical contribution from employment and, in the near future, a gradually lower contribution from population dynamics.

- **Luxembourg**

Luxembourg's high overall growth over the 20-year period (51.9%) was driven mainly by impressive growth in the working age population (migration), contributing over 40% to real growth – the largest such contribution in the EU over the reference period. This compensated for negative productivity growth – the only case of negative productivity growth in cumulative terms over this period in the EU.

Annex I: Real GDP supply-side drivers



The multiplicative components of real GDP are then expressed as natural logarithms, in order to render them additive

Growth rate decomposition:

Source: Scope Ratings GmbH

Annex II: Comparing logarithmic approximation with actual growth rates

The approach adopted in this paper builds on a multiplicative decomposition approach of real GDP. In order to analyse growth dynamics, the growth rates of all components, as well as that of real GDP itself, are expressed via a natural logarithmic approach.

The natural logarithmic form allows us to express the components of growth, which compound on one another, in an additive form to obtain real GDP growth, thereby facilitating easier interpretation and comparisons across countries. However, the natural log form only *approximates* actual growth. Estimates using the natural logarithmic approach match actual growth rates in the case of small changes; however, larger discrepancies exist in the case of growth rates of larger magnitudes.

In this paper, we do not encounter major discrepancies between our approximations and actual growth rates when we analyse growth rates on an annual basis, but we do observe such larger discrepancies when we study cumulative growth over the 20-year cumulative reference period, especially for the countries that have grown significantly. Therefore, by implementing this approach, we highlight here how the focus is on interpreting comparative contributions between components of growth and cross-country differences in growth dynamics, with the value on cumulative growth figures displayed being inexact and, as such, should not to be interpreted as the precise cumulative growth values.

In the following table (**Table 2**), we show for each country the comparison of cumulative growth calculated via the logarithmic approximation against actual cumulative growth. The largest differences exist for countries such as Ireland. In the actual growth rows, since components are not additive, we also display the “Compounding effect,” representing the difference between actual real GDP growth and the sum of growth in the individual components.

Table 2: Cumulative growth 2000-20F: Logarithmic approximation versus actual growth rates

		Compounding effect	Productivity	Hours/ Employee	Empl. rate	Participation rate	Working age pop.	***Real GDP growth***
IT	LN		1.5	-7.1	-1.1	10.8	0.4	***4.6***
	Actual rates	-0.8	1.5	-6.8	-1.0	11.4	0.5	***4.7***
GR	LN		7.0	-2.6	-5.3	14.9	-9.0	***4.9***
	Actual rates	-1.9	7.2	-2.6	-5.2	16.0	-8.6	***5.0***
PT	LN		15.3	-1.5	-0.8	5.0	-4.9	***13.1***
	Actual rates	-0.6	16.5	-1.5	-0.8	5.2	-4.8	***14.0***
DK	LN		20.0	-6.2	0.8	4.1	4.6	***23.4***
	Actual rates	0.4	22.2	-6.0	0.8	4.2	4.7	***26.3***
EA19	LN		16.4	-4.9	1.6	9.7	1.9	***24.6***
	Actual rates	1.2	17.8	-4.7	1.6	10.1	1.9	***27.9***
FR	LN		16.6	-2.4	-0.2	5.9	5.3	***25.2***
	Actual rates	1.7	18.1	-2.4	-0.2	6.1	5.4	***28.7***
DE	LN		18.9	-6.5	4.9	11.4	-3.4	***25.3***
	Actual rates	0.5	20.7	-6.3	5.0	12.1	-3.4	***28.7***
FI	LN		20.2	-7.1	4.3	10.1	-0.1	***27.5***
	Actual rates	1.1	22.4	-6.8	4.4	10.7	-0.1	***31.6***
NL	LN		15.3	-2.2	1.6	9.2	4.2	***28.1***
	Actual rates	2.6	16.6	-2.1	1.6	9.6	4.3	***32.4***
BE	LN		13.7	-2.2	1.7	6.1	9.0	***28.2***
	Actual rates	2.8	14.7	-2.2	1.7	6.3	9.4	***32.6***
EU28	LN		21.2	-4.4	2.6	8.3	1.2	***28.9***
	Actual rates	1.7	23.6	-4.3	2.7	8.7	1.2	***33.6***
AT	LN		22.0	-10.5	2.2	6.8	10.4	***31.0***
	Actual rates	1.4	24.6	-9.9	2.2	7.1	11.0	***36.3***
ES	LN		14.8	-2.3	-1.1	11.9	10.4	***33.7***
	Actual rates	3.9	16.0	-2.3	-1.1	12.6	11.0	***40.1***
UK	LN		17.4	-1.6	1.2	4.7	12.2	***33.9***
	Actual rates	3.9	19.0	-1.6	1.2	4.8	13.0	***40.3***
HR	LN		33.4	-5.3	9.6	8.2	-8.1	***37.8***
	Actual rates	0.6	39.6	-5.1	10.1	8.5	-7.8	***45.9***
SE	LN		24.7	-1.8	-2.6	8.8	12.2	***41.3***
	Actual rates	5.3	28.0	-1.8	-2.6	9.2	13.0	***51.2***
CY	LN		17.7	-7.6	-0.4	8.1	25.0	***42.9***
	Actual rates	5.0	19.4	-7.3	-0.4	8.5	28.4	***53.6***
SI	LN		38.0	-6.9	0.9	19.0	-4.8	***46.2***
	Actual rates	2.0	46.3	-6.6	0.9	20.9	-4.7	***58.7***
HU	LN		44.3	-7.7	-2.3	22.1	-9.2	***47.3***
	Actual rates	-1.6	55.7	-7.4	-2.2	24.8	-8.8	***60.4***
LU	LN		-0.7	-6.2	15.8	2.5	40.5	***51.9***
	Actual rates	5.2	-0.7	-6.0	17.1	2.6	49.9	***68.1***
CZ	LN		46.5	-5.2	7.0	10.6	-4.9	***54.0***
	Actual rates	3.8	59.2	-5.1	7.3	11.2	-4.8	***71.6***
EE	LN		65.2	-8.6	7.9	14.7	-11.8	***67.5***
	Actual rates	-0.4	92.0	-8.3	8.2	15.8	-11.1	***96.3***
BG	LN		60.9	0.3	11.6	20.2	-23.2	***69.7***
	Actual rates	2.8	83.8	0.3	12.3	22.4	-20.7	***100.8***
LV	LN		77.7	-4.0	7.5	18.1	-27.8	***71.4***
	Actual rates	-12.6	117.5	-4.0	7.8	19.8	-24.3	***104.2***
PL	LN		65.8	-4.3	13.4	3.2	-4.3	***73.8***
	Actual rates	6.9	93.1	-4.2	14.4	3.2	-4.2	***109.1***
MT	LN		38.0	-17.0	2.6	28.4	23.2	***75.3***
	Actual rates	20.0	46.2	-15.6	2.7	32.9	26.2	***112.3***
LT	LN		77.1	0.6	11.8	13.4	-26.9	***75.9***
	Actual rates	-6.4	116.3	0.6	12.5	14.3	-23.6	***113.7***
RO	LN		101.2	-2.2	4.0	-6.1	-19.2	***77.7***
	Actual rates	-36.0	175.0	-2.2	4.1	-5.9	-17.4	***117.6***
SK	LN		65.5	-6.7	12.7	7.2	-0.9	***77.8***
	Actual rates	11.5	92.6	-6.5	13.5	7.5	-0.9	***117.7***
IE	LN		66.1	-7.1	-0.4	7.6	23.1	***89.4***
	Actual rates	24.0	93.7	-6.9	-0.4	7.9	26.0	***144.4***

Source: AMECO, Scope Ratings GmbH

Annex III: Regional clusters[4] in the study

Euro area periphery	Italy (BBB+/Stable) Greece (BB-/Positive) Portugal (BBB/Positive) Spain (A-/Stable) Cyprus (BBB-/Stable)	Central and Eastern Europe	Croatia (BBB-/Stable) Slovenia (A/Stable) Hungary (BBB/Positive) Czech Republic (AA/Stable) Estonia (A+/Stable) Bulgaria (BBB+/Stable) Latvia (A-/Stable) Poland (A+/Stable) Lithuania (A-/Stable) Romania (BBB-/Negative) Slovakia (A+/Stable)
Core Europe	Denmark (AAA/Stable) France (AA/Stable) Germany (AAA/Stable) Finland (AA+/Stable) Netherlands (AAA/Stable) Belgium (AA/Stable) Austria (AAA/Stable) United Kingdom (AA/Negative) Sweden (AAA/Stable)	Other	Malta (A+/Stable) Ireland (A+/Stable) Luxembourg (AAA/Stable)

Annex IV: Average annual growth by period

Table 3: EA periphery: average annual growth, by supply-side contribution, by period

		Productivity	Hours/ Employee	Empl. rate	Participation rate	Working age pop.	Real GDP
2000-06	IT	0.1	-0.3	0.5	0.9	0.0	**1.1**
	GR	2.4	0.1	0.4	1.1	0.0	**4.1**
	PT	1.2	-0.3	-0.7	0.6	0.2	**1.0**
	ES	0.3	-0.4	0.5	1.4	1.6	**3.5**
	CY	2.1	-0.8	0.1	0.9	1.9	**4.1**
2006-12	IT	-0.1	-0.7	-0.6	0.3	0.2	**-1.0**
	GR	-1.1	-0.6	-2.8	0.6	-0.3	**-4.1**
	PT	1.2	-0.3	-1.3	-0.2	-0.2	**-0.7**
	ES	1.6	-0.1	-3.2	0.8	0.5	**-0.5**
	CY	0.0	0.0	-1.3	-0.7	2.8	**0.9**
2012-18	IT	0.2	-0.1	0.0	0.3	0.0	**0.5**
	GR	-0.3	-0.1	1.0	0.4	-1.0	**0.0**
	PT	0.0	0.2	1.6	0.3	-0.7	**1.4**
	ES	0.6	0.0	1.9	-0.1	-0.4	**2.0**
	CY	0.7	-0.4	0.7	1.0	-0.7	**1.3**
2018-20F	IT	0.1	0.0	-0.3	0.8	-0.2	**0.4**
	GR	0.6	0.2	1.5	0.7	-0.9	**2.2**
	PT	0.4	0.3	0.7	0.5	-0.3	**1.7**
	ES	-0.1	0.3	1.8	-0.3	0.2	**2.0**
	CY	0.6	0.0	1.4	0.6	0.3	**2.9**

Growth rates are approximated in natural logarithms to ensure additivity

Source: AMECO, Scope Ratings GmbH

[4] Malta, Ireland and Luxembourg are analysed separately due to their very specific growth patterns and statistical aberrations.

EU-28: A supply-side approach to explaining growth differences across member states since 2000

Table 4: CEE: average annual growth, by supply-side contribution, by period

		Productivity	Hours/ Employee	Empl. rate	Participation rate	Working age pop.	Real GDP
2000-06	HR	3.1	0.1	0.8	0.5	0.0	**4.4**
	SI	3.7	-0.4	0.2	0.2	0.2	**3.9**
	HU	4.7	-0.4	-0.7	0.6	-0.1	**4.2**
	CZ	4.7	-0.9	0.4	-0.3	0.3	**4.3**
	EE	5.6	0.2	1.4	0.6	-0.5	**7.3**
	BG	3.8	0.1	1.3	1.5	-0.9	**5.7**
	LV	7.3	-0.6	1.3	1.2	-0.8	**8.4**
	PL	3.6	0.0	0.4	-0.9	0.5	**3.5**
	LT	6.8	0.3	1.8	-0.8	-0.9	**7.3**
	RO	8.1	0.1	0.0	-1.4	-1.0	**5.9**
	SK	5.0	-0.4	0.4	-0.1	0.6	**5.5**
2006-12	HR	0.4	0.0	-0.8	-0.2	-0.1	**-0.8**
	SI	0.5	-0.2	-0.6	0.4	0.0	**0.2**
	HU	0.5	-0.5	-1.1	0.5	-0.3	**-0.8**
	CZ	1.0	-0.2	0.0	0.4	-0.1	**1.1**
	EE	2.3	-1.0	-1.1	0.5	-0.7	**0.0**
	BG	3.0	-0.1	-0.5	0.7	-1.0	**2.1**
	LV	1.9	0.2	-1.5	0.5	-1.8	**-0.6**
	PL	3.2	-0.3	0.7	0.4	0.0	**4.0**
	LT	3.3	-0.2	-1.2	1.0	-1.5	**1.4**
	RO	3.5	-0.5	0.2	-0.4	-1.0	**1.7**
	SK	2.5	0.1	0.3	0.2	0.1	**3.2**
2012-18	HR	1.7	-0.9	1.4	0.6	-1.0	**1.8**
	SI	1.8	-0.4	0.5	1.6	-0.8	**2.7**
	HU	1.3	-0.3	1.3	2.1	-0.8	**3.5**
	CZ	1.5	0.2	0.7	1.2	-0.8	**2.8**
	EE	2.3	-0.7	1.0	1.2	-0.7	**3.1**
	BG	2.3	0.0	1.1	0.7	-1.4	**2.7**
	LV	2.8	-0.4	1.3	0.9	-1.7	**3.1**
	PL	2.9	-0.3	1.1	0.7	-0.9	**3.5**
	LT	2.0	0.0	1.3	1.4	-1.6	**3.1**
	RO	4.3	0.0	0.5	0.5	-1.0	**4.3**
	SK	2.4	-0.9	1.3	0.8	-0.6	**3.1**
2018-20F	HR	1.1	0.0	0.9	1.2	-0.7	**2.5**
	SI	0.9	-0.2	0.1	2.9	-0.8	**2.9**
	HU	2.6	-0.2	0.4	1.4	-1.0	**3.2**
	CZ	1.5	0.2	0.1	1.2	-0.5	**2.5**
	EE	2.2	0.1	0.0	0.7	-0.5	**2.5**
	BG	3.2	0.0	0.2	1.3	-1.4	**3.3**
	LV	2.6	0.1	0.3	0.9	-1.1	**2.9**
	PL	3.9	-0.2	0.2	1.0	-1.1	**3.8**
	LT	2.2	0.1	0.1	1.7	-1.5	**2.6**
	RO	2.9	0.0	0.1	1.0	-0.8	**3.1**
	SK	2.9	0.0	0.5	0.8	-0.7	**3.5**

Growth rates are approximated in natural logarithms to ensure additivity

Source: AMECO, Scope Ratings GmbH

EU-28: A supply-side approach to explaining growth differences across member states since 2000

Table 5: Core Europe: average annual growth, by supply-side contribution, by period

		Productivity	Hours/ Employee	Empl. rate	Participation rate	Working age pop.	Real GDP
2000-06	DK	1.3	-0.1	0.2	0.2	0.2	**1.7**
	FR	1.6	-0.5	-0.1	0.0	0.7	**1.8**
	DE	1.5	-0.3	-0.4	0.6	-0.3	**1.1**
	FI	2.2	-0.5	0.4	0.5	0.2	**2.8**
	NL	1.4	-0.4	-0.1	0.4	0.3	**1.7**
	BE	1.4	-0.2	-0.3	0.5	0.5	**1.9**
	AT	1.8	-0.6	-0.2	0.4	0.5	**2.0**
	UK	2.1	-0.3	0.0	0.2	0.8	**2.7**
	SE	2.9	-0.4	-0.5	0.3	0.7	**2.9**
2006-12	DK	0.6	-0.4	-0.5	-0.1	0.1	**-0.2**
	FR	0.1	0.3	-0.2	0.3	0.2	**0.7**
	DE	0.7	-0.6	0.8	0.7	-0.5	**1.1**
	FI	0.1	-0.4	0.0	0.4	0.1	**0.2**
	NL	0.3	-0.2	0.0	0.5	0.1	**0.7**
	BE	0.3	-0.1	0.1	0.0	0.8	**1.1**
	AT	0.9	-0.9	0.2	0.6	0.3	**1.1**
	UK	0.2	-0.1	-0.5	0.2	0.6	**0.4**
	SE	0.0	0.2	-0.2	0.5	0.5	**0.9**
2012-18	DK	1.0	-0.4	0.4	0.4	0.4	**1.8**
	FR	0.9	-0.2	0.1	0.6	-0.1	**1.3**
	DE	0.8	-0.2	0.3	0.4	0.3	**1.7**
	FI	0.8	-0.2	0.1	0.8	-0.3	**1.1**
	NL	0.6	0.3	0.4	0.4	0.2	**1.8**
	BE	0.5	-0.1	0.3	0.4	0.1	**1.3**
	AT	0.7	-0.3	0.3	0.1	0.7	**1.5**
	UK	0.5	0.1	0.7	0.4	0.4	**2.0**
	SE	1.0	-0.1	0.4	0.6	0.6	**2.5**
2018-20F	DK	1.2	-0.5	0.2	0.6	0.2	**1.6**
	FR	0.6	0.0	0.4	0.4	0.0	**1.4**
	DE	0.5	-0.1	0.3	0.3	0.0	**1.0**
	FI	0.9	-0.2	0.6	0.0	0.1	**1.4**
	NL	0.6	0.0	0.1	0.7	0.3	**1.6**
	BE	0.2	0.2	0.4	0.3	0.1	**1.2**
	AT	0.7	0.1	0.1	0.1	0.6	**1.6**
	UK	0.3	0.2	-0.1	0.0	0.9	**1.3**
	SE	0.8	0.0	-0.1	-0.1	0.8	**1.5**

Growth rates are approximated in natural logarithms to ensure additivity

Source: AMECO, Scope Ratings GmbH

EU-28: A supply-side approach to explaining growth differences across member states since 2000

Table 6: Other countries: average annual growth, by supply-side contribution, by period

		Productivity	Hours/ Employee	Empl. rate	Participation rate	Working age pop.	Real GDP
2000-06	MT	1.9	-0.7	-0.1	-0.4	1.2	**2.0**
	IE	2.4	-0.5	0.0	0.9	2.4	**5.1**
	LU	0.6	-0.5	1.3	0.4	1.5	**3.3**
2006-12	MT	1.2	-1.2	0.1	1.5	0.4	**2.0**
	IE	3.7	-1.6	-2.1	-0.5	0.7	**0.2**
	LU	-0.8	-0.5	0.6	0.0	2.3	**1.5**
2012-18	MT	2.9	-1.0	0.4	2.8	1.9	**6.9**
	IE	4.6	0.7	1.9	0.6	0.7	**8.4**
	LU	0.2	0.0	0.4	0.0	2.4	**3.0**
2018-20F	MT	1.1	0.2	-0.1	2.5	1.2	**5.0**
	IE	1.1	0.5	0.4	1.0	0.5	**3.5**
	LU	-0.4	0.0	1.1	0.0	1.8	**2.5**

Growth rates are approximated in natural logarithms to ensure additivity

Source: AMECO, Scope Ratings GmbH

Annex V: Summary of OECD Going for Growth 2019 policy recommendations

POLICY RECOMMENDATION			Core European economies							Euro area periphery					CEE				Other			
Product market regulation, competition and trade and FDI openness	Economy wide regulations	Streamline permits, licensing and red tape	EU	DEU	FRA					ESP					HUN	POL					IRL	
		Improve bankruptcy procedures	BEL	DEU						ITA	PRT				EST	HUN	LTU					
		Strengthen competition and regulatory authorities	DNK							PRT					HUN	POL	SVN					
		Improve SOEs governance and privatisation													POL	SVN						
		Introduce or expand regulatory impact assessment	FRA							ITA	GRC				HUN							
		One-stop shops	DEU							GRC												
	Barriers to trade and FDI	Reduce barriers to trade	EU												EST							
		Reduce barriers to FDI																				
	Sector specific regulatory burden	Network sectors and construction	BEL	EU	FIN					ITA	PRT				POL						IRL	
		Services including professional services	AUT	BEL	FRA	DEU	EU			ESP	PRT										IRL	LUX
		Banking								PRT											IRL	
		Retail	AUT	BEL	FRA																LUX	
Provision of infrastructure	Enhance quality and accessibility in transport		DEU	GBR											EST	LVA					LUX	
	Increase institutional capacity of relevant agencies and local governments		DEU	FRA	GBR																	
	Boost private infrastructure investment and public-private partnerships		GBR												EST	POL						
	Enhance quality and accessibility in energy		DEU												EST	HUN	LVA	POL			LUX	
	Enhance use of cost-benefit analysis		NOR							ITA					CZE	POL						
	User fees		GBR																		LUX	
	Broadband, telecom and others		DEU	GBR																		
	Improve rural infrastructure														EST	LVA						
Education and skills	University	Improve access and reduce inequalities	AUT	EU						GRC					HUN	POL	SVN					
		Improve funding formula	AUT	DNK	NOR										POL	SVN						
		Better target financial assistance to students	AUT	DNK											HUN	SVN						

	Vocational	Expand vocational education and training	DNK	FRA	GBR					ESP	GRC	ITA	PRT		CZE	EST	HUN	LVA	LTU	POL	LUX	
		Improve alignment with labour market needs and increase employer involvement	EU	GBR						ESP	GRC	ITA	PRT		CZE	EST	LTU	POL				
		Expand apprenticeships and increase the workplace component of training	FRA							GRC	ITA	PRT			CZE	EST	HUN	LTU	POL		LUX	
	Primary and secondary	Improve teaching quality, teachers' incentives and career prospects	BEL	FRA	NOR	SWE				ESP	GRC	PRT			SVK							
		Provide additional support to disadvantaged schools or students	BEL	FRA	SWE					PRT					HUN	LVA	SVK					
		Improve school accountability and autonomy	FRA	NOR						GRC	PRT										LUX	
		Improve school infrastructure																				
		Limit grade repetition								PRT											LUX	
	Lifelong learning	Expand lifelong learning	DEU	FRA	GBR					ITA					CZE	LVA	POL					
R&D and innovation policies	Rebalance direct and indirect support		GBR	NLD						ESP	PRT				CZE	POL					IRL	
	Strengthen collaboration between research centres and industry									PRT					EST	LTU	POL				IRL	
	Evaluate existing policies									ESP					EST	POL						
	Improve policy-coordination									ESP					EST	LTU						
Labour market policies	Labour taxation and social security contributions	Reduce the overall labour tax wedge	AUT	BEL	DEU	DNK	FIN	FRA	NLD	ITA												
		Target cuts in tax wedge to low-income workers	BEL	DEU	NLD					ESP					EST	HUN	LTU	LVA	POL			
	Labour market regulations, minimum wages and collective bargaining	Tackle dualism and reduce the gap in protection between permanent and temporary workers	FRA	NLD	SWE					ESP												
		Reduce severance pay and improve	NLD																			

		legal certainty for dismissals																				
		Avoid too high minimum wages, including through regional differentiation													EST							
		Promote more flexible wage setting and reform collective bargaining	BEL	SWE											SVN							
Activation policies and social benefits	Active labour market policies	Better focus on risk groups	DNK	FRA	NLD	SWE				ITA												
		Expand specific programmes	GBR							GRC					IRL							
		Increase spending or improve effectiveness	GBR							ITA					LTU							
		Improve co-ordination	NLD	SWE						ITA												
	Social benefits	Improve targeting	FIN							GRC					LVA	SVN	SVK				IRL	
		Increase work incentives	FIN							GRC					LTU	POL	SVN				IRL	
		Expand coverage																				
		Tighten eligibility, including in disability benefits	AUT	NOR																		
Labour market inclusiveness	Making the labour market more gender inclusive	Improve early childcare accessibility	AUT	DEU	FIN										CZE	HUN	POL	SVK			LUX	
		Encourage more balanced parental leave	DEU	FIN											CZE	HUN	SVK					
		Improve incentives in the tax and benefit system	AUT	DEU											POL	SVK					LUX	
		Corporate codes, quotas, awareness and anti-discrimination laws																				
		Align the official retirement age	AUT												POL							
	Improving integration of immigrants, refugees and minorities	Provide training, including language training	BEL	DNK	SWE										SVK							
		Facilitate recognition of qualifications	BEL	DEU	DNK	SWE																
		Improve early childcare provision													SVK						LUX	

Source: OECD, Scope Ratings GmbH

Scope Ratings GmbH

Headquarters Berlin
Lennéstraße 5
D-10785 Berlin

Phone +49 30 27891 0

Frankfurt am Main
Neue Mainzer Straße 66-68
D-60311 Frankfurt am Main

Phone +49 69 66 77 389 0

Paris
1 Cour du Havre
F-75008 Paris

Phone +33 1 8288 5557

London
Suite 301
2 Angel Square
London EC1V 1NY

Phone +44 20 3457 0444

Madrid
Paseo de la Castellana 95
Edificio Torre Europa
E-28046 Madrid

Phone +34 914 186 973

Milan
Via Paleocapa 7
IT-20121 Milan

Phone +39 02 30315 814

Oslo
Haakon VII's gate 6
N-0161 Oslo

Phone +47 21 62 31 42

info@scoperatings.com
www.scoperatings.com

Disclaimer