

Box 1.1: Main drivers of growth in 2016 – discerning the underlying shocks

This box uses a newly-developed and estimated multi-region macro model ⁽¹⁾ to provide a model-based quantification of the main drivers of GDP growth in the euro area (EA) in 2016. The estimated model is fitted with historical data from 1999-Q1 to 2015-Q3 and extended with forecast data from the European Commission's forecast for the main macroeconomic aggregates. The new model enables us to decompose deviations of real GDP growth from the long-run trend into the underlying shocks that drive the short- and medium-term dynamics. Hence, the shock decompositions in this box takes the European Commission's forecast as an input to recover the factors that can explain the forecast in a model-consistent way. In other words, the analysis shows, which exogenous factors ('shocks') provide a model-consistent interpretation of the forecast.

The advantage of using an estimated structural macroeconomic model to understand underlying economic dynamics is that such models use all the information in the dataset. Notably, the size of shocks to the model economy (e.g., financial, savings, and productivity shocks) is selected in such a way that these shocks fit not only the movement of GDP, but also the dynamics of other variables (including investment, consumption, the exchange rate, and employment) and the correlations between them (e.g., the correlation between GDP and inflation, or the correlation between employment and wages).

It should be noted, however, that the impact of various factors implied by the model-based shock decompositions is not necessarily identical with the impact that the same factors have in the European Commission's forecast. The driving factors recovered in the model-based analysis are conditioned on the theoretical structure of the model and its parameter values, where the latter have been obtained by estimating the model with Bayesian techniques over the sample period (1999-Q1 to 2015-Q3).

Furthermore, not all shocks in the shock decompositions are directly interpretable in the sense of recovering their fundamental 'causes' within a model of tractable size. Changes in financial risk premia and financing costs that affect interest-sensitive domestic demand, notably

investment, and the exchange rate, for example, can emanate from various sources, including regulatory policies or non-standard monetary policy measures (QE). In such cases, the simplified structure of the multi-region macro model and most other DSGE models does not identify the specific 'events' behind the shock.

Table 1 shows the principal drivers of real GDP growth in the euro area in 2016 as projected in the European Commission's spring forecast, based on a consolidated shock decomposition produced with the estimated multi-region model. The trend component (1.4%) shows the attainable long-run growth rate if the euro area economy were to grow with the average growth rates of total factor productivity (TFP) and the population of working age as observed over the period 1999 to 2015. Real GDP growth is forecast to exceed trend growth by 0.2 pps. in 2016 due to a number of positive shocks that outweigh negative factors.

Table 1:

Shock decomposition from an estimated model

	2016
Long-run trend	1.4
Supply:	
TFP	-0.2
Labour & goods market adjustment	0.1
Oil	0.3
Demand:	
Domestic:	
Consumption	0.2
Investment	-0.1
Fiscal spending	0.0
Foreign:	
World demand and int. trade	-0.2
Exchange rate	0.2
Others	-0.3
Real GDP growth (from forecast)	1.6

According to the decomposition in Table 1 there are positive and negative factors on the supply side and the demand side. Overall, the contribution of supply factors to the positive deviation of GDP growth from trend is positive.

There is a sizeable negative contribution (-0.2 pps.) from TFP, however, which suggests that TFP growth remains subdued and below the long-run trend.

Labour and goods market adjustment makes a positive contribution (0.1 pps.). A disaggregate view, however, reveals that wage and price developments point in opposite direction. Falling

⁽¹⁾ These results are based on the Global Multi Country (GM) model currently developed by DG ECFIN and the Joint Research Centre of the European Commission.

real unit labour costs in the forecast indicate moderate wage growth in the euro area, with wages growing less strongly than labour productivity. The model interprets the combination of low wage growth and declining unemployment as structural adjustment of wages in the euro area labour market, i.e. as a positive labour supply shock that strengthens employment and economic activity. The positive supply side contribution from the labour market is partly offset by rising price mark-ups on the producer side. The increase in the price mark-up is inferred by the model from the observation that the GDP deflator rises more strongly than nominal unit labour costs in the forecast.

Falling oil prices were an important stimulus to euro area GDP growth in 2015, as lower oil prices reduce costs for firms and boost household disposable income. The shock decomposition suggests that oil prices should continue to make a sizeable positive contribution (0.3 pps.) to growth in 2016. This is due to the fact that, despite the gradual and moderate rebound for 2016 in the external assumptions of the forecast, the average oil price in 2016 remains below the annual average in 2015. In addition, the large fall in oil prices in 2015 still has positive effects in 2016 due to sluggish adjustment of demand and goods prices in the model.

On the demand side, a distinction can be made between domestic and foreign factors. Among the factors on the side of domestic demand, the shock decomposition points to a positive contribution of private consumption behaviour (0.2 pps.) to real GDP growth. According to the forecast, consumption is strong despite lagging wage growth, which in the model points to a reduction in the savings rate, i.e. a change in consumption behaviour for given income and levels of short-term interest rates. The decline in the savings rate that is behind stronger consumption in the model suggests that household deleveraging has weakened in the euro area. On a cautious note, the sustainability of consumption growth without wage growth at a similar pace, i.e. of consumption

growth based on lower savings, seems questionable in the longer term.

Investment growth in 2016 is still held back by high estimated investment risk premia (financing costs, access to finance) in the model, and the investment share in GDP remains below its long-term mean. The decomposition attributes -0.1 pps. of GDP growth to a shift in investment demand that is associated with elevated risk premia (financing costs).

Fiscal spending shocks (government consumption and investment) appear neutral in the GDP growth decomposition. It should be stressed, however, that the component in Table 1 measures the impact of deviations in fiscal policy from estimated patterns of fiscal behaviour over the sample period. These deviations are not identical to changes in the primary government balance.

Regarding the foreign factors, weakening foreign demand and weaker international trade are estimated to contribute negatively (-0.2 pps.) to euro area GDP growth in 2016. However, this negative impact is offset by a positive contribution (0.2 pps.) of shocks to the exchange rate.

The positive contribution of the exchange rate is a lagged consequence of the euro's effective depreciation in 2015 in light of the estimated sluggish adjustment of prices and export and import demand in the model. Therefore, the positive contribution of past depreciation should be expected to soften and even reverse with a renewed strengthening of the euro. Furthermore, it should be stressed that the positive contribution only refers to financial shocks (foreign exchange risk premia) that affect exchange rates in the model. Further factors that also affect exchange rate dynamics, such as differences in monetary policies across regions as captured by the model's Taylor rule, are not included in the estimated contribution of 0.2 pps. The positive contribution may, however, partly reflect the portfolio balance effect of non-conventional monetary policy (QE) in the euro area.