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GDP Flash Estimates for Germany

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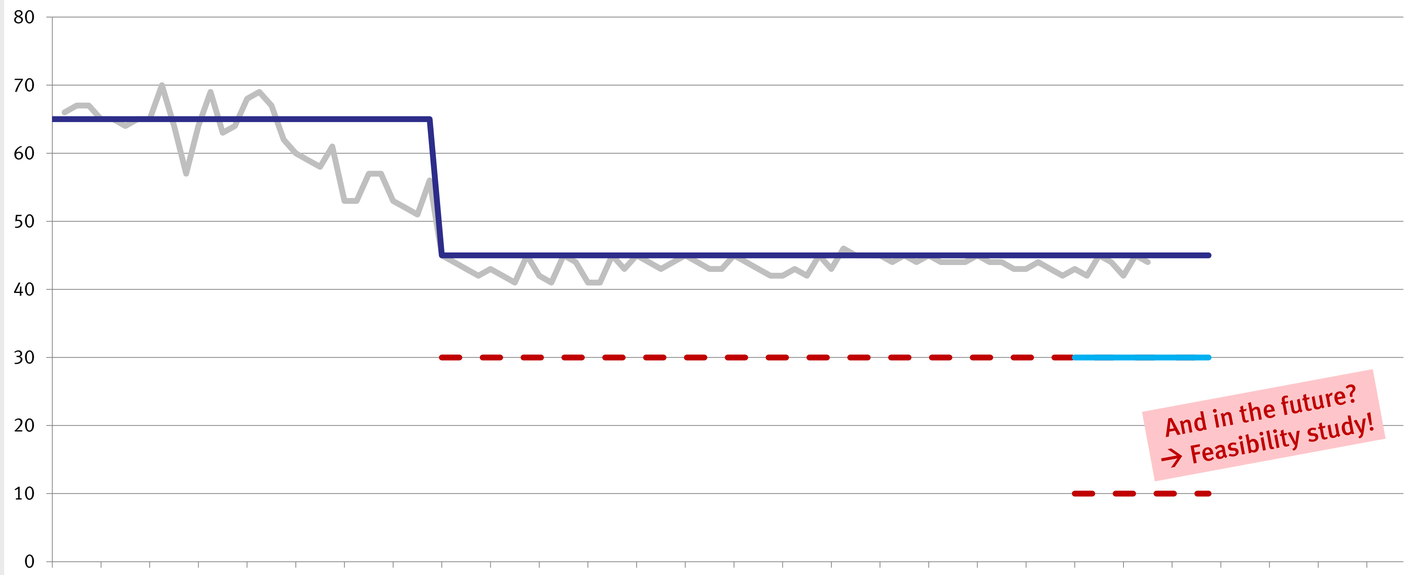
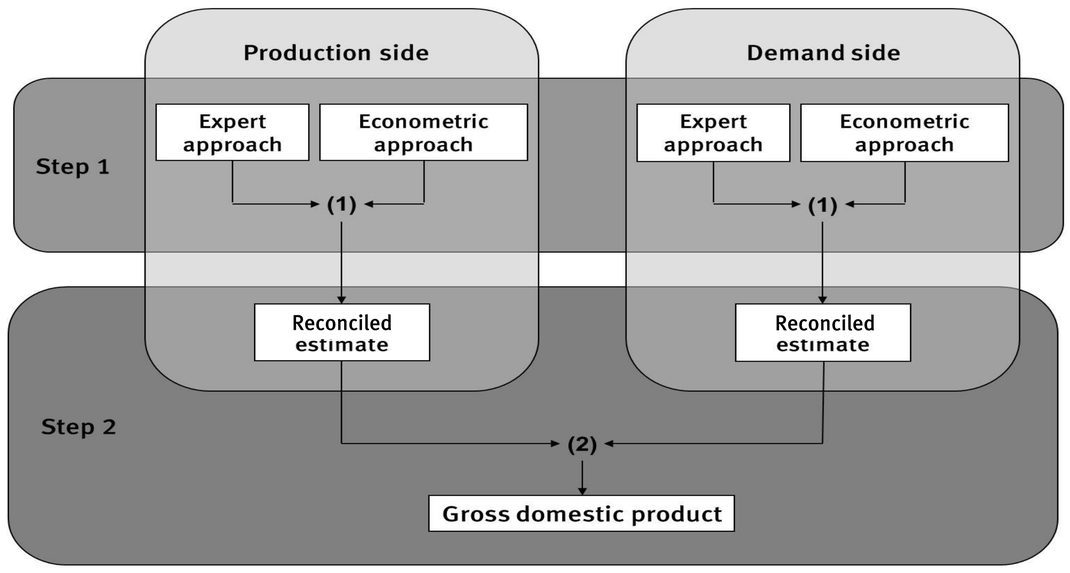
JEL classifications: C53, C82, E01, E32, E37

1 History and status quo of the German GDP Flash

Estimations and release policy of German GDP, days after the end of the reference quarter



Delphi-method-style three-pillar-model to obtain a balanced quarterly GDP at t+30



2 A feasibility study on a GDP Flash for Germany at t+10

Econometric modelling approach of the feasibility study

What is currently estimated (nowcasted)?

→ *Quarterly production side of GDP (not balanced with demand side), disaggregated at the level of the **gross value added (GVA) of 15 industries** using seasonally adjusted data*

How is the GDP figure at t+10 obtained?

→ *By **aggregating nowcasts of all industries**, adding taxes, subtracting subsidies (which are also nowcasted)*

What econometric approach is used for the nowcasts?

→ *For each industry either an **ARIMA(p,d,q) model or ARIMAX model** with up to three additional regressors per industry is chosen based on statistical information criteria*

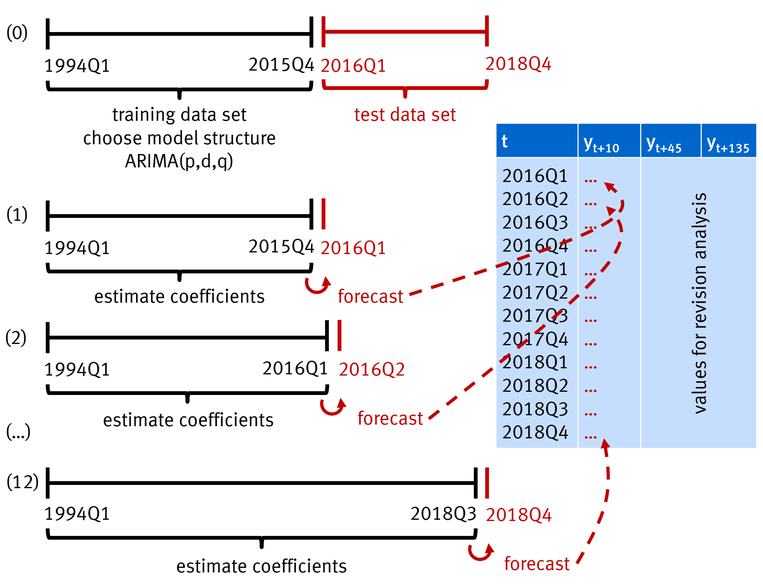
What is the time horizon of the feasibility study?

→ *Using **real-time data allows backtesting** based on a **training data set** ranging from 1994Q1 (or 2000Q1 or 2010Q1 depending on the industry) to 2015Q4 and a **test data set** ranging from 2016Q1 to 2018Q4 (12 observations)*

How are the estimations implemented?

→ *Using the **forecast package in R***

Backtesting procedure used in the feasibility study



Industries for which GVA is estimated

(1) Agriculture, forestry and fishing
(2) Mining and quarrying
(3) Manufacturing
(4) Energy supply
(5) Water supply, sewerage, waste management and remediation activities
(6) Construction
(7) Wholesale and retail trade, sale and repair of motor vehicles and motorcycles
(8) Transportation and storage
(9) Accommodation and food services
(10) Information and communication
(11) Financial and insurance activities
(12) Real estate activities
(13) Business services
(14) Public services, education, health
(15) Other services

Indicators used in the estimation of GVA

Data from official statistics (examples)

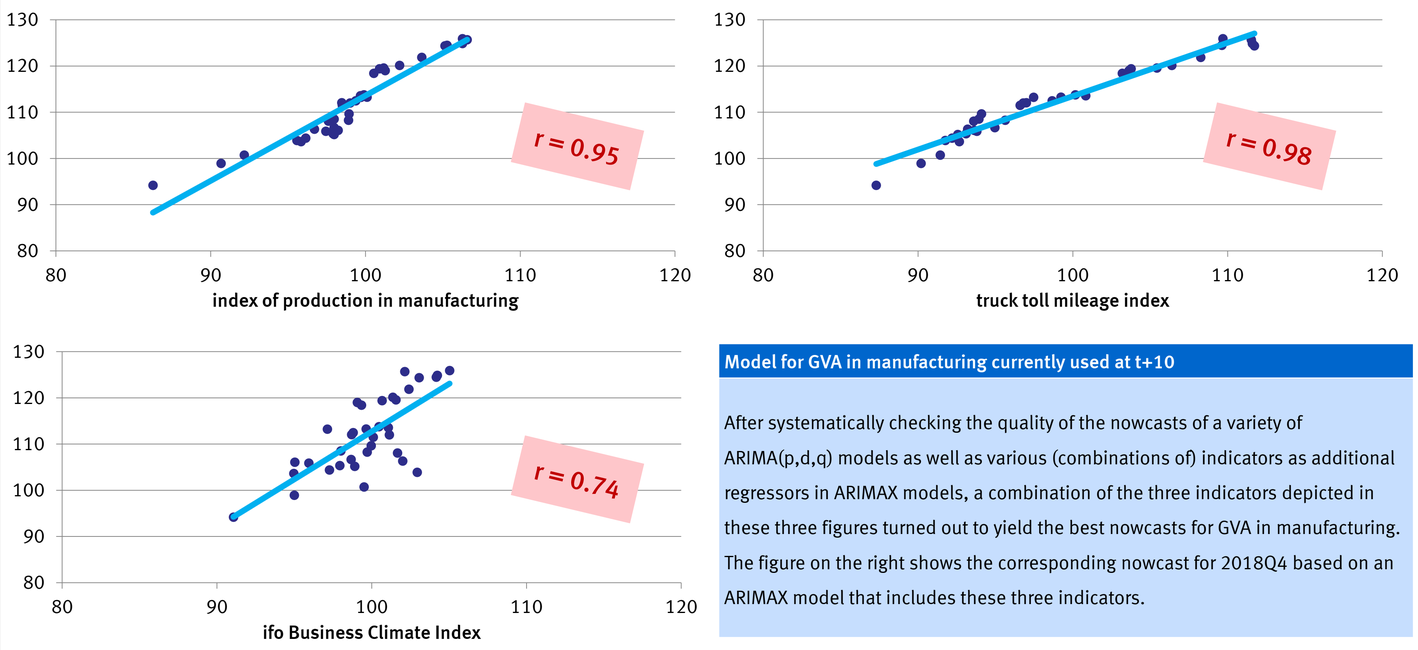
Index of production in manufacturing
Index of production in energy
Index of production in main construction industry
Truck toll mileage index
Index of turnover in retail trade
Index of sales of motor vehicles and motorcycles
Index of turnover in accommodation and food services
...

Data from external sources (examples)

ifo Business Climate Index
GfK income expectations
...

3 Example: GVA in manufacturing

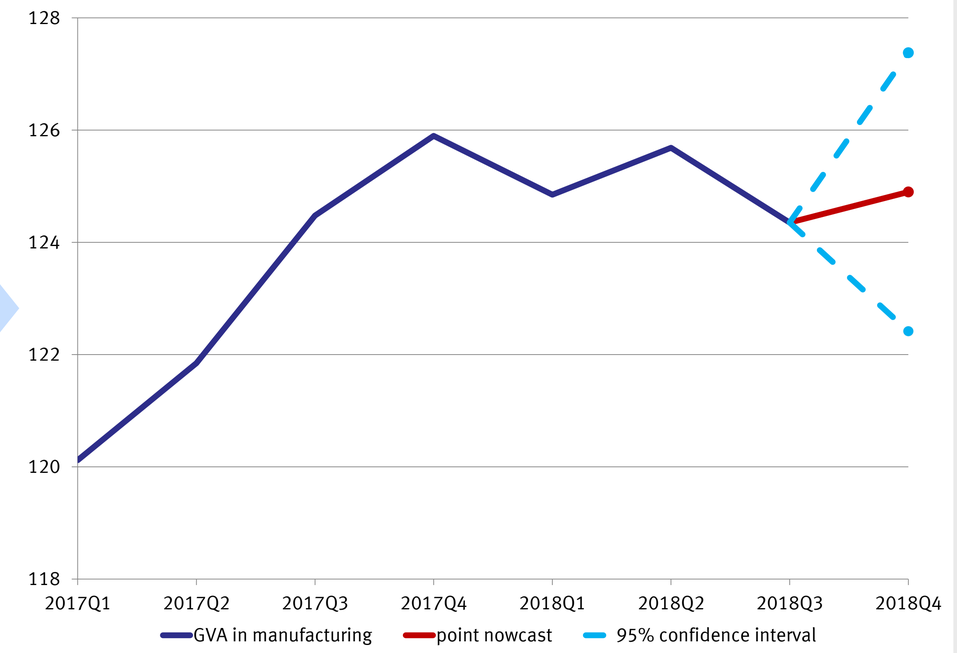
Correlation of potential indicators with GVA in manufacturing, index values (2015 = 100), 2010Q1-2018Q3, r = correlation coefficient



Model for GVA in manufacturing currently used at t+10

After systematically checking the quality of the nowcasts of a variety of ARIMA(p,d,q) models as well as various (combinations of) indicators as additional regressors in ARIMAX models, a combination of the three indicators depicted in these three figures turned out to yield the best nowcasts for GVA in manufacturing. The figure on the right shows the corresponding nowcast for 2018Q4 based on an ARIMAX model that includes these three indicators.

2018Q4 nowcast of the GVA in manufacturing, based on ARIMAX model with indicators



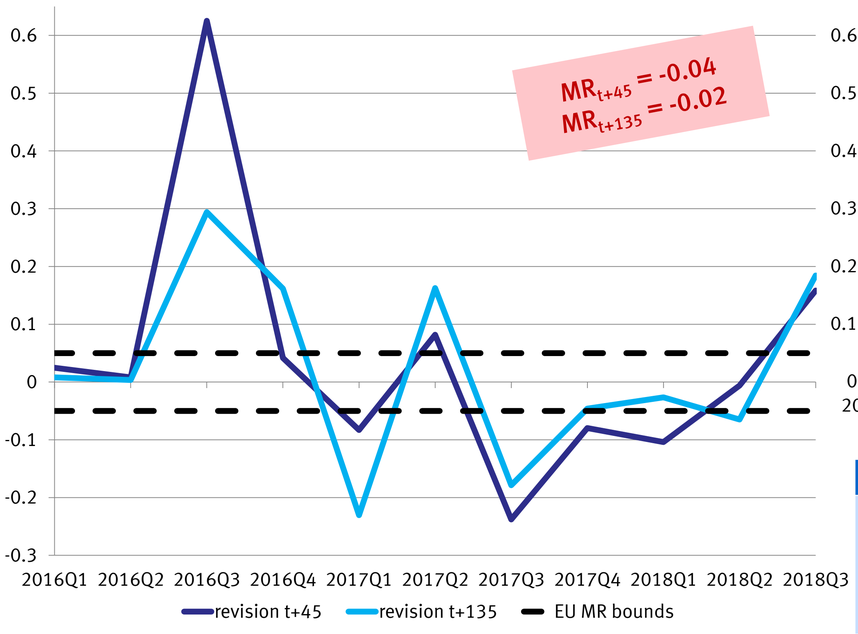
4 Preliminary quality assessment and outlook

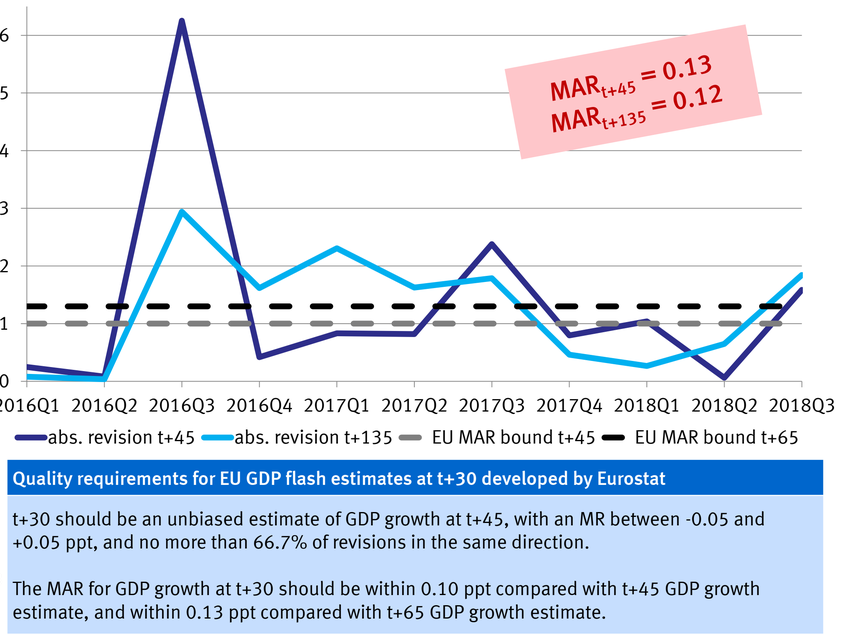
Revision analysis of the feasibility study

These figures show the revisions of the production side GDP (not balanced with demand side) at t+45 and at t+135 with respect to the nowcast obtained by aggregating the nowcasts of the GVA in all 15 industries, based on the models currently used at t+10.

The left figure depicts the revisions in percentage points (ppt) for each quarter of the test data set, alongside the mean revision (MR) of all quarters of the test data set. The right figure depicts the absolute revisions in ppt for each quarter of the test data set, alongside the mean absolute revision (MAR) of all quarters of the test data set.

Revision analysis of the models currently used at t+10, percentage point deviations of the t+10 nowcast from the annual GDP production side growth rates calculated at t+45 and t+135





Quality requirements for EU GDP flash estimates at t+30 developed by Eurostat

t+30 should be an unbiased estimate of GDP growth at t+45, with an MR between -0.05 and +0.05 ppt, and no more than 66.7% of revisions in the same direction.

The MAR for GDP growth at t+30 should be within 0.10 ppt compared with t+45 GDP growth estimate, and within 0.13 ppt compared with t+65 GDP growth estimate.

Outlook

Additional data sources	Alternative methods
→ *from official statistics* (e.g. index of turnover in wholesale trade, turnover indices in the service sector, indices of new orders in various sectors, ...)	→ *from classical statistics and econometrics* (e.g. dynamic factor models, ...)
→ *from external data sources* (e.g. satellite data, weather data, daily power production, leading economic indicators, economic sentiment indicators, IHS Markit/BME purchasing managers index, RWI/ISL-Container Throughput Index, ...)	→ *from the area of machine learning* (e.g. regression trees, neural networks, ...)

References

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Feedback? Questions?

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