

Country experience: Austria: a model for estimating monthly balance of payments data

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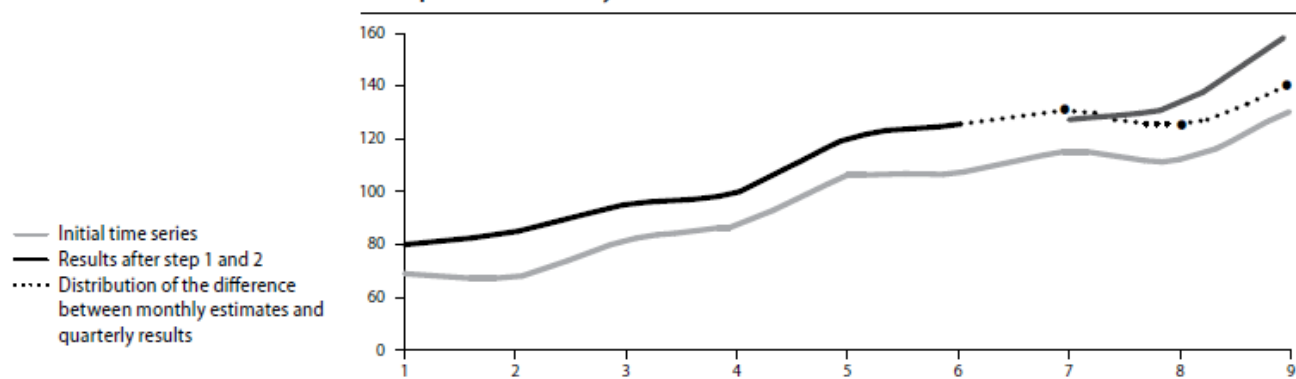
17.33. In Austria, Oesterreichische Nationalbank (OeNB) is responsible for compiling and disseminating statistics on the international supply of services, including the BOP. In cooperation with Statistics Austria, OeNB collects data on trade in services through surveys that are conducted quarterly. In contrast to financial transactions, OeNB found that it was not feasible to employ monthly surveys on real economic transactions due to cost-benefit considerations, as data are not available on a monthly basis for most respondents. Accordingly, and due to the lack of user need for monthly data, national figures on trade in services are published on a quarterly basis only. At the same time, OeNB has to fulfil monthly reporting requirements according to European Union regulations.^[1] To that end, OeNB has introduced a estimation model to derive monthly BOP data from quarterly reports.

17.34. The model produces total figures, both credits and debits, for goods, services, compensation of employees and current transfers. In addition to global figures, a regional breakdown is available for intra- and extra-European Union trade, as well as trade with the intra- and extra-euro area. When assessing the model described below, it must be kept in mind that the results are not intended to be published as such; rather, they enter into European Union and euro area aggregates.

17.35. In principle, reports must be sent to the European Central Bank and Eurostat around the tenth day of the second month following the reporting period. Therefore, estimation is based on quarterly time series that are updated according to revision standards as well as exogenous variables, if available. After quarterly figures have become available, monthly data are reconciled with the quarterly results.

17.36. For calculating monthly figures, the original quarterly time series is first seasonally adjusted by calculating the smoothing component, the seasonal component and the irregular components. Three different methods of smoothing are employed: moving average, basic exponential smoothing and exponential smoothing according to the Holt-Winters Forecasting Method (HOLT). After the original time series has thus been prepared, three different estimation models are employed: linear regression, quadratic regression and cubic regression. A period of 12, 18 or 24 months is used for forecasting. Therefore, 27 different modelling techniques are, in principle, available. For each item, monthly results are estimated for 24 test periods according to the different models, and the quality of the results is quantified by comparing them with the actual figures by calculating relative absolute and relative quadratic differences.

Figure 17.1
Example of the monthly estimates distribution of Austria



17.37. For services exports, an estimation model employing exponential smoothing according to HOLT is used, and quadratic regression over a period of 12 months has proven to be most suitable.^[2] The regression also incorporates overnight stays of foreign guests in Austria as an independent variable. Still, incoming travel makes up approximately one third of the services exports of Austria. Therefore, the development of overnight stays is an influencing variable of the development of overall services exports.

17.38. For services imports, a model with basic exponential smoothing and linear regression over a period of 18 months has proven to be the most effective.

17.39. After global values are estimated, they must be divided into intra-European Union, extra-European Union, intra-euro area and extra-euro area exports and imports. For estimating the current month of trade in services, the regional division is considered according to the respective quarter in each of the two preceding years. In contrast to linear regression, that method is employed for items for which strong seasonal fluctuations are observed, which is the case for trade in services.

17.40. When quarterly results become available, monthly estimates are reconciled so that the three months equal the corresponding quarter. The adjustment is based on the cubic splines method, by which the monthly data are first seasonally adjusted and smoothed, and the actual quarterly results are adjusted for smoothing components. Then a multiple regression model with the cubic spline function is applied, serving as the basis for the monthly results to be estimated again. As a third step, the difference between the actual quarterly result and the quarterly result based on the cubic spline function is determined and distributed between the monthly estimates. That process is again accomplished by applying the regression coefficients of the cubic spline function. As a last step, the monthly estimates must be adjusted for the seasonal and smoothing components that were determined at the beginning.

[1] European Commission regulation No. 555/2012 amending regulation No. 184/2005 of the European Parliament and of the Council of the European Union on Community statistics concerning balance of payments, international trade in services and foreign direct investment, as regards the update of data requirements and definitions (*Official Journal of the European Union*, L 166, 27 July 2012); and guideline of the European Central Bank of 9 December 2011 on the statistical reporting requirements of the European Central Bank in the field of external statistics (ECB/2011/23).

[2] For a description of this method see www.ons.gov.uk/ons/search/index.html?newquery=Holt-Winters+Forecasting+Method+.