EUROPEAN CENTRAL BANK

EUROSYSTEM

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THE AWM DATABASE[1]

This note documents the 14th update of the Area-wide Model (AWM) database[2]. This update, compared to the previous one carried out in 2013, extends the database up to 2013Q4 and updates the levels incorporating Latvia as a new member state. As in previous versions, it has been constructed using both euro area data reported in the ECB Monthly Bulletin and other ECB and Eurostat data where available. It has then been backdated using the numbers of the previous version of the database (in general history pre-1996 has been frozen since the 5th update).

The coverage of fiscal variables is relatively limited in this dataset[3], Users interested in fiscal issues, should refer to the euro area fiscal database[4] which provides a very rich and more consistent framework for the fiscal series.

The AWM database covers a wide range of quarterly euro area macroeconomic time-series. The updated database starts for most variables in 1970Q1 and is now available until 2013Q4. This note elaborates on the methodology and procedures used to update the Area-wide Model database. The first section draws on previous versions of the documentation and briefly explains the sources and methodology to build the historical data. The second section explains how the data for earlier periods are re-scaled to bring the figures in line with recent euro area aggregate data. The subsequent sections list the units and seasonal adjustment of the series, elaborates on the main changes with respect to the previous version of the database and gives a tentative timetable for the next update. The document closes with a summary and an appendix with the codification of the database.

1 HISTORICAL DATA: SOURCES AND METHODOLOGY[5]

[1] For questions on the construction of the database please email: AWMdatabase@ecb.europa.eu. Users should be aware that this is an update of the database provided with the ECB working paper No. 42, undertaken by ECB staff and does not represent in any way an official ECB data source. In this sense it should be viewed as an effort to gather and process all the available information in order to cover the gaps in the specific statistical needs to model the euro area.

The cut-off date for this update is 31 July 2014.

[2] For a description of the model see ECB working paper No. 42: 'An Area-wide Model (AWM) for the euro area' by Gabriel Fagan, Jérôme Henry and Ricardo Mestre (January 2001).

[3] The only fiscal variables available are real government consumption (GCR), government consumption deflator (GCD) and indirect taxes net of subsidies (TIN), the data after 1995Q1 reflects the figures from the ESA95 database while the numbers before 1995Q1 are related to the frozen information from the 5th update of the AWM database. These series have been kept in the AWM database dataset for consistency reasons (in terms of methodology) with the rest of the series.

[4] Fiscal dataset constructed following: Joan Paredes, Diego J. Pedregal, Javier J. Pérez, Fiscal policy analysis in the euro area: Expanding the toolkit, Journal of Policy Modeling, Available online 28 July 2014, ISSN 0161-8938, http://dx.doi.org/10.1016/j.jpolmod.2014.07.003.. For questions on the fiscal database please email: euro_area.fiscal_database@ecb.europa.eu

[5] For a more detailed description of the compilation of the historical data, please refer to the previous version of the documentation

As in the previous version of the database, the historical data have been frozen and rescaled to the new levels given by the recent history.

The historical data are based on the aggregation of available country information when the original AWM database was compiled[6]. The main source for the country information is Eurostat, complemented by the OECD National Accounts, the OECD Main economic indicators, the BIS and the AMECO databases.

The method of aggregation used for most variables is the so called "Index method" [7]. The log-level index for any series X is defined as follows:

$$\ln X_z = \sum_z w_i \ln X_i$$

Where w_i is the weight of X_i in the aggregate X_z. This method is used for both the nominal and real national accounts variables. The deflators are subsequently derived. This method is also used for GDP income variables (e.g. compensation of employees and disposable income) as well as for HICP and components.

For some other variables, for example ratios, the aggregate is simply calculated as a weighted sum of the variables (without expressing them in logarithms). Finally, there are some series that are just summed, e.g. employment and unemployment.

The weights used in aggregating most of the individual country series are constant GDP at market prices (PPP) for the euro area for 1995. If not all countries are available then the weights are re-scaled from the original weights. For HICP variables, 1995 HICP weights are used.

When only annual data were available with partly missing quarterly data, the annual figures were interpolated into quarterly observations using the available quarterly data as an indicator, following the Chow-Lin procedure, implemented as a Kalman filter. When no indicator was available the data were interpolated using a cubic spline.

2 RE-SCALING OF AREA-WIDE DATA TO MONTHLY BULLETIN DATA

As a general principle, the euro area data used are consistent with those reported in the ECB Monthly Bulletin and/or those produced by Eurostat[8]. This was achieved by either completely replacing the original country aggregation by the available official euro area series or by linking the data contained in the original AWM database to the official euro area data where necessary in order to maximise the length

[6] It should be stressed that currently much more information is available, but no additional work has be undertaken to take it on board.

[7] A full explanation of this method can be found in Fagan and Henry's paper "Long run money demand in the EU: Evidence for area-wide aggregates", Empirical Economics (1998) 23:483-506

[8] For a detail description of the Monthly Bulletin and Eurostat data please refer to http://www.ecb.europa.eu and http://epp.eurostat.cec.eu.int respectively

of the series[9]. This linking procedure takes, as a general rule, the available euro area data from the Monthly Bulletin or Eurostat as far back as possible.

The variables are re-scaled as follows.

- Real GDP and demand components are taken from Eurostat, the original source of the corresponding Monthly Bulletin data; then they are re-scaled to the ECU-euro corrected level of 1995 and then backdated with rates of growth of the AWM's original series.
- GDP deflators are taken directly from the corresponding ECB Monthly Bulletin series (which are compiled by ECB staff as a weighted average of the national deflators using PPP weights[10]).
- The unemployment rate is taken from Eurostat, the same series as reported in the Monthly Bulletin. Backdating is undertaken following the same approach.
- Total employment/employees, total compensation to employees and gross operating surplus are taken from the Monthly Bulletin and backdated in rates of growth.
- HICP and components are consistent with the Monthly Bulletin and backdated in rates of growth.
- Short term interest rate data are taken from the Monthly Bulletin. They are backdated with the corresponding series contained in the original database (source: BIS and AMECO). The long term interest rate is taken fully from the ECB Monthly Bulletin databank.
- The information on household disposable income is based on the seasonally adjusted savings ratio series published by Eurostat. This ratio has been extended back using the old disposable income and private consumption series.

In the AWM (as in the Eurostat national accounts data), exports and imports of goods and services are based on the gross concept (i.e. they do not net out intra-area trade flows). While, in principle, this does not affect developments in net trade and other 'balance' items of the current account, it does mean that both export and import figures overstate significantly the true trade of the area (since intra-area trade accounts for about half of gross exports).

3 UNITS AND SEASONAL ADJUSTMENT OF THE SERIES

The units of the series generally follow Eurostat or ECB conventions:

- Real GDP and its components are in millions of ECU/euro corrected with reference year 1995[11].

[9] Obviously the non-official data from the AWM database is bound to be of lower quality compared to the data from official sources.

[10] This procedure is necessary since the published Eurostat figures for nominal GDP and its components are expressed in terms of the current exchange rate (in ECU terms) which implies that, for earlier years, the implicit deflators calculated from the Eurostat data would be distorted by exchange rate movements.

[11] The official National accounts figures published by Eurostat currently have 2005 as a reference year.

- Nominal series are typically in millions of ECU/euro corrected, including compensation to employees, and gross operating surplus.
- Deflators are generally set to 1.0 in 1995 (with the exception of YFD).
- HICP and its components are indices with base year 1996=100[12].
- Employment/Employees are expressed in thousands of persons.
- The unemployment rate is expressed as ratios to the civilian workforce (ILO definition).
- Current account-related series are represented as a percentage of GDP.
- Commodity prices and world GDP are in US dollars.

The series that are typically seasonal, like GDP and its components or HICP are provided seasonally adjusted except in the case of overall HICP and HICP excluding energy where both seasonal and seasonally adjusted data are available in the database.

4 COMPARISON WITH THE PREVIOUS AWM DATABASE UPDATE AND FUTURE UPDATES

- All the series are available up to 2013Q4.
- The next update of the database is schedule to take place in September/October 2015. It will extend the database up to 2014Q4, and should include Lithuania as a new Euro area member state. Also it will incorporate the new ESA 2010 data

5 SUMMARY

This note presents the 14th update of the AWM database. This database takes publicly available data, such as the one produced by Eurostat and/or reported in the ECB Monthly Bulletin, and supplements it with aggregated available country data. Data prior to 1996 are drawn from the, now frozen, previous version of the AWM database. The current version of the database extends the series to 2013Q4 with a fixed composition of the Euro area with 18 members.

[12] The official HICP figures published by Eurostat are scaled to the year 2005=100.

Appendix: Area-Wide Model Variables	
CAN_YEN	*Current Account Balance/GDP*
COMPR	*Commodity Prices*
EEN	*Effective exchange rate (EER-39 from 1993Q1, EEN-12 for 1981Q1-1992Q4, AWM update 5 for the rest of the history)*
EXR	*Euro per USD exhange rate*
GCD	*Gov. Consumption Deflator*
GCR	*Gov. Consumption*
GON	*Gross Operating Surplus*
HEG	*HICP energy*
HEGWEI	*Weight of the HICP energy on overall HICP (HICP total = 1000)*
HEX	*HICP excluding energy (Non-seasonally adjusted)*
HEXSA	*HICP excluding energy (Seasonally adjusted)*
HICP	*Overall HICP (Non-sesonally adjusted)*
HICPSA	*Overall HICP (Seasonally adjusted)*
ITD	*Gross Investment Deflator*
ITR	*Gross Investment*
LEN	*Employees (persons)*
LFN	*Labour Force (persons)*
LNN	*Total Employment (persons)*
LPROD	*Labour Productivity (YER/LNN)*
LTN	*Long-Term Interest Rate*
MTD	*Imports of Goods and Services Deflator*
MTR	*Imports of Goods and Services (Real)*
NFN_YEN	*Ratio, Net Factor Income from Abroad/GDP*
PCD	*Consumption Deflator*
PCOMU	*Non oil commodity prices (in USD)*
PCR	*Private Consumption*
POILU	*Oil prices (in USD)*
SAX	*Household's savings ratio*
STN	*Short-Term Interest Rate (Nominal)*
TIN	*Indirect Taxes (net of subsidies)*
ULC	*Unit Labour Costs(WIN/YER)*
UNN	*Number of Unemployed*
URX	*Unemployment rate (as a percentage of labour force)*
WIN	*Compensation to Employees*
WRN	*Wage per head*
XTD	*Exports of Goods and Services Deflator*
XTR	*Exports of Goods and Services (Real)*
YED	*GDP Deflator*
YER	*GDP (Real)*
YFD	*GDP at Factor Costs Deflator*
YFN	*GDP at Factor Costs (WIN+GON)*
YIN	*GDP, Income Side*
YWD	*World GDP Deflator*
YWDX	*World Demand Deflator, Composite Indicator*
YWR	*World GDP*
YWRX	*World Demand, Composite Indicator*