Read-Me: Area-Wide Model Database

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This document describes the contents of `AWMD_Mar2026.xlsx`. For full methodological details on backward extension, data sources, and output gap estimation, see:

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1 Spreadsheet Structure

The file contains five sheets:

`Introduction`

Contact information, links, and sheet descriptions.

`Definitions`

Variable codes, sample periods, splice dates, adjustment flags, and notes (see Table 1).

`AWMD_Updated`

The updated AWMD (54 variables, 1970Q1–2025Q4 for most series). Column A is a date; column B is the `YYYY-QN` label.

`AWMD_exIreland`

EA21 excluding Ireland aggregates, constructed via chain subtraction where feasible (see Section 2). **Series are indexed to 2019Q4=100.**

`awm19up18`

The ECB's 18th (and final) update of the AWMD (1970Q1–2017Q4), provided for comparison.

2 Excluding Ireland via Chain Subtraction

The `AWMD_exIreland` sheet removes Ireland from EA21 chain-linked aggregates. Because chain-linked volumes are not additive, simple subtraction of levels is invalid. Instead, we compute the residual growth rate using a Törnqvist growth-rate decomposition based on nominal shares.

Let y_t^{EA} and y_t^{IE} denote the chain-linked real series for the EA21 aggregate and Ireland, respectively, and let n_t^{EA} and n_t^{IE} be their nominal counterparts. Define annualized log growth rates:

$$\Delta y_t^j = 400 \times \ln\left(\frac{y_t^j}{y_{t-1}^j}\right) \qquad j \in \{EA, IE\}$$

The weight is the average of adjacent nominal shares of Ireland:

$$w_t = \frac{1}{2}\left(\frac{n_{t-1}^{IE}}{n_{t-1}^{EA}} + \frac{n_t^{IE}}{n_t^{EA}}\right)$$

The growth rate of the residual (EA21 excluding Ireland) is:

$$\Delta y_t^{\text{excl}} = \frac{\Delta y_t^{EA} - w_t \Delta y_t^{IE}}{1 - w_t}$$

Levels are cumulated from a base quarter $\bar{t} = 2019\text{Q4}$, normalized to 100:

$$y_{\bar{t}}^{\text{excl}} = 100$$

$$y_t^{\text{excl}} = y_{t-1}^{\text{excl}} \exp\left(\frac{\Delta y_t^{\text{excl}}}{400}\right) \quad \text{for } t > \bar{t}$$

$$y_t^{\text{excl}} = \frac{y_{t+1}^{\text{excl}}}{\exp\left(\frac{\Delta y_{t+1}^{\text{excl}}}{400}\right)} \quad \text{for } t < \bar{t}$$

This procedure yields an EA21-excluding-Ireland series beginning in 1995Q1. Following the approach in the original AWMD, we extend the series backward by applying EA21 growth rates over the period 1970Q1–1994Q4. This implicitly assumes that the aggregate dynamics of EA21 and EA21 excluding Ireland are sufficiently similar. Given that Ireland accounted for less than 1% of EA21 GDP in 1995Q1, the resulting series can be regarded as a close approximation to the ideal benchmark.

3 Constructed Variables

Several variables are derived from others rather than taken directly from a source:

- $\texttt{YFN} = \texttt{WIN} + \texttt{GON}$ (GDP at factor cost)
- $\texttt{LFN} = \texttt{LNN}/(1 - \texttt{URX}/100)$ (labor force)
- $\texttt{LPROD_EMP} = \texttt{YER}/\texttt{LNN}$ (labor productivity per person)
- $\texttt{LPROD_HW} = \texttt{YER}/\texttt{LHW}$ (labor productivity per hour)
- $\texttt{ULC} = \texttt{WIN}/\texttt{YER}$ (unit labor costs)
- $\texttt{WRN} = \texttt{WIN}/\texttt{LEN}$ (wage per head)

The seasonally adjusted HICP energy index (HEGSYA) is constructed via chain subtraction in log levels:

$$\ln\left(\frac{\texttt{HEGSYA}_t}{\texttt{HEGSYA}_{t-1}}\right) = \frac{\ln\left(\frac{\texttt{HICPSYA}_t}{\texttt{HICPSYA}_{t-1}}\right) - \ln\left(\frac{\texttt{HEXSYA}_t}{\texttt{HEXSYA}_{t-1}}\right) \times (1 - \texttt{HEGWEI}_t)}{\texttt{HEGWEI}_t}$$

Balance of payments variables follow the area-wide model definitions:

$$\texttt{NFN} = \text{Primary Income Balance} + \text{Secondary Income Balance} + \text{Capital Account Balance}$$

$$\texttt{CAN_YEN} = \frac{\texttt{XTR} \times \texttt{XTD}/100 - \texttt{MTR} \times \texttt{MTD}/100 + \texttt{NFN}}{\texttt{YIN}}$$

4 Important Notes

1. **Nominal variables and deflators** are spliced at 2002Q1 (not 1995Q1) to avoid exchange-rate distortions from Eurostat's use of irrevocable conversion rates before the euro launch. See Section 3.3 of the paper.
2. **Hours worked** pre-1995 are constructed from OECD annual data on average hours per worker for 11 countries, aggregated using 1995 PPP-adjusted GDP weights and interpolated to quarterly frequency via cubic spline. See Section 3.6 of the paper.
3. **World GDP deflators** (YWD, YWDX) are frozen at the 18th update (ending 2017Q4) and not extended, due to ambiguity in their original construction.
4. **Trade-weighted World GDP** (TWGDP) is a new variable covering 29 major trading partners (≈90% of EA trade), using ECB trade weights and OECD QNA data, with Chinese GDP from Chen et al. (2024). See Section A.6 of the paper.
5. **Irish GDP anomalies**: The AWMD_exIreland sheet addresses well-known distortions in Irish national accounts (particularly investment and imports from 2015Q1 onward) by providing chain-subtracted EA21-ex-Ireland aggregates.

Table 1: Overview of variables in the AWMD.

Code	Variable Name	Sample Period	Splice	SA	CA	exIE	Notes
YER	Real GDP	1970Q1–2025Q4	1995Q1	✓	✓	✓	Chain linked volumes (2020), million euro
PCR	Household consumption	1970Q1–2025Q4	1995Q1	✓	✓	✓	Chain linked volumes (2020), million euro
GCR	Government consumption	1970Q1–2025Q4	1995Q1	✓	✓	✓	Chain linked volumes (2020), million euro
ITR	Gross fixed capital formation	1970Q1–2025Q4	1995Q1	✓	✓	✓	Chain linked volumes (2020), million euro
XTR	Exports of goods and services	1970Q1–2025Q4	1995Q1	✓	✓	✓	Chain linked volumes (2020), million euro
MTR	Imports of goods and services	1970Q1–2025Q4	1995Q1	✓	✓	✓	Chain linked volumes (2020), million euro
YIN	Nominal GDP	1970Q1–2025Q4	2002Q1	✓	✓	✓	Current market prices, million euro
WIN	Compensation of employees	1970Q1–2025Q4	2002Q1	✓	✓	✓	Current market prices, million euro
GON	Gross operating surplus	1970Q1–2025Q4	2002Q1	✓	✓	✓	Current market prices, million euro
TIN	Taxes less subsidies	1970Q1–2025Q4	2002Q1	✓	✓	✓	Current market prices, million euro
YFN	GDP at factor cost	1970Q1–2025Q4	2002Q1	✓	✓	✓	Compensation of employees + gross operating surplus
YED	GDP deflator	1970Q1–2025Q4	2002Q1	✓	✓	✓	Index, 2020=100
PCD	Private consumption deflator	1970Q1–2025Q4	2002Q1	✓	✓	✓	Index, 2020=100
GCD	Govt. consumption deflator	1970Q1–2025Q4	2002Q1	✓	✓	✓	Index, 2020=100
ITD	Investment deflator	1970Q1–2025Q4	2002Q1	✓	✓	✓	Index, 2020=100
XTD	Exports deflator	1970Q1–2025Q4	2002Q1	✓	✓	✓	Index, 2020=100
MTD	Imports deflator	1970Q1–2025Q4	2002Q1	✓	✓	✓	Index, 2020=100
YFD	GDP at factor cost deflator	1970Q1–2025Q4	2002Q1	✓	✓	×	Index, 2020=100
HICP	HICP overall index	1970Q1–2025Q3	2000Q1	×	×	×	Index, 2015=100
HEX	HICP excluding energy	1987Q4–2025Q3	2001Q1	×	×	×	Index, 2015=100

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Code	Variable Name	Sample Period	Splice	SA	CA	exIE	Notes
HEG	HICP energy	1987Q4–2025Q3	2000Q1	×	×	×	Index, 2015=100
HICPSYA	HICP seasonally adjusted	1970Q1–2025Q3	1997Q1	✓	×	×	Index, 2015=100
HEXSYA	HICP excl. energy seas. adj.	1987Q4–2025Q3	1997Q1	✓	×	×	Index, 2015=100
HEGSYA	HICP energy seas. adj.	1987Q4–2025Q3	1997Q1	✓	×	×	Refer to Section 3.4
HEGWEI	HICP energy weight	1990Q1–2025Q3	2000Q1	–	–	×	Total consumption basket = 1000
CAN_YEN	Current account bal. (% of GDP)	1975Q1–2025Q1	None	✓	✓	×	Refer to Section 3.5
NFN_YEN	Net factor income (% of GDP)	1975Q1–2025Q1	2013Q1	✓	✓	×	Refer to Section 3.5
LFN	Labor force	1970Q1–2025Q4	None	✓	✓	✓	Total employment $/(1 - \text{URX}/100)$
LNN	Total employment	1970Q1–2025Q4	1995Q1	✓	✓	✓	Thousand persons, domestic concept
UNN	Number of unemployed	1970Q1–2025Q4	2009Q1	✓	×	✓	Thousand persons, 15 to 74 years
URX	Unemployment rate	1970Q1–2025Q4	2009Q1	✓	×	✓	Percent of labor force, 15 to 74 years
LEN	Number of employees	1970Q1–2025Q4	1995Q1	✓	✓	✓	Thousand persons, domestic concept
LHW	Hours worked	1970Q1–2025Q4	1995Q1	✓	✓	✓	Thousand hours worked. Pre-1995 interpolated; refer to Section 3.6
STN	Short-term interest rate	1970Q1–2026Q1	1994Q1	×	×	×	Euribor 3-month, % p.a., period average
LTN	Long-term interest rate	1970Q1–2026Q1	None	×	×	×	EA 10-year govt. bond yield, % p.a.
COMPR	Commodity Price Index	1970Q1–2025Q4	2014Q3	×	×	×	US dollar-denominated, weighted sum of oil and non-oil prices
POILU	Oil prices	1970Q1–2026Q1	1987Q3	×	×	×	Petroleum: UK Brent, USD per barrel
PCOMU	Non-oil commodity prices	1970Q1–2025Q2	1996Q1	×	×	×	ECB Commodity Price Index, USD, import weighted
YWD	World GDP deflator	1970Q1–2017Q4	None	✓	✓	×	Excluded from the updated dataset, present in the 18th update
YWDX	World demand deflator	1970Q1–2017Q4	None	✓	✓	×	Excluded from the updated dataset, present in the 18th update

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Code	Variable Name	Sample Period	Splice	SA	CA	exIE	Notes
YWR	World GDP	1970Q1–2025Q4	1995Q1	✓	✓	×	Million USD, PPP-adjusted, weighted average of four major trading partners (US, UK, Japan, Switzerland)
YWRX	World demand	1970Q1–2025Q4	1995Q1	✓	✓	×	Million USD, PPP-adjusted, World GDP + euro area demand minus euro area exports
TWGDP	EA-trade-weighted World GDP	1970Q1–2025Q4	None	✓	✓	×	Index 2019Q4 = 100, derived from OECD data on 29 major trading partners. Refer to Appendix A.6
LPROD_EMP	Labor productivity per person	1970Q1–2025Q4	None	✓	✓	✓	Real GDP (YER) / Total employment (LNN)
LPROD_HW	Labor productivity per hour	1970Q1–2025Q4	None	✓	✓	✓	Real GDP (YER) / Total hours worked (LHW)
CAPU	Capacity utilization (%)	1980Q1–2025Q4	None	✓	×	×	Based on the European Commission industry survey
ULC	Unit labor costs	1970Q1–2025Q4	None	✓	✓	✓	Compensation of employees (WIN) / Real GDP (YER)
WRN	Wage per head	1970Q1–2025Q4	None	✓	✓	✓	Compensation of employees (WIN) / Number of employees (LEN)
SAX	Gross household saving rate	1970Q1–2025Q3	1999Q1	✓	✓	×	The ratio of gross savings and gross disposable income adjusted for the change in equity of households in pension fund reserves
EEN	Effective exchange rate	1970Q1–2026Q1	1993Q1	×	×	×	Index 1999Q1 = 1, includes 41 trade partners
EXR_AVG	USD/EUR exchange rate (Average)	1971Q1–2025Q4	None	×	×	×	Average euro-per-USD exchange rate
EXR_END	USD/EUR exchange rate (End of period)	1974Q3–2025Q4	None	×	×	×	Euro-per-USD exchange rate at the end of period

Note: Column SA denotes whether the series has undergone seasonal adjustment, whereas column CA similarly pertains to calendar adjustment. Column exIE indicates whether an excluding-Ireland version is available in the `AWMD_exIreland` sheet. Section references are to the paper.