



# EUROPEAN CONFERENCE ON QUALITY IN OFFICIAL STATISTICS 2024 ESTORIL - PORTUGAL



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QUALITY IN OFFICIAL STATISTICS  
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# Improving quality in seasonal adjustment in Short-Term Statistics using JDemetra+ regressors and TEAM R-package

Félix Aparicio Pérez, José Fernando Arranz Arauzo, C.  
Gómez, E. Rosa-Perez, C. Sáez Calvo, L. Sanguiao Sande,  
María Teresa Vázquez Gutiérrez



eurostat 

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# Introduction

- 1. Short-term business statistics. 7 out of 27 Principal European Economic Indicators**
- 2. European Business Statistics Regulation: unadjusted data, calendar adjusted data, seasonal and calendar adjusted data**
- 3. JDemetra+ seasonal adjustment software in the ESS. Open-source software developed by the National Bank of Belgium, Deutsche Bundesbank and Eurostat**

## 2023

### FEBRUARY

MO	TU	WE	TH	FR	SA	SU
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

### MARCH

MO	TU	WE	TH	FR	SA	SU
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

## 2024

### February

Mo	Tu	We	Th	Fr	Sa	Su
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29			

### March

Mo	Tu	We	Th	Fr	Sa	Su
			1	2	3	
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

EASTER



## Calendar effects adjustment

Obtain series whose values do not depend on the length of the month, nor on the composition of the number of working days:

- trading days regressors
- leap-year regressors
- moving holidays regressors.

### regarima residuals

normality: **Uncertain (0,070)**

independence: **Good (0,684)**

spectral td peaks: **Good (0,294)**

spectral seas peaks: **Good (0,541)**

### outliers

number of outliers: **Uncertain (0,033)**

### seats

seas variance: **Good (0,290)**

irregular variance: **Good (0,450)**

seas/irr cross-correlation: **Good (0,495)**

### residual trading days tests

f-test on sa (td): **Bad (0,002)**

f-test on i (td): **Bad (0,009)**



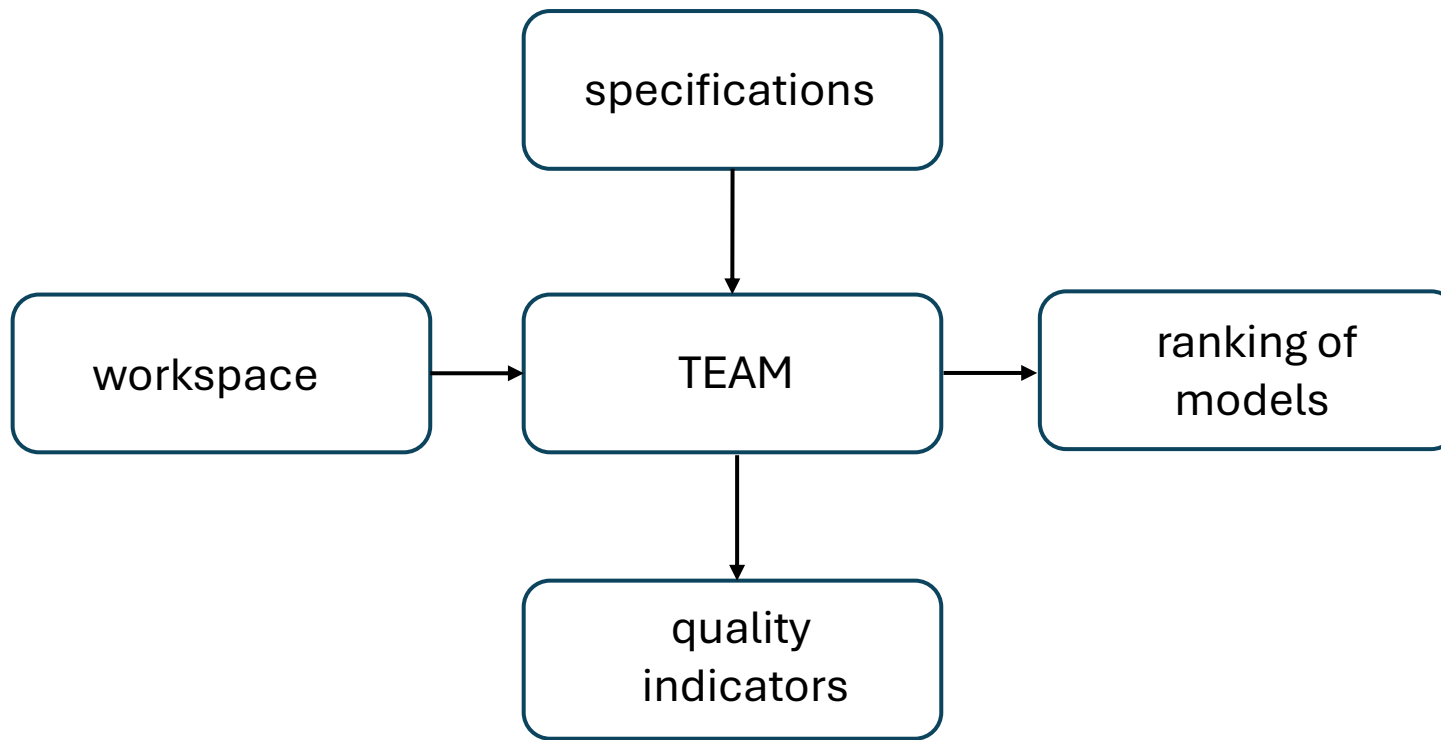
## JDemetra+ regressors. Analysis and results

SERVICES				INDUSTRY			
	SSAI		RTI		ITI		IPI
JD+ TD (nac cal), JD+ Easter	<b>2.84</b>	JD+ TD (nac cal), JD+ Easter	<b>3.00</b>	JD+ TD (EU cal), JD+ Easter	<b>2.87</b>	JD+ TD (EU cal), INE Easter	<b>2.38</b>
JD+ TD (nac cal), INE Easter	<b>2.80</b>	JD+ TD (EU cal), JD+ Easter	<b>3.00</b>	JD+ TD (EU cal), INE Easter	<b>2.83</b>	JD+ TD (nac cal), INE Easter	<b>2.34</b>
JD+ TD (EU cal), JD+ Easter	<b>2.67</b>	JD+ TD (nac cal), INE Easter	<b>2.97</b>	JD+ TD (nac cal), INE Easter	<b>2.27</b>	JD+ TD (EU cal), JD+ Easter	<b>2.32</b>
JD+ TD (EU cal), INE Easter	<b>2.65</b>	JD+ TD (EU cal), INE Easter	<b>2.81</b>	JD+ TD (nac cal), JD+ Easter	<b>2.19</b>	JD+ TD (nac cal), JD+ Easter	<b>2.25</b>
INE WD, JD+ Easter	1.82	INE WD, INE Easter	1.04	INE WD, JD+ Easter	1.43	INE WD, INE Easter	1.78
INE WD, INE Easter	1.69	INE WD, JD+ Easter	0.90	INE WD, INE Easter	1.17	INE WD, JD+ Easter	1.75

**Different results depending on the economic sector, but all the indicators show better results with JDemetra+ trading day regressors**



# ARIMA model selection and outlier detection and correction



- **Outliers fixed for period 2020-2023;**
- **Maximum/minimum values of the parameters in the regular and seasonal parts;**
- **Regressors;**
- **etc.**



## INSTITUTIONAL ENVIRONMENT

### 4. Commitment to Quality

## STATISTICAL PROCESSES

### 7. Sound Methodology

### 8. Appropriate Statistical Procedures

### 10. Cost Effectiveness

## STATISTICAL PROCESSES

### 12. Accuracy and Reliability

### 14. Coherence and Comparability





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