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Is the euro area a prelude to the fiscal union? Introduction to the 'fiscal confluence criteria'

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ABSTRACT

Objective: The objective of the article is to investigate the suitability of the European Union (EU) convergence criteria as an evaluative instrument in assessing its progression from the monetary union (MU) to the fiscal union (FU). The secondary aim was to propose a list of 'fiscal confluence criteria' as a foundation for evaluating member states' ability to adhere to the fiscal union.

Research Design & Methods: A quantitative research methodology was employed, using eight indicators and three distinct methods (Euclidean distance, standardized sums, Technique for Order Preference and Similarity to Ideal Solution) to create a joint development measure, known as the core measure, for each group: CMMU and CMFU. I employed Spearman's ρ to calculate the rank correlation between Monetary and fiscal union. The research sample comprised all 27 European Union member states (EU MS). I sourced the datasets from reputable databases, namely Eurostat, the International Monetary Fund (IMF), the World Bank (WB), and Accounting for Transparency (AFT).

Findings: The integrity level of the EU member states falls notably below the established thresholds. There are significant discrepancies between the countries. Consequently, the possibility of the EU attaining the next level of integration (FU) in the foreseeable future is limited.

Implications & Recommendations: Given the obvious limitations on the ability of EU member states to pursue further integration in the immediate future, policymakers, and business entities within the EU should prioritize maintaining the agreement in its current form (Economic and monetary union). Further research should immediately concentrate on the causes and remedies of rising Euroscepticism in EU MS.

Contribution & Value Added: This research offers valuable insights into the potential for further integration within the EU. Moreover, it initiates a discourse on the formulation of new criteria for the next level of integration (fiscal union).

Article type: research article

Keywords: European Union; monetary union; fiscal union; convergence criteria; fiscal confluence criteria

JEL codes: E52, E62, F33, F36, F45

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INTRODUCTION

The foundations of today's EU were laid by Germany, France, Italy, and the Benelux countries (Taşcu-Stavre & Staicu, 2021). It came a long way through all of Balassa's levels of integration: starting from a free trade area and later becoming a customs union and a common market. For the time being, the EU is the Economic and monetary union (Głodowska, 2017; Butorina & Borko, 2022). The next step in this economic-political integration process is the establishment of the European fiscal union, whose economic field is the subject of this article. However, the fiscal union has never been consensually agreed upon by all EU member states to be a necessity (Uramová *et al.*, 2021).

It all started with the establishment of the European Coal and Steel Community in 1951 and the European Community that came into effect on 1 January 1958 under the Treaty of Rome (Cremona, 2019). Later, seven enlargements created the European Union in today's shapes: 1973 (the UK, Ireland, Denmark), 1981 (Greece), 1986 (Portugal, Spain), 1995 (Austria, Sweden Finland), 2004 (Czechia, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia, Slovakia), 2007 (Romania, Bulgaria), and 2013 (Croatia). After Brexit in 2018, the EU consists of 27 member states (Ficek & Gawlik, 2022).

With the conclusion of the Maastricht Treaty as an act of Primary Law in 1992, the process of adopting a common currency began. It came into force in 1993. However, the history of the adoption of the euro is much more complex, including many sensitive details that should be analyzed in another theoretical article.

In 1999, eleven countries adopted the euro as their currency (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain). Regarding the Eurozone, there were eight enlargements: 2001 (Greece), 2007 (Slovenia), 2008 (Malta, Cyprus), 2009 (Slovakia), 2011 (Estonia), 2014 (Latvia), 2015 (Lithuania) (Cervelló-Royo, 2023), and the most recent one: 2023 (Croatia) (Šarić, 2023). To sum up, 20 out of 27 EU member states have participated in the monetary union so far. In this article, they will be called the 'EUR group,' as an opposite to the seven countries within the EU but outside of the euro area: the 'non-EUR group' (Poland, Romania, Czechia, Hungary, Sweden, Denmark, Bulgaria).

We may interpret the differentiation of these two groups as 'two-speed Europe' or 'multi-speed Europe' (Kundera, 2019; Califano & Gasperin, 2019). While this concept is not directly tied to the integration levels, it implies that the EU should form smaller, more homogenous groups of MS and then integrate within themselves in slightly different directions, compared with other sub-groups (Michalewska-Pawlak, 2021). However, it would certainly create a legislative disruption regarding the variety of competence structures (Cremona, 2019).

Having discussed the fiscal union (FU), the concept of 'multi-speed Europe' needs to be considered. As Kundera (2019) indicates, 'in connection with the concept of the multi-speed Europe always the question arises as to which countries are fit for the first speed of integration, and which countries remain outside this group. It can, of course, be assumed that the "first speed Europe" creates the euro area and the countries which have not adopted the euro are in "Europe of second speed."' Needless to say, the PIIGS countries did join the Eurozone, and it could be discussed whether they should be considered the 'first speed Europe.' Nonetheless, monetary integration is an important factor to move further to the next level. Therefore, participating in the Eurozone is treated as a mandatory condition to be a part of the FU (Kundera, 2019).

The objective of this article is to verify whether the EU member states are ready to create the FU, even in a lesser group than the euro area. In this article, using a quantitative approach, only the economic sphere is measured. The qualitative political nature is not addressed in this work. The research gap is the lack of propositions regarding the shapes of the FU, especially regarding the criteria that should be met to join such a Union. In this article, I called the proposed criteria the 'fiscal confluence criteria.'

I formulated three research questions:

RQ1: Do the European Union convergence criteria serve as an effective tool for fulfilling the 'fiscal confluence criteria'?

RQ2: Do European Union member states (EU MS) exhibit statistically significant economic disparities among themselves?

RQ3: To what extent do the envisioned confluence criteria prove that the transformation of the current monetary union into a fiscal union is an inevitable progression for the European Union?

The abovementioned research questions seek answers using a quantitative research methodology. The economic potential of further integration will be measured based on datasets from the 2015-2022 indicators of Eurostat, IMF, WB, and AFT.

The main goal of this research was to investigate whether the convergence criteria are a good benchmark for further integration within the EU and to propose a new set of 'fiscal confluence criteria' as a foundation for FU.

Firstly, I will develop hypotheses. Next, I will present a review of the literature on fiscal integration, followed by a section on methodology, a presentation, a discussion of the results of the research, and finally, conclusions.

LITERATURE REVIEW (AND HYPOTHESES DEVELOPMENT)

Fiscal Integration

One could ask, what does the European fiscal union (EFU) mean precisely? As Mileusnic (2021) indicated, the Union should include 'a substantial Eurozone budget, an enabled stabilization function, and an enhanced risk sharing. This final degree of the EFU would entail a significant degree of economic convergence, financial integration, further coordination, and pooling of decision making on national budgets, with adequate strengthening of democratic accountability.'

Blanchard *et al.* (2021) claim that 'there are two dimensions to the European Union's (EU) fiscal framework. The first relates to the development of a fiscal union, through increased risk sharing, common borrowing, and the size and use of the common EU budget. The second focuses on the design and application of EU-level fiscal rules to national fiscal policies.'

According to Bilbiie *et al.* (2021), this would 'mean a centralized European entity with an autonomous taxing and spending authority. This European "finance minister" could spend its resources either as block grants to individual countries or directly on specific projects or via automatic programs. Furthermore, as discussed above, this fiscal union could be an additional instrument for risk-sharing, stabilization policies, or coordinating large public investment projects. Supporters of a European finance minister also often argue that it is a precondition for a closer Political Union.' However, the unknown seems to be the tax side of fiscal integration. Would it mean a joint tax policy? Creation of dedicated taxes? Or maybe shares of tax revenues collected by the MS? Distressingly, this topic is barely specified.

We may see some EU documents as benchmarks for fiscal integrity, especially the Maastricht Treaty and the subsequent Stability and Growth Pact (SGP). 'The EU rules on public finances, as laid down in Article 126 and Protocol No. 12 of the Treaty of the Functioning of the European Union (TFEU), demand a budget deficit of less than three per cent of GDP and a public debt below 60 per cent of GDP' (Mileusnic, 2021). Through its preventive and corrective arm, the supplementary SGP supports the aforementioned thresholds (Dermine & Larch, 2023).

The frameworks were enhanced after the financial crisis, resulting in additional pacts called the 'Six-Pack,' 'Two-Pack,' and 'Fiscal Compact.' 'The first two are responsible for setting up the annual budgetary and debt targets, taxation, and public expenditure while the third one influences fiscal policy by providing independent analysis, forecasts, and advice' (Ioannou & Stracca, 2014).

'In Meseberg, France and Germany proposed establishing a Eurozone Budget within the framework of the European Union to promote competitiveness, convergence, and stabilization in the euro area' (European Council, 2018). Countries must be aware that the creation of the FU includes risk sharing both in the micro- and macroeconomic spheres. The centralized budget would certainly help deal with asynchronous macroeconomic shocks, but at the same time, a moral hazard could follow (Berger *et al.*, 2019). Therefore, centralized control is necessary (Fuest & Peichl, 2012).

Conversely, Howarth and Schild (2021) show a rather skeptical approach regarding Germany. Chancellor Merkel and her government were not supportive of a bailout program for Greece that included emergency loans. Moreover, the working process of a centralized fiscal authority can raise questions. member states would receive unconditional transfers that, in the long run, they would have to pay back (Bilbiie *et al.*, 2021). This could create another spiral of indebtedness.

Noteworthy, countries that adopted the euro, cannot simply use current inflation to inflate their debt. With that being said, EU member states should have a sound debt situation, even before joining the Eurozone (Stanek, 2019), not to mention a more advanced integration stadium, the FU.

The discussion about fiscal integration in the EU has its ups and downs. Mileusnic (2023) inspected 160 documents between 2007 and 2022. The downward and nil shifts can be seen during the 2016-2019 period mainly caused by Brexit and the sovereign debt crisis. At that time, there were also talks

about the unprecedented Eurozone leave either by Greece or the PIIGS group as a whole (Pera, 2016), the so-called eurexit.

On the contrary, 'upward shifts could be viewed as the prevalent force in the EU fiscal processes. The analysis showed that deeper fiscal integration might happen as an answer to crises as long as it does not entail reaching sophisticated versions of a fiscal union with a centralized fiscal capacity' (Mileusnic, 2023).

- Price stability (HICP): measured using the HICP index, with a reference value based on the three best-performing countries (with the lowest inflation rates). The criterion is met when a country's figure does not exceed the referenced value by more than 1.5%pt;
- Government budgetary position: measured as government deficit and debt (as % of GDP). The criterion is met when the values of deficit (DF) and debt (DB) are below 3% and 60% accordingly;
- Exchange rate (ER): participation in ERM II for at least two years, without devaluing against the euro (not used as an index in the research since, technically speaking, all 'EUR' countries meet this criterion, that is why it would disfavour the 'non-EUR' countries);
- Long-term interest rate (LTIR): measured as an average nominal long-term interest rate with a referenced value based on the three best-performing countries in terms of price stability (the same three countries as in the price stability yardstick). The criterion is met when a country's figure does not exceed the referenced value by more than 2 percentage points (European Central Bank, 2022).

Moreover, to the convergence criteria, fiscal frameworks called the 'fiscal confluence criteria' were created:

- The Financial Development Index (FDEV): it consists of sub-indices 'that summarize how developed financial institutions and financial markets are in terms of their depth, access, and efficiency' (Svirydzenka, 2016). The FDEV index assumes values ranging from 0 to 1. The higher the value, the greater the financial development. However, Sahay *et al.* (2015) claim that 'an FD index between 0.45 and 0.7 (with 95% likelihood) could generate the largest cumulative growth returns.' Therefore, the interval of [0.55;0.65] was used as a yardstick;
- Tax Complexity Index (TCI): 'a survey-based measure that captures the complexity of corporate income tax systems across countries and, thereby, allows users to comprehensively assess the tax complexity faced by multinational corporations' (Hoppe *et al.*, 2023). The higher the value, the more complex the tax system;
- (r-g): the differential between the interest rate on sovereign debt and the GDP growth rate. The 'r' and 'g' are either nominal or real (Blanchard *et al.*, 2021). 'If the growth rate exceeds the interest rate, the debt might be sustainable in spite of primary deficits' (Stanek, 2019);
- Trade openness (TO): the sum of exports measured together with imports as a share of GDP. 'The higher degree of trade openness reflects the greater openness of the economy to the outside world, which is beneficial for foreign trade, increases the level of exports and GDP, and boosts economic growth. Consequently, greater economic strength benefits the health of public finances and increases the responsiveness of budgetary authorities' (Afonso *et al.*, 2023).

In summary, I employed a total of eight indicators in the research, with an equal distribution of four indices of both monetary and fiscal aspects. Based on the literature review, all of them have a significant correlation with fiscal integration (Sahay *et al.*, 2015; Taghizadeh-Hesary *et al.*, 2019; Wasserfallen, 2022; Stanek, 2019; Blanchard *et al.*, 2021; Afonso *et al.*, 2023). Hence, I selected them to participate in this research endeavour.

Empirical evidence from prior literature studies was crucial to build the following main research thesis (H0):

H0: The prospect of the European Union's evolution into a fiscal union can be systematically evaluated through the application of 'fiscal confluence criteria', which are grounded in the European Union's convergence criteria framework.

To prove (or reject) the H0, I considered the following hypotheses:

H1: The European Union convergence criteria effectively contribute to meeting the fiscal confluence criteria.

H2: There are statistically significant economic disparities among European Union member states.

H3: The expected confluence criteria provide substantial evidence supporting the argument that the evolution of the current monetary union into a fiscal union is an inevitable progression for the EU.

The following section discusses the research methodology and metadata used in this study.

RESEARCH METHODOLOGY

The research design of this article is quantitative. As a sample, I used eight indicators mentioned in the previous section (Statistics Poland, 2024):

- two stimulants (DF, TO): the increased value indicates an increase in the level of the dependent variable; the higher the value, the better (also called 'the benefit criteria');
- three destimulants (DB, TCI, (r-g)): the increased value indicates a decrease in the level of the dependent variable; the higher the value, the worse (also called 'the cost criteria');
- one nominant (FDEV): a statistical characteristic that is considered desirable when its values are 'normal' or nominal. Any deviations from the 'normal' level are considered negative. In other words, values should circulate close to the reference value;
- two one-sided nominants (HICP, LTIR): in this case, they are one-sided; therefore, figures below or equal to the reference value are desirable (Ficek & Gawlik, 2022).

Initially, I used three methods to perform multi-criteria decision-making, based on the eight aforementioned indices: Euclidean distance (ED), standardized sums (SSM), and Technique for Order Preference and Similarity to Ideal Solution (TOPSIS) as an alternative method to econometric models. They order objects (countries) on the basis of their distance to the ideal solution formed on the given indicators. The Table below represents the process of creating the three measures grounded on the comprehensive empirical literature, in which:

i - EU MS, i = [1, 2, …, n_{EU}], n_{EU} = 27;
j - number of indices, j = [1, 2, …, m], j_{MU} = 4, j_{FU} = 8;
$\bar{x}_j$ - a value of the j-th index for the i-th country;
s_j - an arithmetic mean of the j-th index;
z_{ij} - a standardized value of the j-th index in the i-th country;
qi - an aggregated value of the measure in the i-th country.

Table 1. Process of creating ED, SSM, and TOPSIS

Step number	ED	SSM	TOPSIS
(1)	$z_{ij} = \frac{x_{ij} - \bar{x_j}}{s_j}$	$z_{ij} = \frac{x_{ij} - \bar{x_j}}{s_j}$	$z_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{n} x_{ij}^2}}$
(2)	$d_i = \sqrt{\sum_{j=1}^{m} \left(z_{ij} - z_{0j}^{+}\right)^2}$	$p_P = \sum_{j=1}^{m} \max_i \{z_{ij}\}$ $p_A = \sum_{j=1}^{m} \min_i \{z_{ij}\}$	$z_{0j}^{+} = \max_i \{z_{ij}\}$ $z_{0j}^{-} = \min_i \{z_{ij}\}$
(3)	$d_0 = \max_i \{d_i\}$	$p_i = \sum_{j=1}^{m} z_{ij}$	$d_{i0}^{+} = \sqrt{\sum_{j=1}^{m} \left(z_{ij} - z_{0j}^{+}\right)^2}$ $d_{i0}^{-} = \sqrt{\sum_{j=1}^{m} \left(z_{ij} - z_{0j}^{-}\right)^2}$
(4)	$q_i = 1 - \frac{d_i}{d_0}$	$q_i = \frac{p_i - p_A}{p_P - p_A}$	$q_i = \frac{d_{i0}^{-}}{d_{i0}^{+} + d_{i0}^{-}}$
Source:	Kovacova *et al.* (2019) Ficek and Gawlik (2022) Zabawa and Kozyra (2020)	Maciejewski (2017) Maciejewski and Głodowska (2020) Bąk and Szczecińska (2022)	Thakkar (2021) Bąk (2018) Dyson (2017) Kacprzak (2018)

Source: own study based on the literature.

Each of the three measures yields a value in the range, $qi \in [0;1]$. I calculated the arithmetic and weighted arithmetic averages of the aggregated values. Then, I transformed all figures into a ranking system from 1 to 27, to apply Spearman's ρ rank correlation. Later, I created two core measures: CM_{MU} (monetary) and CM_{FU} (monetary & fiscal). The final comparison was made between the ranks of MU and FU for 27 EU member states.

The next section clarifies the research results of this study.

RESULTS AND DISCUSSION

Data samples come from four different databases for the years 2015-2022 (average):

- Eurostat (2023) for HICP, DF, DB, LTIR, and (r-g);
- International Monetary Fund (2023) for FDEV (2022 data extrapolated);
- World Bank (2023) for TO;
- Transparency International (2023) for TCI (2016, 2018, 2020, 2022).

Table 2. Datasets used in the research

2015-2022	**HICP**[a]	**DF**	**DB**	**LTIR**[b]	**FDEV**[c]	**TCI**	**r-g**	**TO**
Austria	2.55	-2.45	79.31	0.48	0.63	0.34	-3.33	106.97
Belgium	2.75	-3.35	104.50	0.57	0.66	0.41	-3.45	166.34
Bulgaria	2.61	-0.84	24.19	1.21	0.37	0.30	-7.74	125.03
Croatia	2.03	-1.66	77.18	2.15	0.49	0.48	-3.49	100.33
Cyprus	1.08	-0.80	98.94	2.30	0.51	0.35	-3.41	155.34
Czechia	3.66	-1.46	37.05	1.61	0.41	0.41	-5.78	146.43
Denmark	1.68	1.59	36.19	0.35	0.68	0.32	-4.30	108.51
Estonia	4.20	-1.26	12.55	0.10	0.27	0.23	-7.68	150.70
Finland	1.63	-1.96	69.04	0.47	0.65	0.31	-2.87	77.27
France	1.69	-4.48	103.29	0.57	0.81	0.40	-2.08	63.03
Germany	2.30	-0.46	66.08	0.17	0.70	0.37	-3.44	87.78
Greece	1.24	-2.85	184.48	4.55	0.51	0.41	2.30	78.87
Hungary	4.14	-3.90	73.33	3.49	0.44	0.36	-2.71	165.19
Ireland	1.46	-0.95	62.14	0.72	0.66	0.32	-12.28	230.79
Italy	1.70	-4.48	140.30	1.88	0.78	0.46	-0.23	60.60
Latvia	3.63	-2.41	39.51	0.72	0.23	0.37	-5.88	125.61
Lithuania	4.13	-0.90	39.90	0.53	0.21	0.30	-7.42	148.31
Luxembourg	2.19	0.93	22.43	0.32	0.73	0.29	-4.99	366.43
Malta	1.78	-2.09	50.76	1.14	0.53	0.31	-7.67	313.46
Netherlands	2.68	-0.43	55.31	0.34	0.73	0.34	-4.28	156.87
Poland	3.26	-2.48	51.39	3.03	0.45	0.43	-3.28	104.11
Portugal	1.64	-2.33	125.15	1.77	0.68	0.39	-2.48	85.27
Romania	3.25	-4.39	40.46	4.37	0.28	0.43	-4.11	85.57
Slovakia	2.85	-2.68	53.98	0.68	0.29	0.40	-3.99	185.34
Slovenia	1.90	-2.36	74.38	0.88	0.35	0.40	-5.00	157.06
Spain	1.83	-5.03	107.29	1.21	0.85	0.38	-2.14	67.41
Sweden	2.36	0.20	38.78	0.55	0.79	0.33	-2.64	88.20
Variables	***N***	***S***	***D***	***N***	***N***	***D***	***D***	***S***

Note: [a] referenced value measured as an average of Cyprus, Greece, and Ireland and equals 1.26;
[b] referenced value measured as an average of Cyprus, Greece, and Ireland and equals 2.52;
[c] the referenced value is either 0.55 or 0.65 for values outside the range of [0.55;0.65].
variables – statistical features (stimulants – S; destimulants – D or nominats – N)
Source: own study using the databases.

To apply the measures, there is a need to transform all indices to stimulants. The destimulants are simply multiplied by -1 (Maciejewski, 2017). Concerning the nominants, it must be done as follows:

$$z^*_{ij} = \begin{cases} 1 \text{ if } z_{ij} = N_j \\ \frac{-1}{z_{ij} - N_j - 1} \text{ if } z_{ij} < N_j \\ \frac{1}{z_{ij} - N_j + 1} \text{ if } z_{ij} > N_j \end{cases} \quad (5)$$

in which:

z^*_{ij} - the standard deviation for EU MS;

N_j - specific value in a data set.

With respect to one-sided nominants, the formula is the same, but takes [1] if $z_{ij} < N_j$.

Therefore, the data from Table 2 were converted to the stimulants (Table 3).

Table 3. Datasets after conversion to stimulants

2015-2022	**HICP**	**DF**	**DB**	**LTIR**	**FDEV**	**TCI**	**r-g**	**TO**
Austria	0.44	-2.45	-79.31	1.00	1.00	-0.34	3.33	106.97
Belgium	0.40	-3.35	-104.50	1.00	0.99	-0.41	3.45	166.34
Bulgaria	0.42	-0.84	-24.19	1.00	0.85	-0.30	7.74	125.03
Croatia	0.57	-1.66	-77.18	1.00	0.94	-0.48	3.49	100.33
Cyprus	1.00	-0.80	-98.94	1.00	0.96	-0.35	3.41	155.34
Czechia	0.29	-1.46	-37.05	1.00	0.88	-0.41	5.78	146.43
Denmark	0.71	1.59	-36.19	1.00	0.97	-0.32	4.30	108.51
Estonia	0.25	-1.26	-12.55	1.00	0.78	-0.23	7.68	150.70
Finland	0.73	-1.96	-69.04	1.00	1.00	-0.31	2.87	77.27
France	0.70	-4.48	-103.29	1.00	0.86	-0.40	2.08	63.03
Germany	0.49	-0.46	-66.08	1.00	0.95	-0.37	3.44	87.78
Greece	1.00	-2.85	-184.48	0.33	0.96	-0.41	-2.30	78.87
Hungary	0.26	-3.90	-73.33	0.51	0.90	-0.36	2.71	165.19
Ireland	0.83	-0.95	-62.14	1.00	0.99	-0.32	12.28	230.79
Italy	0.69	-4.48	-140.30	1.00	0.89	-0.46	0.23	60.60
Latvia	0.30	-2.41	-39.51	1.00	0.76	-0.37	5.88	125.61
Lithuania	0.26	-0.90	-39.90	1.00	0.75	-0.30	7.42	148.31
Luxembourg	0.52	0.93	-22.43	1.00	0.93	-0.29	4.99	366.43
Malta	0.66	-2.09	-50.76	1.00	0.98	-0.31	7.67	313.46
Netherlands	0.41	-0.43	-55.31	1.00	0.93	-0.34	4.28	156.87
Poland	0.33	-2.48	-51.39	0.67	0.91	-0.43	3.28	104.11
Portugal	0.73	-2.33	-125.15	1.00	0.97	-0.39	2.48	85.27
Romania	0.33	-4.39	-40.46	0.35	0.79	-0.43	4.11	85.57
Slovakia	0.39	-2.68	-53.98	1.00	0.79	-0.40	3.99	185.34
Slovenia	0.61	-2.36	-74.38	1.00	0.84	-0.40	5.00	157.06
Spain	0.64	-5.03	-107.29	1.00	0.83	-0.38	2.14	67.41
Sweden	0.48	0.20	-38.78	1.00	0.88	-0.33	2.64	88.20
Variables	***S***	***S***	***S***	***S***	***S***	***S***	***S***	***S***

Source: own study using Microsoft Excel (2023).

The following table corresponds to the qi values for ED, SSM, and TOPSIS, respectively, for both MU and FU. It also contains the arithmetic (AVG) and weighted arithmetic (WAVG) means, and the ranking measure based on the WAVG.

Table 4. ED, SSM, and TOPSIS data with ranking

ISO 2	monetary union						fiscal union					
	ED	SSM	TOPSIS	AVG	WAVG	RANK	ED	SSM	TOPSIS	AVG	WAVG	RANK
AT	0.35	0.55	0.47	0.46	0.46	18	0.31	0.52	0.41	0.41	0.41	17
BE	0.23	0.47	0.36	0.35	0.36	22	0.26	0.46	0.37	0.37	0.37	19
BG	0.50	0.71	0.66	0.62	0.63	6	0.44	0.61	0.60	0.55	0.56	5
HR	0.47	0.63	0.55	0.55	0.55	13	0.23	0.45	0.44	0.37	0.39	18
CY	0.57	0.76	0.63	0.65	0.65	5	0.42	0.61	0.51	0.52	0.51	8
CZ	0.38	0.62	0.58	0.53	0.54	14	0.32	0.51	0.53	0.45	0.47	11
DK	0.76	0.87	0.85	0.83	0.83	1	0.47	0.68	0.60	0.58	0.59	4
EE	0.37	0.66	0.61	0.55	0.56	11	0.39	0.61	0.59	0.53	0.55	6
FI	0.53	0.68	0.57	0.60	0.59	10	0.36	0.58	0.44	0.46	0.46	13
FR	0.26	0.51	0.36	0.38	0.37	21	0.17	0.38	0.31	0.29	0.29	23
DE	0.51	0.67	0.64	0.61	0.62	7	0.33	0.53	0.49	0.45	0.46	12
GR	0.00	0.31	0.35	0.22	0.25	27	0.00	0.28	0.26	0.18	0.20	27
HU	0.09	0.29	0.36	0.24	0.27	26	0.20	0.36	0.35	0.31	0.32	22
IE	0.65	0.76	0.68	0.70	0.69	3	0.66	0.78	0.73	0.72	0.72	1
IT	0.17	0.45	0.29	0.30	0.30	24	0.06	0.31	0.23	0.20	0.21	26
LV	0.33	0.58	0.52	0.48	0.49	16	0.27	0.46	0.49	0.41	0.43	15
LT	0.38	0.63	0.61	0.54	0.55	12	0.35	0.54	0.58	0.49	0.51	9
LU	0.63	0.81	0.78	0.74	0.75	2	0.61	0.77	0.70	0.69	0.70	2
MT	0.53	0.69	0.58	0.60	0.59	9	0.61	0.73	0.64	0.66	0.66	3
NL	0.48	0.67	0.65	0.60	0.61	8	0.41	0.58	0.54	0.51	0.52	7
PL	0.28	0.46	0.49	0.41	0.43	20	0.21	0.39	0.41	0.34	0.36	21
PT	0.36	0.57	0.44	0.46	0.45	19	0.25	0.47	0.36	0.36	0.36	20
RO	0.05	0.30	0.40	0.25	0.29	25	0.08	0.27	0.38	0.24	0.28	24
SK	0.35	0.57	0.50	0.47	0.48	17	0.29	0.46	0.46	0.40	0.42	16
SI	0.45	0.62	0.52	0.53	0.52	15	0.34	0.50	0.48	0.44	0.45	14
ES	0.19	0.47	0.32	0.33	0.32	23	0.15	0.36	0.29	0.27	0.27	25
SE	0.57	0.74	0.72	0.68	0.69	4	0.34	0.55	0.52	0.47	0.48	10

Source: own study using Microsoft Excel (2023).

Comparison of standard deviations of the WAVGs (25% ED, 25% SSM, 50% TOPSIS) between the two groups (MU vs. FU) shows that the discrepancies were lower in the FU:

- $CM_{MU} = 0.153$;
- $CM_{FU} = 0.137$.

I used Spearman's ρ based on the ranks in Table 4 to determine if MU was a good benchmark for FU. The correlation between monetary and fiscal integration is shown below.

As presented in Figure 1., the set of fiscal indices is correlated with the monetary indices. Spearman's ρ is equal to 0.93 and shows a significant correlation (p-value < 0.01). Therefore, H1 can be confirmed.

Although discrepancies between CM_{FU} and CM_{MU} are not significant, EU member states differ from one another. Thus, H2 is denied.

It is also established that MU is a good benchmark for FU, but it is not a sufficient condition. On the top right (the red square), nine countries achieved the top 10 in both monetary and fiscal integration. Six of them are from the 'EUR group.'

On the other hand, there are also 3 out of 7 'non-EUR' countries inside that square. Therefore, H3 can be confirmed conditionally.

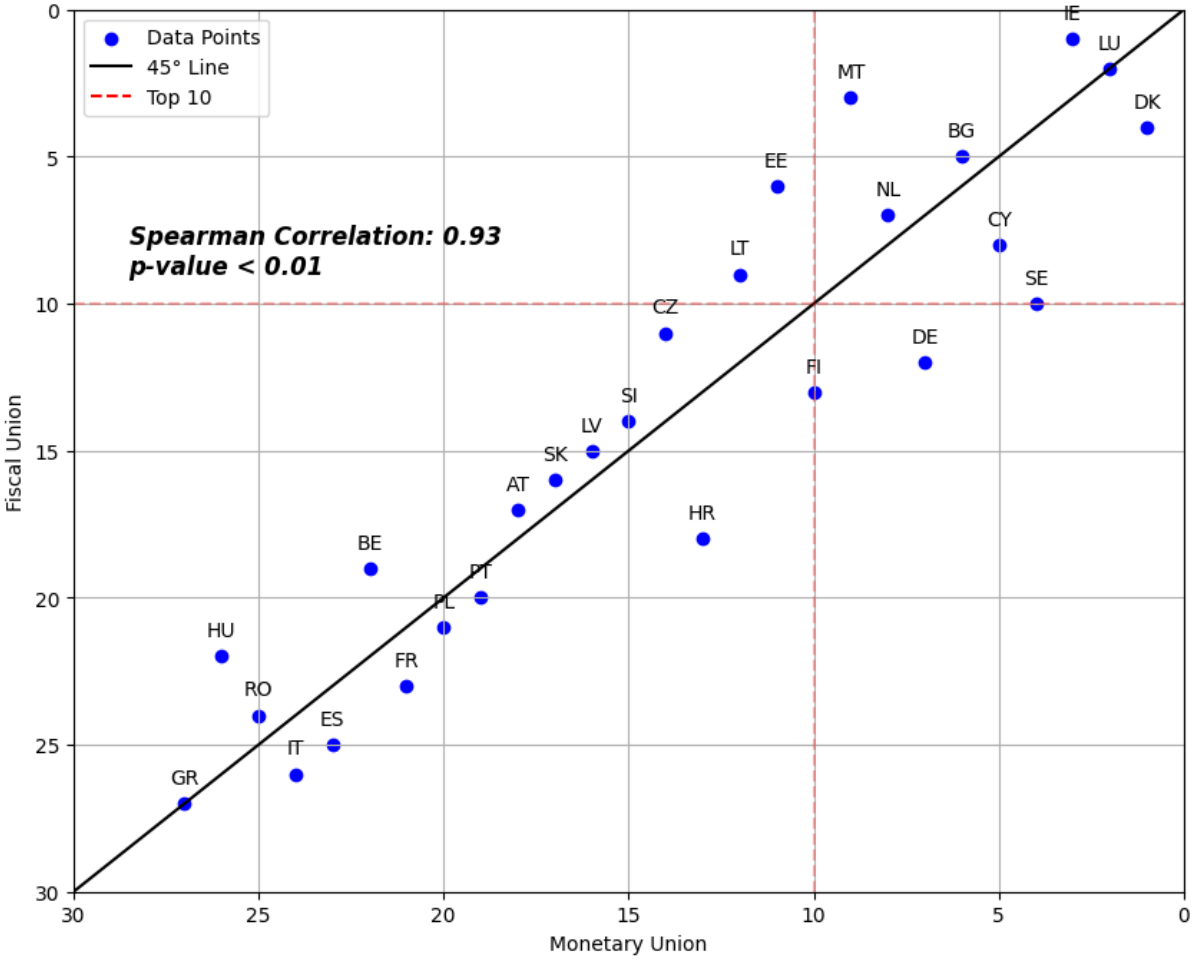

Figure 1. Monetary vs. fiscal integration
Source: own elaboration using Python (2023).

The objective of this article was to substantiate that sound convergence criteria can contribute to transformation into a fiscal union. With the applied methods, based on various databases, we can draw the following conclusions:

- Ireland is an undisputed European leader in fiscal integration. This country significantly reduced its debt after the financial crisis to 62% of GDP, with an (r-g) ratio of -12.3%. This is another proof that this country left the inglorious PIIGS group a long time ago;
- Three countries seem ready to adopt the euro: Denmark (monetary leader), Sweden, and Bulgaria. Even though Denmark has an opt-out clause (Butler, 2020), it could consider joining the euro area soon;
- There are two visible bookend outliers: Luxembourg and Greece (both lie on the 45° line). Luxembourg gained such a position thanks to good results in almost every index, especially with a government surplus, 22% debt (% of GDP), and TO equal to 366% of GDP. Greece, the opposite, with a government debt of 184%, and the only positive (r-g) ratio, could not catch up with other countries;
- PIGS countries, or rather 'GISP' based on the findings in this article, still fell behind after the financial crisis with a visible deficit and debt exceeding 100% of GDP each;
- Interesting are findings for France and Belgium. Both countries received lower ranks than one could expect. This is caused mainly by the complexity of tax systems and the high value of deficit: -3.4% for BE and -4.5% for FR. Their debt values are over 100% of GDP, similar to 'GISP' countries. Nevertheless, the (r-g) ratio for these countries is negative;
- Croatia, a new member of the 'EUR group', seems to be better monetary integrated than fiscally. It is mainly caused by tax complexity and indifferent financial development;

- Sweden appears to be highly developed regarding MU because of the general government surplus, accurate debt, and low value of the long-term nominal rate. Conversely, the fiscal side is less integrated mainly because of the low value of TO (88% of GDP) and over-developed financial institutions and market (0.79);
- Malta achieved sound results in both integration spheres. Transparency of their tax system, (r-g) equal to -7.7% and TO over 300% of GDP let Malta take the 3rd place regarding fiscal integrity.

Based on the findings and the literature review, H1 was confirmed to be contrary to H2. H3 was confirmed conditionally. Therefore, the MRT, which states that the European Union will become the FU with the use of the 'fiscal confluence criteria,' is denied.

Nevertheless, it needs to be highlighted that the Eurozone is itself a non-optimal currency area (Costa, 2021; Scharpf, 2014). That is why a buffer should be used to adjust the findings to the actual condition of the area.

Future research should concentrate on the following:

- The future of Denmark, Sweden, and Bulgaria in the Eurozone;
- Verifying whether the Eurozone countries meet the convergence criteria;
- Concentrate on the European business cycle (Beck & Okhrimenko, 2024);
- Debt sustainability in Belgium and France;
- The current 'GISP' situation, mainly regarding debt sustainability;
- Examination of the integration process within the Visegrád Group (V4) and its impact on the EU (with Slovakia being the only V4 country using the euro);
- The dynamics and historical context of the European unification process;
- The dynamics of supranational and national political decisions, including necessary conditionality, and idea development;
- Euroscepticism regarding the integration process;
- Recalculating this research using alternative sets of indicators (e.g. corruption, CAR, legal rights index).

CONCLUSIONS

This article adds value to the Science of Finance and Economics, and especially to the European integration process. It starts the discussion in what direction fiscal integration should go and what indicators, other than the 'fiscal confluence criteria' ought to be considered.

The limitations of this study can also be found. Firstly, the selection of used indices. All of them were thoroughly analyzed based either on the literature review or other empirical studies. Even though, a better set of indicators surely can be found. Secondly, outliers such as Luxembourg and Greece are responsible for major discrepancies between EU member states. It is worth investigating whether H2 could be confirmed without these countries. Third, the government debt index could alternatively be measured as a nominant, which would change the findings. However, the reference value for indebtedness is difficult to establish. Thirdly, I did not directly. address the political nature of the European integration process in this study. The quantitative indicators utilized in this article measured only economic aspects of integration.

The findings have some crucial implications and recommendations for policymakers. The convergence criteria are important although not sufficient, for transformation into the fiscal union. New criteria, such as the 'fiscal confluence criteria' should be added, either to the FU or to the enhanced MU, which would become an optimum currency area and be beneficial for all participants. Nonetheless, it would be extremely difficult to achieve. The divergence between the 'EUR' countries is significant, and even the convergence criteria are not meant for the countries already in the Eurozone. Therefore, the euro area will never become an optimum currency area without solid reforms and strict joining restrictions.

Business entities shall recognize the benefits that would result from establishing the FU. For countries with complex tax systems, this would be a chance to introduce a European-level fiscal law that could be more transparent than national ones. There is always the other side of the coin. Countries with clear tax laws such as Estonia, Luxembourg, Bulgaria, or Malta could negotiate their opt-out from

the tax rules. It is necessary to find a common solution that all countries would accept. Otherwise, the functionality of the fiscal union would be based on a 'multi-speed' Europe.

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