

SYNCHRONIZATION OF FINANCIAL CYCLES IN THE EARLY EURO AREA MEMBER STATES

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Abstract: *The paper analyses the synchronisation of financial cycles in the early member states of the European Monetary Union, as well as their co-movement with business cycles, with the aim of formulating policy recommendations for an adequate macroprudential framework at the euro area level. Financial cycles are represented by the volume of credit to the private sector, real house prices, and share prices, while the business cycle is approximated by real GDP. The cyclical components of the observed time series were extracted with the Hodrick–Prescott filter, and their level of synchronisation was estimated using measures of static and dynamic correlation. The findings reveal that financial cycles across euro area countries are not fully synchronised, although a relatively high level of co-movement was identified between share price cycles and credit cycles, whereas housing markets show considerably lower levels of synchronisation. At the same time, the results confirm that financial cycles do not necessarily follow the dynamics of business cycles, highlighting the need for continuous monitoring of the financial sector in order to enable the early identification of systemic risks, both at the level of individual member states and at the level of the monetary union as a whole. The obtained results suggest that the incomplete synchronisation of financial cycles within the euro area constrains the effectiveness of a uniform macroprudential approach, and underscores the need for enhanced alignment of supranational coordination with nationally tailored macroprudential policy measures.*

Key words: *financial cycles, business cycles, synchronization, macroprudential policy, euro area.*

JEL classification: E32, E44, E58, E61

1. INTRODUCTION

The contemporary macroeconomic framework recognises macroprudential policy as the third pillar of economic stabilisation, together with monetary and fiscal policy. Its primary role consists in constraining the build-up of systemic risks and reducing financial imbalances that develop over financial cycles. In the case of the European Monetary Union, the conduct of macroprudential policy is further complicated by the absence of a single, centralised supranational institution with a comprehensive supervisory mandate over European financial markets. Instead, macroprudential policy is implemented through an institutional arrangement that combines national supervision with supranational coordination by the European Systemic Risk Board. An exception is represented by the banking sector within the euro area, over which supervision has been centralised through the Single Supervisory Mechanism within the European Central Bank, although the European Banking Union has yet to be completed as a fully integrated project. Such an institutional framework increases the likelihood that local disturbances translate into broader systemic risks, as was the case during the sovereign debt and banking crisis in the euro area, while the free movement of capital further amplifies the transmission of financial shocks across member states and deepens their macroeconomic vulnerability.

In line with the above, the aim of this paper is to examine the level of synchronisation of financial cycles across euro area countries and to analyse its implications for the conduct of macroprudential policy at monetary union level. Particular attention is devoted to the question of whether the dynamics of financial cycles constrain the scope for coordinated policy action and affect the effectiveness of the existing regulatory framework.

The paper is structured into six sections. Following the introductory section, the second section reviews the key findings of previous empirical studies on financial cycles and their co-movement with business cycles. The third section presents the selected data, defines the variables used, and outlines the applied methodology. The fourth and fifth sections are devoted to the interpretation of the obtained results and the discussion of their implications for the conduct of macroprudential policy in the euro area. The paper ends with concluding remarks and recommendations for future research.

2. PREVIOUS RESEARCH ON FINANCIAL CYCLES IN THE EURO AREA

Business cycles have long dominated macroeconomic research, whereas research on financial cycles is of more recent origin and considerably less prevalent. Its more extensive development followed only after the Global Financial Crisis and the subsequent sovereign debt crisis in the euro area, when the financial sector and its linkages with the real economy moved to the centre of economic policy and macroeconomic research. In this context, increasing attention has been drawn to the view that financial markets also undergo medium-term cyclical fluctuations, characterised by *"the build-up of imbalances as credit rapidly expands and asset prices rise to overinflated levels, followed by market corrections often taking the form of sharp adjustments"* (Borio, Kennedy & Prowse, 1994: 9; Adarov, 2019: 1).

The literature built on these foundations can be organised around two main research directions relevant to macroprudential policy. The first focuses on the identification and analysis of the key characteristics of financial cycles and the estimation of their synchronisation across countries (Hiebert et al., 2014; ECB, 2018; Adarov, 2019), while the second examines the relationship between financial and business cycles, proceeding from the assumption that understanding their interdependence is fundamental for maintaining macroeconomic and financial stability within the monetary union (Claessens, Kose & Terrones, 2011; Hubrich et al., 2013; Oman, 2019).

Previous research largely confirms that financial cycles are longer and more volatile than business cycles, with credit cycles and real house price cycles being particularly relevant for the identification of systemic risks. With regard to the synchronisation of financial cycles, some level of alignment has been documented among European countries, although it remains lower compared to the level of synchronisation of business cycles,

which is largely linked to differences in the structure of national financial systems.

Based on the second group of studies, two important findings can be highlighted. First, real house price cycles and credit cycles appear to display greater synchronisation with the cyclical component of real GDP than share price cycles and interest rate cycles, although this pattern is not universal and depends on whether short-term or medium-term fluctuations are extracted from the time series. Second, the synchronisation of financial and business cycles, regardless of the indicators selected, varies across member states as well as over time.

3. DATA AND METHODOLOGY

Following the established literature, business cycles in this study are represented by real GDP, expressed in millions of euros at constant 2015 prices. These data are obtained from Eurostat. Unlike business cycles, there is no universally accepted variable for representing financial cycles. Attempts to construct a single composite indicator based on multiple macrofinancial variables have not yielded particularly useful results. This is because the information derived from individual variables has been found to be more relevant for defining adequate macroprudential policy than the information obtained from composite measures.

Based on the above, multiple macrofinancial indicators will be used in this study to capture financial cycles across euro area countries. As a measure of credit, total credit to the private non-financial sector from all sources (banks, financial corporations, non-financial corporations, and non-residents) will be used. These data are published on a quarterly basis by the Bank for International Settlements. Credit defined in this manner broadly reflects total financial flows (particularly given that the euro area financial system is bank-based), which could be considered comparable to total flows of goods and services in the analysis of business cycles. Furthermore, an alternative credit variable — the credit-to-GDP ratio — tends to be negatively correlated with GDP, potentially leading to contradictory conclusions (Repullo & Saurina, 2011). In addition, real house price indices and share price indices constructed by the Organisation for Economic Co-operation and Development will be used as asset price indicators. These are quarterly, seasonally adjusted, real indices, expressed relative to the base year 2015. All time series have been log-transformed, and the credit volume series has been additionally adjusted to real values using the GDP deflator (2015=100).

The empirical analysis of financial cycles will be undertaken for the original member states of the European Monetary Union (excluding

Luxembourg), namely Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain, due to data unavailability for the selected macrofinancial variables for the new member states. The analysis will cover the period from the first quarter of 1995 to the fourth quarter of 2022.

The cyclical components of the time series were extracted using the Hodrick-Prescott filter. For real GDP time series, $\lambda = 1600$ smoothing parameter value was applied, while for macrofinancial time series, in line with the recommendations of the Bank for International Settlements (2016), the smoothing parameter was set at $\lambda = 400,000$. This adjustment is motivated by the empirical observation that financial cycles are approximately four times longer than business cycles, which, taking into account the Ravn and Uhlig (2002) formula and the standard practice of applying a parameter value of 1600 for quarterly time series, yields a smoothing parameter value of $1600 \cdot 4^4 \approx 400,000$ for macrofinancial time series (BIS, 2016; Drehmann & Yetman, 2018). Due to the well-documented end-point bias of the Hodrick-Prescott filter in estimating the trend at the endpoints of time series, the first and last year were excluded from the analysis, reducing the analysed time period to 1996–2021 following this correction.

To estimate the synchronisation of financial and business cycles, as well as the synchronisation among the various macrofinancial variables used to represent financial cycles, the concordance index developed by Harding and Pagan is predominantly used in the literature. This index is based on the Bry-Boschan algorithm, which identifies cycle turning points and thereby determines the expansion and recession phases. The concordance index CI_{xy} for two time series (variables) x_t and y_t and sample size T takes the following form:

$$CI_{xy} = \frac{1}{T} \sum_{t=1}^T [S_{xt}S_{yt} + (1 - S_{xt})(1 - S_{yt})]$$

where

$S_{xt} = \{0, \text{ if variable } x_t \text{ is in a recession phase in period } t; 1, \text{ if variable } x_t \text{ is in an expansion phase in period } t\}$,

$S_{yt} = \{0, \text{ if variable } y_t \text{ is in a recession phase in period } t; 1, \text{ if variable } y_t \text{ is in an expansion phase in period } t\}$.

In other words, S_{xt} and S_{yt} are binary variables whose values reflect the cycle phase of the associated economic or financial variable.

Furthermore, since T denotes the number of quarters in the sample, the concordance index effectively measures the percentage of time during which two variables are in the same cycle phase (expansion or recession). Harding and Pagan demonstrated that the index defined in this manner ranges from 0 to 1 and is symmetric around 0.5, which can be interpreted as indicating that the analysed macrofinancial variable is moderately to perfectly procyclical when the index falls between 0.5 and 1, and moderately to perfectly countercyclical when the index falls between 0 and 0.5 (Harding & Pagan, 2004: 6-11).

Finally, the synchronisation of financial cycles among the early member states of the euro area will be estimated using both static and dynamic measures. As a static measure of the level of synchronisation, simple linear correlation (Pearson correlation coefficient) will be used, while the correlation index of Cerqueira and Martins (2009) will be used as a dynamic measure. This correlation index can be calculated for any two stationary time series y_{it} and y_{jt} measured over period T using the following formula:

$$\rho_{ijt} = 1 - \frac{1}{2} \left(\frac{(y_{jt} - \bar{y}_j)}{\sqrt{\frac{1}{T} \sum_{t=1}^T (y_{jt} - \bar{y}_j)^2}} - \frac{(y_{it} - \bar{y}_i)}{\sqrt{\frac{1}{T} \sum_{t=1}^T (y_{it} - \bar{y}_i)^2}} \right)^2$$

where \bar{y}_j and \bar{y}_i represent their mean values.

More formally, the expression in parentheses can be treated as $(z_{jt} - z_{it})^2$ and measures the distance between two standardised variables at time t , which is Euclidean in y and Mahalanobis in z . The smaller this distance is, the greater the synchronisation between the two variables. In particular, when $z_{jt} = z_{it}$, then $\rho_{ijt} = 1$, meaning that the business cycles of the two countries are perfectly synchronised. If the difference between the two variables is large, ρ_{ijt} can become negative. Although the factor $\frac{1}{2}$ in front of the parentheses limits the range of the index, it does not fall within the narrow interval of $(-1, +1)$, as is the case with the simple linear correlation coefficient (Cerqueira & Martins, 2009: 107). More precisely, ρ_{ijt} ranges between $3-2T$ and 1, meaning that it is more dispersed along the negative than the positive axis, which may lead to an overestimation of the degree of business cycle divergence during negative shocks (Cerqueira, 2013: 351). The arithmetic mean of the dynamic correlation coefficients is equal to the value of the static correlation coefficient. This index has gained significant popularity in empirical analysis in recent years due to its clear advantages over both static correlation and rolling window dynamic correlation. Unlike the static correlation coefficient, the correlation index allows for the

identification of episodes of synchronous and asynchronous behaviour, enabling the detection of specific patterns in co-movement during periods of both crisis and prosperity. On the other hand, compared to rolling window dynamic correlation, there is no need for the arbitrary definition of window width and no loss of observations. Furthermore, the resulting variable is not highly autocorrelated, as is the case with overlapping rolling windows, which is particularly relevant when it is used in further econometric analysis (Cerqueira & Martins, 2009: 107).

4. EMPIRICAL RESULTS

The analysis of the extracted cyclical components is broadly consistent with the findings of previous studies. Credit cycles and real house price cycles generally last longer than business cycles, with financial cycles appearing particularly prolonged in Spain, Greece, Ireland, Italy, and Portugal – the countries most affected by the sovereign debt crisis – while Austria and Germany recorded only short-term financial fluctuations. As noted by the ECB (2018a), Germany does not undergo medium-term financial cycles, a finding further corroborated by Schüler, Hiebert and Peltonen (2019). Although credit and real house price cycles are more volatile than business cycles across all analysed countries, the highest volatility and largest amplitudes are recorded in the five aforementioned countries. This may partly reflect the full liberalisation of capital flows following the creation of the European Monetary Union, which, combined with price stability-oriented monetary policy, may have altered financial market perceptions of investment value and risk, fuelling financial booms and laying the preconditions for subsequent deep contractions. Finally, share price cycles are somewhat shorter than business cycles and considerably shorter than credit and real house price cycles, yet display substantially higher volatility and larger amplitudes of fluctuation, consistent with earlier findings in the literature (Drehmann, Borio & Tsatsaronis, 2012; Hiebert et al., 2014; ECB, 2018).

The further empirical analysis focuses on estimating the co-movement between business and financial cycles within individual countries, and subsequently extends to financial cycles synchronisation analysis across member states. Results of the synchronisation between business and financial cycles by country, measured using the concordance index, are reported in Table 1. Considering the average value of this index for the 11 early member states of the European Monetary Union, it follows that business cycles are more closely aligned with share price cycles, as they are in the same cyclical phase (expansion or contraction) 65% of the time, than with real house

price cycles and credit cycles. In this regard, there is no notable heterogeneity across countries in terms of the level of alignment, as a more significant downward deviation is recorded only in the case of Austria (55%). On the other hand, credit cycles are in the same phase as business cycles approximately 55% of the time, with notable differences across countries. Business cycles and credit cycles are most closely aligned in Austria (71%), Finland (64%), and France (64%), and least aligned in Portugal (43%) and Greece (49%). Moreover, real credit to the private non-financial sector appears to be a mildly countercyclical variable in Portugal, Greece, and Belgium. Finally, real house price cycles and business cycles are in the same phase approximately 59% of the time, with Spain (69%) recording the largest deviation from this average. In the context of analysing the synchronisation of business and financial cycles, it should also be noted that several studies have documented a higher level of synchronisation between the two when real GDP cycles are also considered at medium-term frequencies (Rünstler & Vlekke, 2016; ECB, 2018a; Oman, 2019). However, business cycles by definition represent short-term fluctuations in aggregate economic activity, and extracting the medium-term component from real GDP time series may be useful as an additional robustness check, but cannot be considered equivalent to business cycles.

Table 1. Synchronization of business and financial cycles in the original Euro Area member states

| Country | Real private sector credit | Real housing prices | Real share prices |
|----------------|----------------------------|---------------------|-------------------|
| Euro Area | 0.606 | 0.587 | 0.683 |
| Austria | 0.712 | 0.500 | 0.548 |
| Belgium | 0.481 | 0.519 | 0.712 |
| Finland | 0.644 | 0.606 | 0.644 |
| France | 0.644 | 0.663 | 0.702 |
| Germany | 0.538 | 0.510 | 0.663 |
| Greece | 0.490 | 0.500 | 0.587 |
| Ireland | 0.558 | 0.644 | 0.577 |
| Italy | 0.510 | 0.558 | 0.731 |
| Netherlands | 0.567 | 0.654 | 0.712 |
| Portugal | 0.433 | 0.615 | 0.644 |
| Spain | 0.500 | 0.692 | 0.644 |
| EMU-11 Average | 0.552 | 0.587 | 0.651 |

Source: Author's calculations using Stata software

In addition to the synchronisation between business and financial cycles, the level of

synchronisation among the various macrofinancial variables used to represent financial cycles by country was also estimated, with results reported in Table 2. The obtained results indicate that in the early member states of the monetary union, real house price cycles are more closely synchronised with credit cycles and share price cycles than the latter two financial variables are with each other. Similarly, the level of synchronisation between credit cycles and share price cycles varies more notably across countries, while the level of synchronisation of real house price cycles with both credit cycles and share price cycles is fairly uniform across countries. The only notable upward deviation is recorded in the case of Italy, where credit and share prices are in the same cyclical phase approximately 88% of the time. However, overall, the synchronisation among the variables used to represent financial cycles is only moderate, averaging approximately 60%, which does not exceed the level of co-movement that the same variables record with business cycles across the analysed countries.

Table 2. Synchronization of macrofinancial variables in the original Euro Area member states

| Country | Real private sector credit – Real housing prices | Real private sector credit – Real share prices | Real housing prices – Real share prices |
|----------------|--|--|---|
| Euro Area | 0.558 | 0.481 | 0.596 |
| Austria | 0.519 | 0.471 | 0.529 |
| Belgium | 0.538 | 0.500 | 0.654 |
| Finland | 0.538 | 0.558 | 0.615 |
| France | 0.538 | 0.635 | 0.635 |
| Germany | 0.587 | 0.452 | 0.596 |
| Greece | 0.630 | 0.538 | 0.610 |
| Ireland | 0.567 | 0.538 | 0.683 |
| Italy | 0.875 | 0.606 | 0.538 |
| Netherlands | 0.510 | 0.548 | 0.596 |
| Portugal | 0.548 | 0.423 | 0.587 |
| Spain | 0.635 | 0.606 | 0.548 |
| EMU-11 Average | 0.590 | 0.534 | 0.599 |

Source: Author's calculations using Stata software

Table 3 reports the bilateral correlation coefficients, which represent a static measure of credit cycle synchronisation across the 11 member states of the European Monetary Union. Overall, it can be concluded that the estimated level of alignment of cyclical credit fluctuations among the early member states of the euro area is moderate to high. At the country level, the credit cycles of

Spain and Greece are highly correlated with both the common European credit cycle and the credit cycles of individual member states. On the other hand, German credit cycles are highly correlated only with Austrian credit cycles, while the co-movement with the cyclical fluctuations of other early member states is either low or statistically insignificant. In addition to Germany, the Netherlands also records somewhat lower synchronisation with the credit cycles of other countries.

Real house price cycle synchronisation across the observed euro area member states, as can be seen from Table 4, is in most cases lower than the level of credit cycle synchronisation. In addition, more notable differences across countries are also evident. As Germany and Austria do not record medium-term cyclical fluctuations in housing markets, their real house price cycles are mostly negatively correlated with the real house price cycles of other monetary union member states. Similarly, cyclical fluctuations in Portuguese real house prices are not significantly correlated with cyclical fluctuations in most analysed countries. At the other end of the spectrum, Spain and Greece again record highly aligned cycles with both the common euro area real house price cycle and the national cycles of individual member states.

Finally, Table 5 reports the synchronisation of share price cycles. Based on the bilateral correlation coefficients, it is evident that cyclical movements in equity markets across the euro area are strongly aligned. Moreover, European equity markets are clearly more highly correlated than both European credit markets and European real estate markets.

The only exception is Austria, whose cyclical fluctuations in share prices are only moderately correlated with share price cyclical fluctuations in other countries. Nevertheless, due to their high volatility and the consequent possibility of generating false signals, share prices do not represent financial cycles particularly well.

On the other hand, although cyclical fluctuations in real house prices are medium-term in nature, they record the lowest level of co-movement across countries. In line with the suggestions of previous research, this result could be attributed to the specificities of national housing markets, such as the tax treatment of real estate, characteristics of mortgage markets, regulatory frameworks, and so forth.

Therefore, despite their limitations, credit to the private non-financial sector provides the best approximation of financial cycles among the macrofinancial variables considered.

Table 3. Credit cycle synchronization in the original Euro Area member states

| Country | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| (1) Euro Area | 1.000 | | | | | | | | | | | |
| (2) Austria | 0.884* | 1.000 | | | | | | | | | | |
| (3) Belgium | 0.747* | 0.700* | 1.000 | | | | | | | | | |
| (4) Finland | 0.833* | 0.567* | 0.656* | 1.000 | | | | | | | | |
| (5) France | 0.735* | 0.626* | 0.506* | 0.580* | 1.000 | | | | | | | |
| (6) Germany | 0.523* | 0.759* | 0.336* | 0.054 | 0.478* | 1.000 | | | | | | |
| (7) Greece | 0.950* | 0.776* | 0.638* | 0.861* | 0.578* | 0.362* | 1.000 | | | | | |
| (8) Ireland | 0.785* | 0.555* | 0.732* | 0.846* | 0.476* | 0.123 | 0.764* | 1.000 | | | | |
| (9) Italy | 0.894* | 0.649* | 0.604* | 0.902* | 0.611* | 0.141 | 0.943* | 0.743* | 1.000 | | | |
| (10) Netherlands | 0.530* | 0.602* | 0.776* | 0.390* | 0.171* | 0.319* | 0.436* | 0.550* | 0.361* | 1.000 | | |
| (11) Portugal | 0.935* | 0.880* | 0.759* | 0.734* | 0.563* | 0.494* | 0.914* | 0.673* | 0.853* | 0.646* | 1.000 | |
| (12) Spain | 0.958* | 0.779* | 0.644* | 0.872* | 0.604* | 0.339* | 0.986* | 0.780* | 0.956* | 0.449* | 0.918* | 1.000 |

* $p < 0,05$ *Source: Author's calculations using Stata software***Table 4.** House price cycle synchronization in the original Euro Area member states

| Country | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|------------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|-------|
| (1) Euro Area | 1.000 | | | | | | | | | | | |
| (2) Austria | -0.449* | 1.000 | | | | | | | | | | |
| (3) Belgium | 0.779* | -0.636* | 1.000 | | | | | | | | | |
| (4) Finland | 0.559* | -0.625* | 0.829* | 1.000 | | | | | | | | |
| (5) France | 0.801* | -0.641* | 0.956* | 0.762* | 1.000 | | | | | | | |
| (6) Germany | -0.083 | 0.668* | -0.616* | -0.620* | -0.589* | 1.000 | | | | | | |
| (7) Greece | 0.904* | -0.692* | 0.830* | 0.579* | 0.835* | -0.310* | 1.000 | | | | | |
| (8) Ireland | 0.797* | -0.567* | 0.491* | 0.401* | 0.490* | 0.050 | 0.731* | 1.000 | | | | |
| (9) Italy | 0.804* | -0.698* | 0.936* | 0.699* | 0.971* | -0.608* | 0.893* | 0.512* | 1.000 | | | |
| (10) Netherlands | 0.797* | -0.545* | 0.458* | 0.377* | 0.464* | 0.087 | 0.798* | 0.884* | 0.526* | 1.000 | | |
| (11) Portugal | 0.545* | 0.016 | -0.036 | -0.096 | -0.014 | 0.662* | 0.380* | 0.693* | 0.018 | 0.775* | 1.000 | |
| (12) Spain | 0.955* | -0.580* | 0.844* | 0.645* | 0.860* | -0.296* | 0.893* | 0.779* | 0.874* | 0.708* | 0.370* | 1.000 |

* $p < 0,05$ *Source: Author's calculations using Stata software***Table 5.** Share price cycle synchronization in the original Euro Area member states

| Country | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| (1) Euro Area | 1.000 | | | | | | | | | | | |
| (2) Austria | 0.393* | 1.000 | | | | | | | | | | |
| (3) Belgium | 0.814* | 0.623* | 1.000 | | | | | | | | | |
| (4) Finland | 0.921* | 0.249* | 0.599* | 1.000 | | | | | | | | |
| (5) France | 0.991* | 0.401* | 0.787* | 0.934* | 1.000 | | | | | | | |
| (6) Germany | 0.900* | 0.285* | 0.806* | 0.731* | 0.861* | 1.000 | | | | | | |
| (7) Greece | 0.744* | 0.590* | 0.571* | 0.775* | 0.753* | 0.480* | 1.000 | | | | | |
| (8) Ireland | 0.800* | 0.506* | 0.799* | 0.683* | 0.808* | 0.623* | 0.579* | 1.000 | | | | |
| (9) Italy | 0.933* | 0.488* | 0.745* | 0.905* | 0.942* | 0.700* | 0.845* | 0.851* | 1.000 | | | |
| (10) Netherlands | 0.961* | 0.280* | 0.768* | 0.847* | 0.940* | 0.922* | 0.598* | 0.766* | 0.847* | 1.000 | | |
| (11) Portugal | 0.850* | 0.567* | 0.723* | 0.761* | 0.818* | 0.746* | 0.837* | 0.598* | 0.841* | 0.787* | 1.000 | |
| (12) Spain | 0.800* | 0.640* | 0.794* | 0.742* | 0.786* | 0.652* | 0.854* | 0.603* | 0.829* | 0.656* | 0.872* | 1.000 |

* $p < 0,05$ *Source: Author's calculations using Stata software*

In line with the above, Figure 1 presents the synchronisation between the common European credit cycle and the credit cycles of individual member states on a quarterly basis.

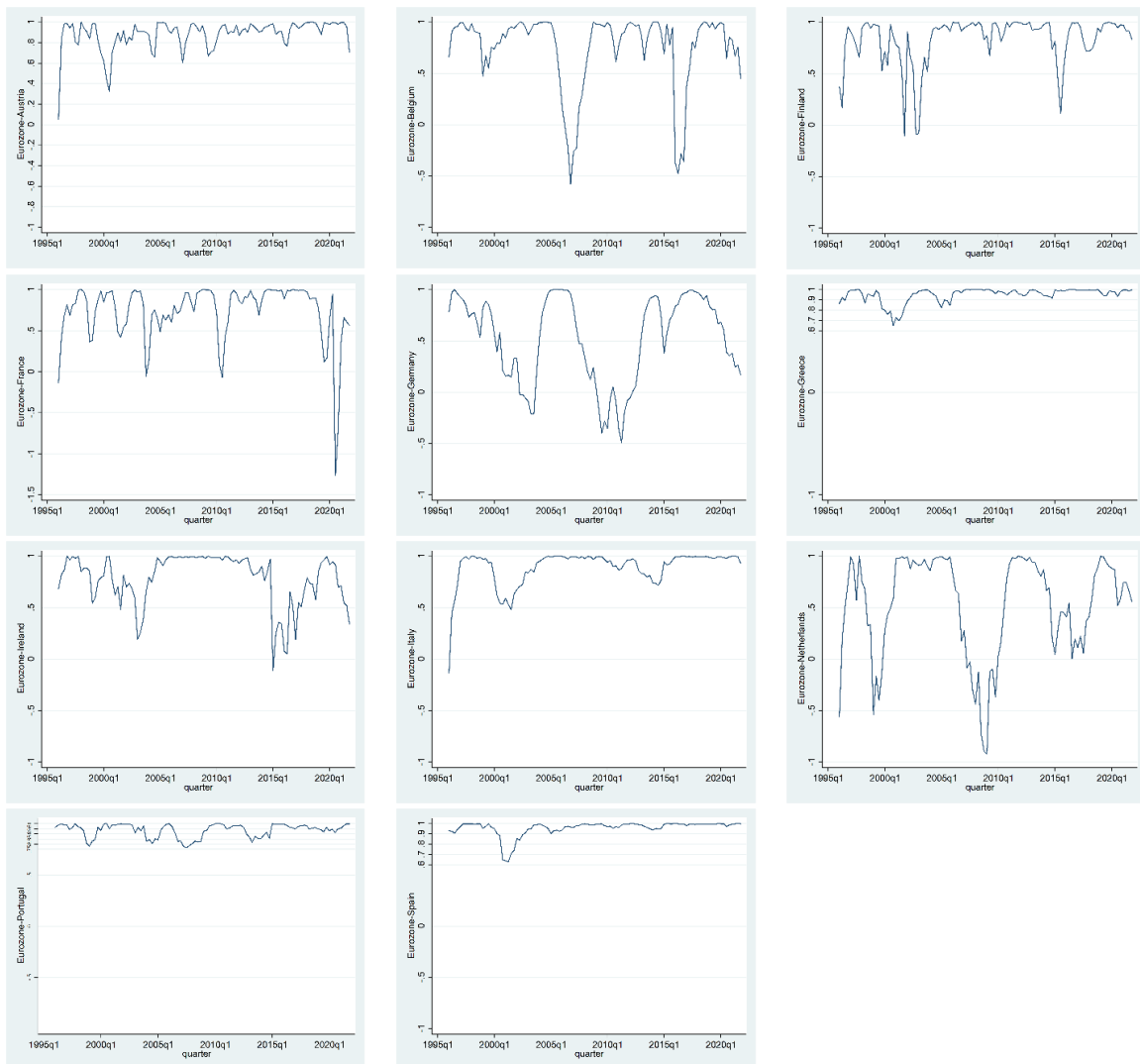
Since the common European credit cycle represents aggregate developments in credit markets, the level of its co-movement with national credit cycles can be interpreted as an indicator of the degree of financial integration of individual member states into the common European financial area.

Overall, a high level of credit cycle correlation is recorded among the early member states of the

European Monetary Union, although it is evident that the credit cycles of countries commonly referred to as peripheral economies – Spain, Greece, Italy, and Portugal (with the exception of Ireland) – are not only more synchronised with the common European credit cycle, but also display a more stable level of synchronisation over time compared to other early member states of the monetary union.

It can therefore be concluded that the financial cycles of peripheral countries are more sensitive to common developments in European financial markets than those of core countries.

Chart 1. Dynamic synchronization of credit cycles in the original Euro Area member states with the common Euro Area credit cycle



Source: Author's illustration using Stata software

5. IMPLICATIONS FOR ECONOMIC/MACROPRUDENTIAL POLICY

The results of the analysis of the synchronisation of business and financial cycles by country, as well as the synchronisation of financial cycles across countries, point to several key implications that should be taken into account when formulating economic policy at the European Monetary Union level. Primarily, the empirical finding that business and financial cycles are in the same cyclical phase approximately 60% of the time indicates that the financial cycle does not always follow the business cycle, leading to situations in which the financial sector is in expansion while the real sector is under pressure, and vice versa. If policies are based only on cyclical movements in real GDP, while overlooking cyclical movements in macrofinancial variables, policy responses may come too late or too early. It is therefore necessary for economic policymakers within the European Monetary Union to develop a dual monitoring framework encompassing both financial and real sector developments. The purpose of the dual monitoring framework is to enable the early identification of financial imbalances – such as credit booms or the build-up of asset price bubbles in real estate or equity markets – which may persist during economic expansions but can deepen downturns during periods of contraction. This inevitably requires enhanced cooperation between national and supranational institutions within the European Monetary Union. At the EU level, the European Systemic Risk Board is the macroprudential authority responsible for monitoring the dynamics of financial cycles and publishing warnings and recommendations to national institutions. However, unlike the European Central Bank (more precisely, the Single Supervisory Mechanism), which has the authority to require the tightening of national measures – such as the activation of countercyclical capital buffers or additional capital requirements for systemically important banks – when financial stability in the banking sector is at risk, the recommendations of the European Systemic Risk Board are advisory in nature. In this regard, it is necessary to strengthen the accountability of national institutions in implementing the warnings published by the European Systemic Risk Board, in order to ensure consistent and early implementation of macroprudential policies at monetary union level. The experience of the sovereign debt crisis demonstrated that the development of negative feedback loops – which are not limited to the interaction between the financial sector and public finances – can lead to a loss of investor confidence and rising borrowing costs, with potentially severe consequences for economic growth and

employment. Furthermore, national policymakers, when implementing macroprudential measures, must carefully consider their potential impact on the real economy. Measures aimed at curbing credit expansion, if applied when the real sector is under pressure, may have procyclical effects. It is therefore necessary for such interventions to be accompanied by adequate fiscal stimulus to support investment and consumption in the economy and offset recessionary pressures.

Furthermore, the observed significant synchronisation of cyclical fluctuations in total credit and share price cyclical fluctuations across euro area member states may contribute to greater effectiveness of a uniform macroprudential policy in these markets. In contrast, countries that deviate from this pattern – such as Austria, Germany, and the Netherlands – may face limitations regarding the efficiency of a uniform policy due to the specific dynamics of their financial cycles. Consequently, additional national adjustments or complementary instruments – such as targeted macroprudential measures – will be required in these countries in order to align policy with local financial conditions.

At the same time, the observed co-movement between European credit cycles and European share price cycles increases the risk of financial shock spillovers from one member state to another. This empirical finding highlights the importance of developing an effective and common supervisory framework at the European Monetary Union level. While the Single Supervisory Mechanism is already operational in the banking sector, supervision over capital markets – including equity markets as their integral component – remains under the jurisdiction of national regulatory authorities. In this regard, several institutional solutions exist for enhancing the supervision of European capital markets: the establishment of a new single supervisory institution, the transfer of responsibilities to the already existing European Securities and Markets Authority, or the extension of the European Central Bank's mandate to cover capital markets. Regardless of which institutional form is selected, the establishment of a common supervisory mechanism in the area of capital markets would enable more uniform application of rules and enhance the credibility of regulatory standards at the European Monetary Union level. As in the case of the banking sector, the transfer of supervisory responsibilities over capital markets to the supranational level would contribute to neutralising political influences on regulatory decisions and increase the transparency and accountability of financial institutions across member states. Building such institutional infrastructure would also contribute to

strengthening investor confidence and the confidence of other market participants, thereby fostering the development and accelerating the integration of European capital markets.

In contrast, the considerably lower co-movement of real house price cycles across euro area member states points to the strong influence of national factors – such as the tax treatment of property, regulatory frameworks, and the characteristics of local supply and demand – in shaping their dynamics. The observed heterogeneity may pose a challenge for the formulation and implementation of macroprudential policy within the euro area. It is therefore necessary for European institutions – such as the European Systemic Risk Board and the European Central Bank – to play a key role in policy coordination and in designing differentiated macroprudential measures adjusted to the specificities of national financial systems, with the aim of maintaining stability across the euro area. An example of a differentiated approach to macroprudential policy is provided by the recommendations issued by the European Systemic Risk Board in 2019 to European Union member states, with the objective of reducing identified vulnerabilities in residential real estate markets. Depending on the characteristics of national markets and the sources of risk, the recommended measures differed in content and scope. Some countries, such as the Netherlands, were advised to tighten capital requirements, while Belgium, Finland, and Luxembourg were recommended to implement borrower-based measures – such as limits on loan-to-value ratios or debt-to-income ratios. In certain cases, the European Systemic Risk Board also recommended improvements to the legal and institutional framework for the application of these instruments, as well as measures beyond macroprudential policy – such as tax and housing reforms – to offset pressures on house price growth and household indebtedness (European Systemic Risk Board, 2022). This approach confirmed the need to adjust macroprudential instruments to the characteristics of national real estate markets, while maintaining coordination at the European Union/European Monetary Union level.

Finally, in addition to strengthening resilience, it is necessary to work towards deepening European financial markets, in order to ensure more efficient capital allocation, foster financial integration, and strengthen the role of the European financial sector in supporting long-term economic growth. This could be achieved through the development of safe assets (common European Union/European Monetary Union bonds) and the application of modern financial instruments, such as securitisation. The development of a common

European safe asset, drawing on the experience of federal bonds in the United States, would contribute to the creation of high-quality and liquid collateral for financial transactions, the introduction of a single benchmark for securities valuation, and greater portfolio diversification among financial institutions. At the same time, the development of securitisation markets would enable banks to free up capital by transferring risk to a broader investor base, consequently increasing their lending capacity.

CONCLUSION

The research findings indicate that financial cycles in the early member states of the European Monetary Union are not fully synchronised, neither across member states nor with business cycles. The finding that financial cycles do not necessarily follow the dynamics of business cycles highlights the need to develop a dual monitoring framework, in order to enable economic policy to respond early to disruptions in both the real and financial sectors. Furthermore, the significant co-movement of cyclical fluctuations in European equity and credit markets confirms the need for further deepening of the banking union and the development of a capital markets union with a common supervisory framework. Such an institutional arrangement could contribute to more effective management of systemic risks, containing the spillover effects of financial shocks, and more coordinated implementation of macroprudential policy within the European Monetary Union.

For additional robustness checks, future research could examine the synchronisation between business and financial cycles at medium-term frequencies. In addition, the analysis of financial cycle synchronisation could be extended by incorporating stock market indices as indicators of share price movements, as well as interest rates on government bonds, thereby covering the debt market as well. Finally, it would be useful to identify the factors driving the convergence/divergence of financial cycles within the euro area.

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