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Sectoral reallocation and re-concentration of bank credit to non-financial corporations in the euro area: Evidence from a 2022 structural break

Tetiana Vasylieva

*Faculty of Business Administration, Chair of Investment and Finance,
TU Bergakademie Freiberg, Germany;
Department of Financial Technologies and Entrepreneurship,
Sumy State University, Ukraine
Tetiana.Vasylieva@extern.tu-freiberg.de
ORCID 0000-0003-0635-7978*

Eszter Kazinczy

*Department of International and Applied Economics,
Kautz Gyula Faculty of Business and Economics,
Széchenyi István University, Hungary
kazinczy.eszter@sze.hu
ORCID 0000-0003-0058-0992*

Roman Hlawiczka

*Department of Marketing, Faculty of Entrepreneurship and Law,
Pan-European University,
Prague, Czechia
Roman.Hlawiczka@opf.slu.cz
ORCID 0000-0002-6429-2095*

Andreas Horsch

*Faculty of Business Administration, Chair of Investment and Finance,
TU Bergakademie Freiberg, Germany
andreas.horsch@bwl.tu-freiberg.de
ORCID 0000-0003-4157-2454*

Abstract. Sectoral allocation of bank credit has regained prominence in the euro area following the 2022 shock, as changes in lending composition increasingly shape investment patterns, structural adjustment, and financial stability. This study examines how bank credit to non-financial corporations in the euro area was reallocated across sectors after 2022, distinguishing between immediate level shifts and subsequent trend dynamics in sectoral loan shares. The analysis uses quarterly euro-area data on outstanding bank loan amounts (loan stocks in ECB

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terminology) to non-financial corporations by sector for 2015–2025. It applies descriptive analysis, post-period regressions, and a structural-break framework with alternative break dates. The results show a persistent dominance of real estate and professional services lending, whose share rose from about 34–36% before 2022 to just over 40% by 2024–2025 ($\approx +3.35$ percentage points). Construction and manufacturing recorded the largest average declines (–1.47 and –1.15 percentage points, respectively). At the same time, significant post-period increases are observed only for electricity, gas, and water companies (+0.66 percentage points), while declines are observed for agriculture (–0.42 percentage points). Structural-break estimates reveal a two-stage adjustment: Construction and real estate experienced negative level shifts at the 2022 break (around –2.8 and –2.3 percentage points) followed by positive post-break trends, whereas manufacturing, trade, and accommodation show the opposite pattern, i.e., initial gains followed by sustained declines, indicating that post-2022 reallocation towards productive sectors was temporary and ultimately gave way to renewed credit re-concentration.

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1. INTRODUCTION

The sectoral allocation of bank credit has re-emerged as a central issue in the euro-area policy debate following the series of overlapping shocks that culminated in 2022. According to assessments by the European Central Bank (2023a; 2023b; 2024), the euro-area financial system entered this period with historically high credit volumes, but also with a lending structure increasingly shaped by sector-specific risk perceptions and collateral values. Rising market interest rates, heightened uncertainty, and deteriorating macroeconomic expectations led to higher bank lending rates and tighter credit conditions, though not symmetrically across industries. This prompted banks to reassess both the composition and the risk-return profile of their loan portfolios, rather than merely adjust the aggregate supply of credit. As a result, understanding how credit is redistributed across sectors has become essential not only for evaluating the transmission of monetary policy and the resilience of the real economy, but also for assessing how banks' loan portfolios adjust in terms of risk, return, and sectoral exposure.

At the same time, reports by the International Monetary Fund (2022; 2023a; 2023b), the European Commission (2022; 2023), and the European Investment Bank (2024) stress that sectoral credit dynamics are closely intertwined with the reallocation of investment activity. In bank-based financial systems such as the euro area, shifts in lending towards or away from specific sectors directly condition firms' funding base and investment capacity, thus shaping capital formation, productive restructuring, and long-term growth potential. Credit reallocation, therefore, does not merely reflect changes in financial portfolios but also mirrors the redirection of investment flows across the economy, particularly between tradable production sectors and asset-intensive activities. From this perspective, persistent concentration of credit in certain sectors may reinforce existing structural imbalances, while temporary reallocations may signal short-lived stabilisation responses rather than durable transformation.

Against this backdrop, the year 2022 represents a potentially critical structural breakpoint. The combination of monetary tightening, energy-price shocks, and heightened geopolitical risk altered both banks' (and non-banks') risk-return assessments and firms' financing needs, raising the question of whether observed shifts in provided credit constitute a genuine sectoral reallocation or merely a short-term adjustment to be followed by renewed concentration. Recent policy documents highlight the importance of distinguishing between immediate shock responses and medium-term adjustment paths, as the latter determine whether investment is durably redirected towards particular (preferably productive and strategic) sectors or gradually re-concentrates in traditionally dominant activities. This makes an explicit analysis of level shifts and post-shock trends in sectoral credit allocation not only timely but essential for understanding how financial conditions shape the euro-area investment landscape in the post-2022 environment.

2. LITERATURE REVIEW

Sectoral reallocation of bank credit is widely recognised as a key transmission channel through which systemic shocks affect real economic structures, particularly in bank-based financial systems. Periods of crisis tend to disrupt established credit–investment linkages, leading to changes not only in aggregate lending volumes but also in the sectoral composition of financial flows. Recent research emphasises that sectoral credit reallocations are closely tied to changes in investment priorities and risk perceptions within the financial system (Müller & Verner, 2024; Chikhaoui, 2025; Ashurbayli-Huseynova & Guliyeva, 2025). These adjustments become particularly pronounced during periods of heightened uncertainty and geopolitical stress, when banks reassess both lending opportunities and portfolio risks (Gaigaliene & Jurakovaite, 2024; Ali et al., 2023; Tong, 2023).

A growing strand of literature highlights that financial shocks increasingly interact with broader socio-economic and geopolitical transformations, creating asymmetric sectoral outcomes. The Russian–Ukrainian war has been identified as a pivotal disturbance affecting macroeconomic stability and financial conditions across Europe and neighbouring regions (Batten et al., 2023; Koilo, 2023; Tong, 2023). It has also reshaped trade patterns, bank performance, and sector-specific investment dynamics, particularly in economies with strong exposure to regional geopolitical and energy shocks (Nate et al., 2024; Zozulinskyy, 2024; Hakobyan & Margaryan, 2025). These shocks propagate through banking systems by altering liquidity conditions, asset quality, and risk pricing (Pham et al., 2020; Boubaker et al., 2023; Chikhaoui, 2025). Firm-level evidence from emerging banking markets reinforces this mechanism directly: banks exhibiting weaker risk-management practices, thinner capital buffers, and higher shares of non-performing loans struggle to sustain stability, which in turn depresses investor confidence and market valuation, whereas robust capital adequacy and regulatory oversight reinforce both stability and market value (Abbas & Hassouni, 2024). They also affect capital allocation strategies, with direct implications for credit supply and firms' investment decisions under extreme uncertainty (Sitnicka et al., 2025; Wang & Duan, 2025). Evidence from real estate markets further shows that geopolitical shocks reshape asset valuations and investment incentives, reinforcing the role of property-related sectors in post-shock financial reallocation (Cosmulese & Zhavoronok, 2023; Yuni et al., 2024; Abakah et al., 2025).

The literature further underlines that changes in credit allocation are inseparable from changes in investment behaviour. In bank-dominated economies, sectoral lending patterns largely determine firms' capacity to undertake fixed capital formation, innovation, and restructuring. Empirical evidence shows that investment dynamics respond strongly to financial volatility and credit constraints, particularly in manufacturing, pharmaceuticals, energy, and infrastructure-related sectors (Kalamen et al., 2025; Lyeonov et al., 2025; Zhang et al., 2025). Financial stress and exchange-rate instability during wartime conditions also affect investment sustainability and bankruptcy risks, shaping the demand for and allocation of credit across

sectors (Kozlovskiy & Poliakov, 2024; Fu & Chang, 2024; Wang & Duan, 2025). As a result, shifts in sectoral credit shares can be interpreted as a financial reflection of deeper investment reallocation processes rather than as pure balance-sheet adjustments.

Several studies stress that crises often prompt a temporary reorientation of investment, followed by a gradual return to pre-existing structural patterns. Evidence from post-crisis and post-pandemic contexts suggests that initial support for productive and tradable sectors may weaken over time as financial institutions revert to asset-backed, lower-risk lending, particularly in real estate and related services (Gaigaliene & Jurakovaite, 2024; Kuzior et al., 2024; Tong & Saladríguez, 2025). This reversion is reinforced by the structure of credit markets and strategic collateral provision, which systematically favours sectors with tangible assets and stable collateral values (Distefano & Reito, 2026), and also by behavioural biases in investment decision-making and institutional risk-management practices within banks (Legenzova & Lecké, 2024; Rafinda et al., 2024), whereas coordination challenges between fiscal and monetary authorities appear to shape post-conflict recovery trajectories (Giuli et al., 2025).

Energy and sustainability considerations have also become increasingly relevant for sectoral credit and investment allocation. Energy price shocks and climate-policy uncertainty reshape sectoral risk-return profiles, thereby influencing banks' lending decisions (Wang et al., 2023; Hui et al., 2024; Jareño et al., 2025). At the same time, the green transition alters capital formation needs across sectors, especially in sectors where investment depends on long-term financing and policy stability (Streimikiene, 2025). Financial market evidence shows that energy and commodity shocks generate risk spillovers across asset classes, affecting financial stability and investors' portfolio decisions (Cui & Maghyreh, 2023; Palmieri et al., 2023; Shahzad et al., 2023). These spillovers also feed into banks' risk assessment and may influence sectoral lending strategies, especially under energy-price and financial stress (Gao et al., 2025). The effectiveness of climate change mitigation policies across EU sectors has been shown to depend critically on access to long-term finance, reinforcing the central role of bank credit in steering investment towards sustainable activities (Streimikiene, 2025; for the ECB's perspective, Köhler-Ulbrich et al., 2025). Research shows that investment in renewable energy, energy-efficient technologies, and sustainable business models depends critically on access to long-term finance, reinforcing the role of bank credit as a driver of structural transformation (Kuzior et al., 2023b; Lyeonov et al., 2025; Su et al., 2025). Comparative evidence from EU member states further shows that the effectiveness of channelling finance towards renewable energy and research-and-development activities varies substantially across countries, underscoring those structural and institutional factors condition how effectively sustainable finance translates into targeted sectoral investment (Streimikiene et al., 2024). Moreover, energy price shocks triggered by geopolitical conflict have direct inflationary and sectoral effects, feeding back into banks' credit allocation decisions and investment financing conditions (Møller & Pöschl, 2025; Vasylieva et al., 2025; Bermpei & Triantafyllou, 2026). Behavioural and informational factors, including energy awareness and perception mechanisms, further mediate how firms and households respond to these shocks, indirectly affecting sectoral investment demand (Piwowski, 2024; Shi et al., 2025).

War-related disruptions further amplify the interaction between finance, investment, and socio-economic resilience. Studies focusing on Ukraine and neighbouring economies document how armed conflict reshapes entrepreneurial behaviour, investment priorities, and sectoral development paths (Dobrovolska et al., 2024; Apalkova et al., 2025; Boiko et al., 2025). Conflict-related disruptions also affect labour markets and business adaptation strategies, creating additional constraints for sectoral recovery (Sitnicka & Serhiienko, 2025; Tutar et al., 2025). These processes are accompanied by institutional adaptation, ethical leadership challenges, and changes in economic security frameworks (Kuzior et al., 2023a; Auer et al., 2025; Stadniichuk et al., 2025). Such institutional and security-related changes condition the allocation of financial resources across sectors (Tsymbol & Demediuk, 2025). At the same time, fiscal

governance weaknesses and budgetary distortions may indirectly affect credit allocation by altering public-sector demand for financing and the broader risk environment (Udoh & Popesko, 2024; Thomann et al., 2025).

International capital flows and global financial integration also shape the reallocation of domestic credit and investment. Evidence suggests that foreign direct investment and financial globalisation interact with domestic banking systems, influencing sectoral financing patterns and investment decisions (Dinga & Mah, 2025; Hrubliak et al., 2025; Kaonga et al., 2025). Uncertainty and absorptive capacity further shape how external capital flows affect domestic credit allocation and entrepreneurship (Mammadzayev et al., 2025; Tarek & Albaqami, 2024). External trade and financial conflicts can transform market threats into new investment opportunities, but such transformations are uneven across sectors and countries, reinforcing the importance of domestic credit structures (Joseph et al., 2025; Pozovna et al., 2025). These interactions may either support diversification or reinforce concentration, depending on institutional quality and absorptive capacity (Ali et al., 2023; Zatonatskiy et al., 2024; Tutar et al., 2025).

Finally, a broader interdisciplinary literature points to the long-term societal consequences of persistent sectoral imbalances in credit and investment. Structural concentration of financial resources can exacerbate social stratification, regional divergence, and demographic pressures (Bodea & Deceanu, 2024; Dima, 2024; Slyusarevskyy & Chunikhina, 2025). It may also limit adjustment through productive investment and innovation, including in contexts of sectoral and regional imbalance (Li et al., 2025a; Li et al., 2025b). These insights reinforce the importance of analysing not only whether credit is reallocated after a shock, but also whether such reallocation is sustained or gradually reversed in the presence of uncertainty, governance constraints, and financial market connectedness (Tong, 2023; Federico et al., 2025).

Altogether, the existing literature suggests that sectoral credit reallocation following major shocks is a dynamic, multi-stage process closely intertwined with investment reallocation and structural transformation. While short-term adjustments may temporarily redirect finance towards productive or strategic sectors, longer-term dynamics often favour re-concentration in traditionally dominant activities. However, empirical evidence on how these processes unfolded in the euro area after the 2022 shock remains limited, particularly in distinguishing between immediate level effects and post-shock trend dynamics. Addressing this gap motivates the present study.

Against this backdrop, this study aims to examine how bank credit to non-financial corporations in the euro area was reallocated across sectors following the 2022 shock, distinguishing between immediate level shifts and subsequent trend dynamics in sectoral loan shares.

3. METHODOLOGY

3.1. Data and variable construction

The empirical analysis is based on quarterly data on estimated bank loans to non-financial corporations (NFCs) in the euro area, disaggregated by sector, gathered from the ECB (n.d.). The dataset covers the period from 2015 Q3 to 2025, allowing both pre- and post-2022 dynamics to be examined in a consistent time-series framework. Loan volumes are measured as stocks, expressed in nominal terms, and classified according to standard sectoral categories used in euro-area banking statistics. Sectoral outstanding loan amounts are normalised by total lending to non-financial corporations (NFCs) to obtain each sector's proportion of total NFC lending, following standard practice in the literature on credit allocation and portfolio composition (Beck et al., 2000; Dell'Ariccia et al., 2008).

To focus on the allocation of credit across sectors rather than its aggregate expansion or contraction, sectoral outstanding loan amounts are transformed into sectoral shares. For each sector i in quarter t , the dependent variable is defined as:

$$s_{i,t} = \frac{L_{i,t}}{\sum_{j=1}^N L_{j,t}}$$

where $L_{i,t}$ denotes the outstanding amount of bank loans to non-financial corporations in the sector i at quarter t , and $\sum_{j=1}^N L_{j,t}$ represents the total amount of bank lending to non-financial corporations across all sectors in the euro area during the same quarter. Thus, $p_{i,t}$ measures the proportion of total NFC lending allocated to the sector i . The index i denotes the sector of interest, j indexes all sectors included in the dataset, and t denotes the quarter. By construction, the proportions of total lending across all sectors sum to 1 (100%) in each quarter. This transformation allows the analysis to focus on changes in the sectoral allocation of bank lending rather than fluctuations in the aggregate volume of credit.

3.2. Descriptive analysis

The first step of the analysis is descriptive. Sectoral loan shares are summarised for a baseline pre-period and a post-period to document changes in the banks' credit portfolio composition. Time-series plots are used to visualise long-run trends and identify potential structural changes in the evolution of sectoral shares. This descriptive evidence provides the empirical motivation for the subsequent econometric analysis and helps to establish whether observed changes are gradual or concentrated around specific periods.

3.3. Baseline post-period regression

The post-period specification follows a reduced-form approach commonly used to identify average shifts associated with discrete events (Angrist & Pischke, 2009; Wooldridge, 2010). To assess whether sectoral loan shares exhibit systematic changes after 2022, a baseline regression model is estimated separately for each sector:

$$s_{i,t} = \alpha_i + \beta_i Post_t + \varepsilon_{i,t}$$

where $s_{i,t}$ is the sectoral loan share, α_i is a sector-specific constant capturing the average pre-period level, and $Post_t$ is a binary indicator equal to one for observations in the post-2022 period and zero otherwise. The coefficient β_i measures the average immediate shift in the sector's loan share after the onset of the post period. Standard errors are computed to account for potential serial correlation in quarterly observations. $\varepsilon_{i,t}$ may exhibit temporal dependence.

This specification captures instantaneous reallocation effects, but does not allow for detecting gradual adjustment over time. Standard errors are computed to account for serial correlation in quarterly data. The regression results are interpreted in percentage-point terms to facilitate economic interpretation.

3.4. Structural-break model with level and trend decomposition

The level–trend decomposition follows the standard structural-break framework, distinguishing between discrete shifts and post-break trend changes (Perron, 1989; Stock & Watson, 2020). Because credit reallocation may occur through both abrupt shifts and gradual post-shock adjustment, the analysis is extended using a structural-break framework that explicitly distinguishes between level effects and trend effects. For each sector, the following model is estimated:

$$s_{i,t} = \alpha_i + \delta_i D_t + \gamma_i t + \theta_i (D_t \times t) + u_{i,t}$$

where D_t is a post-break dummy equal to one from the break quarter onward, t is a linear time trend, and $u_{i,t}$ is an error term.

In this specification:

- δ_i captures the immediate level shift in the sectoral loan share at the break date;
- γ_i represents the pre-break trend;
- θ_i measures the change in the slope of the trend after the break.

This decomposition allows the analysis to identify whether sectoral loan shares respond to shocks primarily through discrete reallocation, gradual recovery, or a combination of both. All coefficients are expressed in percentage-point terms, with slope coefficients interpreted as quarterly changes.

3.5. Choice of break date and robustness analysis

To avoid sensitivity to a single break definition, the model is estimated under alternative breakpoints, consistent with best practice in the structural-change literature (Hansen, 2001). The year 2022 is selected as the focal period for potential structural change, reflecting the onset of a major systemic shock affecting the euro-area economy and financial system. To avoid arbitrariness in break-date selection, the structural-break model is estimated under three alternative break points: 2022 Q1, 2022 Q2, and 2022 Q3.

This robustness strategy serves two purposes. First, it verifies whether the estimated level and trend effects are sensitive to the exact timing of the break. Second, it strengthens causal interpretation by demonstrating that the signs and relative magnitudes of the coefficients remain stable across reasonable alternative specifications. Consistency across breakpoints is interpreted as evidence of a genuine structural adjustment rather than a timing-specific artefact.

3.6. Interpretation strategy

The econometric results are interpreted jointly across descriptive statistics, baseline regressions, and structural-break models. Descriptive analysis documents long-run concentration patterns, baseline regressions identify average post-period shifts, and structural-break models uncover dynamic adjustment paths. Rather than treating these approaches as competing, the methodology explicitly recognises them as complementary layers of evidence, each capturing a different dimension of sectoral credit reallocation.

This integrated approach allows for a nuanced assessment of how bank credit to NFCs in the euro area adjusts following a major systemic shock, distinguishing between short-term reallocation and longer-term re-concentration dynamics.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Empirical results

The 2015-Q3 loan portfolio (Table 1) is markedly concentrated in real estate and professional services, which account for 34.1% of total loans (≈ 1.465 trillion in the dataset's currency). This dominance indicates that credit allocation in this quarter was strongly oriented towards property-related and business services, implying a comparatively higher exposure of the banks' credit portfolio to real estate-linked demand and valuation dynamics.

A second tier of sectors captures substantial, but clearly smaller, shares. Manufacturing represents 14.7% (≈ 0.633 trillion), and trade and repair accounts for 12.8% (≈ 0.549 trillion), suggesting that a meaningful portion of lending supported goods production and distribution. Construction also holds a

notable share (10.1%, $\approx$ **0.435 trillion), reinforcing the interpretation of a credit structure with a pronounced built-environment component (real estate plus construction together $\approx$ 44.2%).

Mid-sized allocations are observed in Transport, IT, and communications (8.19%, $\approx$ 0.352 trillion) and the residual “other” category (6.85%, $\approx$ 0.294 trillion), reflecting broader service and mixed-sector financing. In contrast, accommodation and food services (3.30%) and agriculture, forestry and fishery (4.05%) receive comparatively modest shares, whereas mining and quarrying is marginal at 0.567% ($\approx$ **0.024 trillion). Overall, the portfolio totals approximately 4.293 trillion euros, with sectoral shares totalling $\sim$ 100% (minor rounding differences).

Table 1

Sectoral distribution of loans in 2015-Q3

Quarter	Sector	Loans (bn)	Share (%)
2015-Q3	Real estate, professional services	1,464.90	34.10
2015-Q3	Manufacturing	633.16	14.70
2015-Q3	Trade, repair	549.30	12.80
2015-Q3	Construction	434.94	10.10
2015-Q3	Transport, IT, communications	351.71	8.19
2015-Q3	Other	293.86	6.85
2015-Q3	Electricity, gas, water	225.30	5.25
2015-Q3	Agriculture, forestry, and fishery	173.65	4.05
2015-Q3	Accommodation, food services	141.74	3.30
2015-Q3	Mining, quarrying	24.35	0.57

Note: Loans are reported as outstanding amounts in billions of euros. Total outstanding bank loans to NFCs in 2015 Q3 amount to approximately €4,292.93 billion. Sectoral proportions may not sum exactly to 100% due to rounding.

The pre–post comparison (Table 2) indicates a rebalancing of the loan portfolio towards real-estate-linked activity, with real estate and professional services’ quota increasing from 36.4% to 39.8% (+3.35 percentage points). This is the single largest movement in the distribution and implies that the post-period credit structure became more concentrated in property and related business services, potentially elevating portfolio sensitivity to real-estate cycles.

Two sectors show small positive changes. Electricity, gas, and water rose from 5.20% to 5.80% (+0.60 pp), suggesting a modest relative expansion of lending to utilities and network industries, which are often capital-intensive and may reflect infrastructure or energy-related financing needs. Accommodation and food services’ quota remains essentially unchanged (3.45% to 3.48%, +0.03 pp), indicating stability rather than a meaningful shift.

Most other sectors experience declining shares, suggesting a relative contraction in credit allocation compared with the expanding real estate component. The largest decreases occur in the construction (8.05% to 6.58%, –1.47 pp) and manufacturing sectors (14.3% to 13.2%, –1.15 pp). These movements suggest that, in relative terms, lending shifted away from production and the construction pipeline even as the broader real-estate/professional-services category gained weight. Trade and repairs’ quota falls only slightly (–0.29 pp), while agriculture, forestry, and fishery (–0.43 pp) and other (–0.51 pp) register moderate declines. The smallest negative changes are observed for transport, IT and communications (–0.01 pp, effectively stable) and mining and quarrying (–0.12 pp, remaining marginal in both periods).

Overall, the pattern is consistent with a post-period increase in concentration in the dominant sector, accompanied by a broad-based, though mostly modest, reduction across several sectors, and more pronounced relative declines in construction and manufacturing.

Table 2

Pre-post sectoral loan shares and changes (percentage points)

Code	Sector	Pre (%)	Post (%)	Change (pp)
2240LMN	Real estate, professional services	36.40	39.80	3.35
2240DE	Electricity, gas, water	5.20	5.80	0.60
2240I	Accommodation, food services	3.45	3.48	0.03
2240HJ	Transport, IT, communications	8.33	8.31	−0.01
2240B	Mining, quarrying	0.51	0.39	−0.12
2240G	Trade, repair	12.80	12.50	−0.29
2240A	Agriculture, forestry, and fishery	4.13	3.70	−0.43
2240Z	Other	6.72	6.21	−0.51
2240C	Manufacturing	14.30	13.20	−1.15
2240F	Construction	8.05	6.58	−1.47

Note: “Change (pp)” denotes the difference between post and pre values in percentage points; small discrepancies may occur due to rounding in the reported shares.

The time-series evidence (Figure 1) shows a progressive concentration of NFC sectoral outstanding loan amounts in the “Real estate, professional services” sector over the entire observation window. This sector’s share rises steadily from the mid-30% range (about 34–36%) at the beginning to just above 40% (around 41%) towards the end, indicating that the credit portfolio becomes increasingly anchored in property-related and business-service activities rather than diversifying across productive sectors.

By contrast, several real-economy sectors exhibit gradual relative contraction. Manufacturing declines from roughly 15% to around 13%. In comparison, construction falls more visibly from approximately 10% to about 6–7%, implying a sustained reduction in the relative weight of loans linked to production capacity and the construction pipeline. Trade and repair remain comparatively stable but trend slightly downward (from around 13% to ~12–12.5%), suggesting a mild reallocation away from commerce.

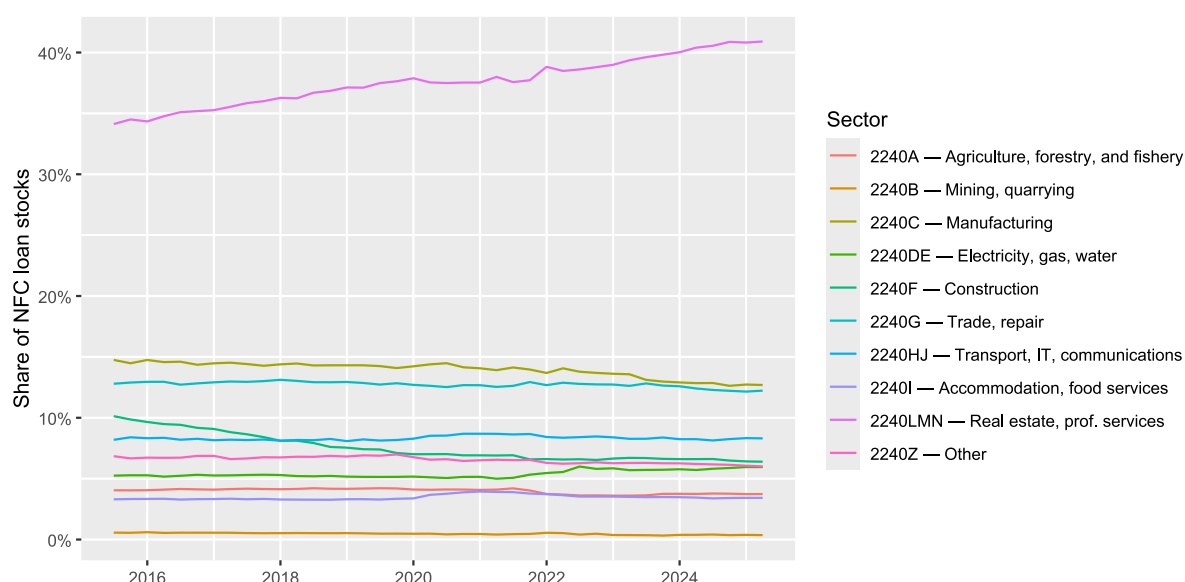


Figure 1. Sectoral shares of total bank lending to non-financial corporations (NFC) over time (quarterly)

Most remaining sectors are largely flat with small drifts, reinforcing that the dominant structural change is concentration in real estate-related lending. Transport, IT, and communications stay close to 8–9% with limited variation. Electricity, gas, and water edges upwards (roughly 5% to ~6%), consistent with a modest strengthening of utilities/infrastructure-type credit. Agriculture declines slightly (around 4% to ~3.7%), whereas accommodation and food services are broadly stable (around 3.4–3.6%), and mining and quarrying remains negligible (around 0.4–0.6%). The figure documents a slow but persistent shift in banks' credit portfolio composition: the proportion of total NFC lending allocated to real estate and professional services increases, while the proportions allocated to construction and manufacturing decline, with only marginal changes in other sectors.

The post-period estimates (Table 3) indicate that only a small subset of sectoral loan-share changes is statistically distinguishable from zero, suggesting that much of the apparent reallocation is either modest in magnitude, heterogeneous over time, or imprecisely estimated once sampling uncertainty is taken into account.

Table 3

Post-period effects on sectoral loan shares

Sector	Post coef.	SE	t	p	Post change (pp)	Sig.
Construction	0.01080	0.008	1.43	0.162	1.080	
Electricity, gas, water	0.00657	0.001	6.98	<0.0001	0.657	***
Manufacturing	-0.00433	0.004	-1.23	0.226	-0.433	
Agriculture, forestry, and fishery	-0.00416	0.001	-5.85	<0.0001	-0.416	***
Accommodation, food services	-0.00378	0.004	-0.858	0.397	-0.378	
Transport, IT, communications	-0.00275	0.004	-0.700	0.488	-0.275	
Other	-0.00254	0.001	-2.13	0.0401	-0.254	*
Trade, repair	0.000545	0.001	0.428	0.672	0.054	
Real estate, professional services	-0.000208	0.006	-0.0372	0.971	-0.021	
Mining, quarrying	-0.000112	0.000	-0.644	0.524	-0.011	

Note: "Post change (pp)" expresses the coefficient in percentage points (pp). Significance codes: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

The most robust positive post-period effect is observed for electricity, gas, and water, with a coefficient of 0.00657 ($SE = 0.001$; $t = 6.98$; $p < 0.0001$), corresponding to an average increase of 0.657 percentage points. This implies a statistically significant post-period rise in the relative weight of lending to utilities, consistent with a portfolio shift (even if small in size) towards capital-intensive, network-based activities.

Conversely, agriculture, forestry, and fishery show a statistically significant decline (coef. = -0.00416 , $SE = 0.001$; $t = -5.85$; $p < 0.0001$), equivalent to a -0.416 percentage-point decline. In addition, the "other" category displays a smaller but still significant reduction (coef. -0.00254 , $SE = 0.001$; $t = -2.13$; $p = 0.0401$), i.e., -0.254 percentage points), suggesting that some of the post-period reshaping occurred through a marginal compression of residual or mixed activities rather than through large shifts among the main tradable sectors.

For the remaining sectors, the coefficients are not statistically significant at conventional levels. Notably, real estate and professional services have an estimate extremely close to zero (coef. = -0.000208 ; $p = 0.971$), implying no detectable post-period shift in their share within this inferential specification, despite their descriptive prominence in the portfolio. Similarly, construction is positive ($+1.08$ pp) but imprecisely estimated ($p = 0.162$), whereas manufacturing is negative (-0.433 pp) and lacks statistical support ($p = 0.226$). Trade and repair remain essentially unchanged ($+0.054$ pp, $p = 0.672$), and transport, IT and communications, accommodation and food services, and mining and quarrying also show no statistically reliable post-period effects.

The results imply that the statistically validated reallocation in the post period is concentrated in: (i) a rise in utilities lending share, and (ii) declines in agriculture and the residual “other” sector, whereas changes in construction, manufacturing, trade, transport/IT, and real estate cannot be confidently separated from zero in this model.

Table 4 separates two distinct post-period dynamics: (i) an immediate level shift in sectoral loan shares (reported in percentage points, *level_pp*), and (ii) a change in the quarterly trend (slope change, *slope_pp*). The results show that the post period is characterised not by a uniform reallocation across sectors, but by a statistically significant reshaping of both levels and trajectories for several major industries.

The first dimension concerns level effects, which capture immediate post-period reallocation. Several sectors exhibit statistically significant level shifts, indicating an abrupt re-weighting of the loan portfolio at the start of the post period. Construction records the largest negative level shift (−2.85 pp, $p < 0.0001$), while real estate and professional services also fall sharply in level terms (−2.27 pp, $p < 0.0001$). Agriculture, forestry, and fishery declines (−0.887 pp, $p < 0.0001$). In contrast, several sectors rise immediately: Manufacturing increases (+2.66 pp, $p < 0.0001$) as well as trade and repair (+1.62 pp, $p < 0.0001$), accommodation and food services (+0.922 pp, $p < 0.0001$), and transport, IT and communications (+0.660 pp, $p = 0.00306$). These findings indicate that the post period begins with a discrete shift away from construction/real-estate-related shares and agriculture, and towards manufacturing, trade, and selected services.

Two sectors show no statistically detectable level effect: Electricity, gas and water (+0.038 pp, $p \approx 0.959$) and mining and quarrying (+0.088 pp, $p \approx 0.564$), while the “other” category’s quota hardly changes at all (+0.021 pp, $p \approx 0.982$). In these cases, any immediate post-period change is too small relative to sampling uncertainty to be interpreted as systematic.

The slope coefficients reveal whether sector shares subsequently accelerate or decelerate during the post period. The most pronounced positive trend changes are found in construction (+0.469 pp per quarter, $p < 0.0001$) and real estate and professional services (+0.268 pp per quarter, $p = 0.000312$). This combination (a negative level shift and a positive slope) implies that both sectors experience an initial drop at the onset of the post-period, followed by progressive recovery and increasing shares over time.

Conversely, manufacturing (−0.369 pp per quarter, $p < 0.0001$), trade and repair (−0.186 pp per quarter, $p < 0.0001$), accommodation and food services (−0.155 pp per quarter, $p = 0.00354$), and transport, IT and communications (−0.112 pp per quarter, $p = 0.0257$) show significant negative slope changes, indicating that—despite some positive level jumps—these sectors’ loan shares trend downwards during the post period. Agriculture shows the opposite pattern: a negative level shift (−0.887 pp) paired with a positive trend change (+0.056 pp per quarter, $p < 0.0001$), implying a small but systematic post-period recovery after the initial contraction.

Finally, electricity, gas, and water, mining and quarrying, and the “other” category exhibit no statistically significant trend changes ($p > 0.5$), suggesting broadly stable trajectories.

The results indicate a structural break at the beginning of the post period (large, significant level shifts), followed by divergent trend dynamics: construction and real estate shares rebound over time, while manufacturing, trade, and several service sectors gradually lose share after initial gains. This pattern is consistent with an adjustment process in which the credit portfolio initially rebalances towards production and commerce, but subsequently drifts back towards construction and real-estate-related lending as post-period dynamics unfold.

Table 4

Estimated post-period level shifts and slope changes in sectoral loan shares

Sector	Level shift (pp)	Level p-value	Slope change (pp per quarter)	Slope p-value
Accommodation, food services	0.922	< 0.0001	−0.155	0.00354
Agriculture, forestry, and fishery	−0.887	< 0.0001	0.0563	< 0.0001
Construction	−2.85	< 0.0001	0.469	< 0.0001
Electricity, gas, water	0.0384	0.959	0.0739	0.552
Manufacturing	2.66	< 0.0001	−0.369	< 0.0001
Mining, quarrying	0.0884	0.564	−0.0119	0.532
Other	0.0207	0.982	−0.0328	0.750
Real estate, professional services	−2.27	< 0.0001	0.268	0.000312
Trade, repair	1.62	< 0.0001	−0.186	< 0.0001
Transport, IT, communications	0.660	0.00306	−0.112	0.0257

Note: “Level shift (pp)” reports the discrete change in sector share at the start of the post period. “Slope change” reports the change in the sector share's quarterly trend during the post period. P-values indicate whether each effect is statistically different from zero.

Figure 2 tracks the sectoral composition of total bank lending to non-financial corporations (NFCs) over time. It highlights a clear structural feature: the portfolio is persistently dominated by real estate and professional services, whose proportion rises from roughly the mid-30% range in 2016 to just above 40% by 2024–2025. This upward trajectory indicates increasing concentration of NFC lending in property- and business-service-related activities, implying that aggregate credit exposure becomes progressively more sensitive to dynamics in this segment.

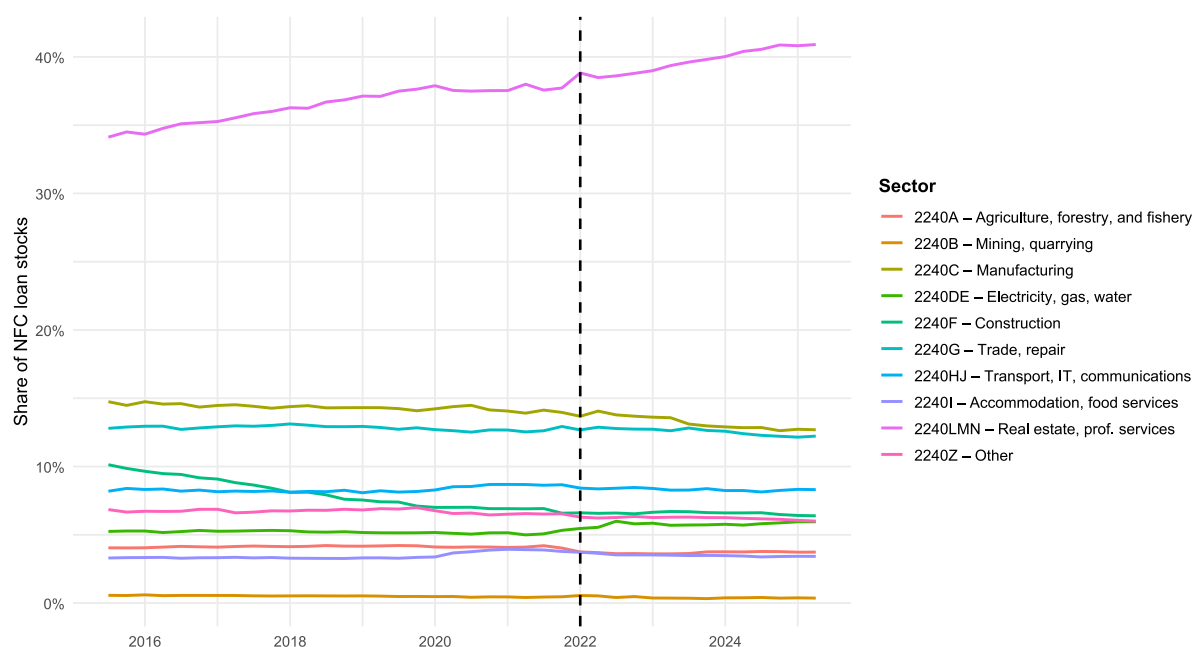


Figure 2. Evolution of sectoral shares of total bank lending to non-financial corporations, with the 2022 structural-break marker

A second cluster of sectors forms a relatively stable middle layer. Manufacturing and trade and repair remain sizeable but show a gradual downward drift (from around 14–15% to about 13% for manufacturing,

and from roughly 13% to ~12–12.5% for trade and repair). Transport, IT, and communications stay broadly stable around 8–9%, suggesting limited reallocation within this service/ICT-related category over the research period.

Several smaller sectors exhibit modest but systematic changes. Construction declines from around 10% early in the sample to approximately 6–7% later, signalling a long-run reduction in the relative weight of credit linked to construction activity. Agriculture, forestry, and fishery also trend slightly downward (about 4% to ~3.5–3.8%). Electricity, gas, and water prices are edging upwards (by around 5% to ~6%), consistent with a mild strengthening of utilities' share. Accommodation and food services remain low but show a gentle increase (roughly 3–4%), while mining and quarrying remain negligible (well below 1%) throughout.

Importantly, the vertical dashed line (around 2022) does not coincide with a uniform break across all sectors. Instead, the post-2022 period is characterised by (i) the continued rise of real estate/professional services, and (ii) incremental adjustments elsewhere rather than abrupt reordering. The overall message is therefore one of slow-moving but persistent compositional change, dominated by a gradual concentration in the largest sector and relative weakening of construction and manufacturing shares.

Table 5 reports sector-specific structural break estimates under three alternative post-period start dates: 2022 Q1, 2022 Q2, and 2022 Q3. For each sector and break date, the results distinguish between (i) an immediate level shift in the sectoral proportion of total bank lending to NFCs, expressed in percentage points, and (ii) a change in the post-break trend, expressed in percentage points per quarter, together with the corresponding p-values.

A consistent and policy-relevant pattern emerges across all three break definitions: the post-2022 adjustment is characterised by a sharp initial contraction in construction and real estate-related shares, followed by positive trend (recovery) dynamics, while manufacturing, trade, and accommodation show the opposite configuration: immediate gains but negative post-break trends.

- Construction exhibits the largest negative level break under every specification (about –2.84 to –2.92 pp, always highly significant), coupled with a strongly positive slope change (+0.459 to +0.487 pp per quarter, highly significant). This combination implies an abrupt drop at the break, followed by a systematic rebound in construction's share as the post-break period progresses.
- Real estate and professional services also show a negative level shift that becomes larger and more precisely estimated when the break is set later (–1.63 pp in 2022 Q1; –2.27 pp in 2022 Q2; –2.52 pp in 2022 Q3, all significant), paired with a positive and significant trend change (+0.206 to +0.300 pp per quarter). Substantively, this indicates an initial compression of the real-estate/professional services share around the break, followed by gradual re-expansion.
- In contrast, manufacturing displays a large positive level shift across breakpoints (+2.30 to +2.66 pp, strongly significant), but a strongly negative slope change (–0.338 to –0.369 pp per quarter, strongly significant). This indicates that manufacturing's loan share jumps up initially at the start of the post period, yet erodes steadily thereafter, consistent with a short-run reorientation that is not sustained over time.
- A similar “up-first-then-down” pattern holds for trade and repair (level +1.28 to +1.77 pp, significant; slope –0.150 to –0.207 pp per quarter, significant) and accommodation and food services (level +0.87 to +1.06 pp, significant; slope –0.147 to –0.171 pp per quarter, significant). These results suggest an immediate post-break expansion of credit shares in commerce and consumer-facing services, followed by a gradual relative decline.
- Transport, IT, and communications increase in level across breakpoints (+0.66 to +0.79 pp, significant), while its slope effect becomes clearer under later breakpoints (insignificant at 2022 Q1 with $p \approx 0.063$; significant and negative at 2022 Q2–Q3). This indicates that the sector

experiences an initial step-up, with evidence of subsequent trend deceleration strengthening when the break is placed later.

- Agriculture, forestry, and fishery consistently show a negative level shift (roughly -0.68 to -1.10 pp, significant), while its slope effect is positive and significant for 2022 Q2–Q3 (but not for 2022 Q1). This suggests an initial contraction in agriculture's share, with partial recovery dynamics emerging more clearly after mid-2022.

- Electricity, gas, and water, mining and quarrying, and "other" are comparatively unstable or mostly insignificant in their level effects. Notably, electricity/utilities show a positive slope change only under the 2022 Q1 break ($p \approx 0.03$) and no significant effects for later breaks, indicating that any trend shift in utilities is sensitive to breakpoint choice and should be interpreted cautiously.

The cross-breakpoint consistency of the largest movements (construction, manufacturing, real estate, trade, accommodation) supports the interpretation of a post-2022 portfolio reconfiguration with two-stage dynamics: an initial redistribution of shares (level effects) followed by sector-specific recoveries or reversals (slope effects). The fact that signs and relative magnitudes remain broadly stable as the break is moved from 2022 Q1 to 2022 Q3 confirms the conclusion that these are structural rather than purely timing-driven artefacts.

Table 5

Structural-break estimates by alternative post-period start (2022 Q1–Q3)

Break quarter	Sector	Level shift (pp)	Level p-value	Slope change (pp/quarter)	Slope p-value
2022 Q1	Construction	-2.921	<0.0001	0.487	<0.0001
2022 Q1	Manufacturing	2.298	<0.0001	-0.338	<0.0001
2022 Q1	Real estate, prof. services	-1.633	0.00372	0.206	0.00085
2022 Q1	Accommodation, food services	1.062	<0.0001	-0.171	0.00640
2022 Q1	Trade, repair	1.278	0.00145	-0.150	0.0014
2022 Q1	Transport, IT, communications	0.708	0.00147	-0.119	0.0632
2022 Q1	Electricity, gas, water	-0.272	0.533	0.114	0.0296
2022 Q1	Other	-0.019	0.996	-0.035	0.942
2022 Q1	Agriculture, forestry, and fishery	-0.682	0.00026	0.026	0.117
2022 Q1	Mining, quarrying	0.182	0.275	-0.019	0.317
2022 Q2	Construction	-2.854	<0.0001	0.469	<0.0001
2022 Q2	Manufacturing	2.661	<0.0001	-0.369	<0.0001
2022 Q2	Real estate, prof. services	-2.265	<0.0001	0.268	0.00031
2022 Q2	Trade, repair	1.615	<0.0001	-0.186	<0.0001
2022 Q2	Accommodation, food services	0.922	<0.0001	-0.155	0.00354
2022 Q2	Transport, IT, communications	0.660	0.0031	-0.112	0.0257
2022 Q2	Electricity, gas, water	0.038	0.959	0.074	0.552
2022 Q2	Agriculture, forestry, and fishery	-0.887	<0.0001	0.056	<0.0001
2022 Q2	Other	0.021	0.982	-0.033	7.50e-01
2022 Q2	Mining, quarrying	0.088	0.564	-0.012	5.32e-01
2022 Q3	Construction	-2.840	<0.0001	0.459	<0.0001
2022 Q3	Manufacturing	2.626	0.00041	-0.367	<0.0001
2022 Q3	Real estate, prof. services	-2.516	<0.0001	0.300	<0.0001
2022 Q3	Trade, repair	1.766	<0.0001	-0.207	<0.0001

2022 Q3	Accommodation, food services	0.868	<0.0001	-0.147	0.000549
2022 Q3	Transport, IT, communications	0.788	0.00229	-0.122	0.00256
2022 Q3	Agriculture, forestry, and fishery	-1.099	<0.0001	0.087	0.00267
2022 Q3	Other	0.207	0.537	-0.047	0.336
2022 Q3	Electricity, gas, water	0.292	0.695	0.038	0.728
2022 Q3	Mining, quarrying	-0.091	0.286	0.006	0.631

Note: “Level shift” is the immediate change in sector share at the breakpoint; “Slope change” is the change in the post-break quarterly trend. Values are in percentage points (pp).

Importantly, the descriptive evidence, regression estimates, and structural-break results are fully consistent once their analytical roles are distinguished. Descriptive statistics capture the long-run distribution of loan shares and therefore reflect cumulative concentration effects, most notably in real estate and professional services. In contrast, the post-period regression coefficients identify average, immediate shifts and are therefore insensitive to gradual recoveries or trend-based adjustments. This explains why sectors such as real estate appear descriptively dominant while exhibiting no statistically significant post-dummy effect. The structural-break analysis resolves this apparent tension by decomposing adjustment into an initial level shift and a subsequent trend change, revealing that real estate and construction experience short-run contractions followed by systematic post-break recovery. The results indicate not contradictory evidence, but a coherent multi-stage adjustment process in sectoral credit allocation. In other words, the credit portfolio adjusts not through one-off reallocations, but through gradual post-shock re-concentration.

4.2. Discussion

The findings of this study provide strong empirical support for the view that sectoral credit reallocation following major systemic shocks is neither uniform nor permanent, but instead unfolds as a multi-stage adjustment process. The descriptive evidence shows a long-run and persistent concentration of euro-area bank lending in real estate and professional services, which intensifies after 2022. This pattern is consistent with earlier research emphasising that financial systems tend to gravitate towards asset-backed and lower-risk sectors under heightened uncertainty, particularly when collateral values and risk-weighting practices dominate banks’ portfolio decisions (Distefano & Reito, 2026; Gaigaliene & Jurakovaite, 2024). The continued rise of real-estate-related lending observed in this study mirrors findings from war-affected and geopolitically exposed economies, where property markets often absorb a disproportionate share of financial resources during and after shocks (Cosmulese & Zhavoronok, 2023; Tong, 2023).

At the same time, the structural-break results reveal that this long-run concentration masks important short-term reallocations that closely align with crisis-response mechanisms documented in the previous literature. The immediate post-2022 level shifts towards manufacturing, trade, accommodation, and transport-related services are consistent with evidence that crises initially redirect credit towards sectors supporting production continuity, supply chains, and consumption smoothing (Pham et al., 2020; Chikhaoui, 2025; Kalamen et al., 2025). These findings also resonate with studies highlighting that investment activity in tradable and productive sectors is highly sensitive to short-run financial conditions and policy interventions, particularly during periods of elevated uncertainty and energy-price volatility (Wang & Duan, 2025; Vasylieva et al., 2025). In this sense, the observed credit reallocation can be interpreted as a reflection of a temporary reorientation of investment financing, rather than a structural transformation of the euro-area credit model.

Crucially, the post-break trend dynamics documented in this study show that these initial reallocations are not sustained. The manufacturing, trade, accommodation, and transport sectors exhibit statistically significant negative post-break slopes, indicating a gradual erosion of their loan shares after the initial expansion. This reversal is in line with the broader literature on post-crisis financial adjustment, which suggests that banks revert to familiar, collateral-intensive lending once immediate stabilisation pressures ease (Rafinda et al., 2024; Legenzova & Lecké, 2024; Agarwal et al., 2025). In contrast, construction and real estate exhibit the opposite configuration – large negative level shocks followed by strong positive trend recovery – supporting the interpretation of re-concentration dynamics driven by structural features of credit markets, governance arrangements, and risk management practices (Ali et al., 2023; Distefano & Reito, 2026). Similar reversion patterns have been observed in post-pandemic and post-crisis settings, where temporary diversification gives way to renewed dominance of traditional sectors (Tong & Saladríguez, 2025; Kuzior et al., 2024; Mateev & Mostafa Khan, 2025).

The results also reinforce the literature's emphasis on the tight linkage between credit allocation and investment allocation in bank-based financial systems. The temporary expansion and subsequent decline of credit to productive sectors imply that crisis-driven lending does not automatically translate into sustained investment reorientation or long-term structural upgrading, echoing findings from studies on innovation, sustainability, and green investment finance (Streimikiene, 2025; Lyeonov et al., 2025; Su et al., 2025). Moreover, the relative stability or insignificance of effects in utilities, mining, and residual sectors suggests that only selected parts of the economy experience meaningful reallocation, while broader structural constraints remain binding. Taken together, the evidence aligns with the view that, without complementary policy measures that address risk asymmetries, governance quality, and investment incentives, sectoral credit reallocation following major shocks is likely to remain transitory, ultimately reinforcing rather than reshaping existing patterns of concentration.

A key limitation of this study lies in its reliance on aggregate euro-area sectoral outstanding bank loans, which, while well suited to analysing portfolio composition and structural dynamics, do not allow for heterogeneity across individual countries, banking institutions, or firm types to be examined. As a result, differences in national banking structures, exposure to the 2022 shock, and sector-specific policy interventions may be obscured in the aggregate analysis. In addition, the use of loan shares, although appropriate for identifying relative reallocation, does not account for changes in the absolute volume of credit or capture substitution between bank lending and alternative financing sources, such as capital markets or public support schemes. Finally, the structural-break framework identifies shifts in levels and trends. However, it cannot fully disentangle underlying causal mechanisms, such as changes in credit demand versus supply or the role of targeted policy measures. These limitations suggest that future research could benefit from disaggregated country- or bank-level data and from combining structural-break analysis with micro-level identification strategies better to isolate the drivers of sectoral credit and investment reallocation.

5. CONCLUSION

This study aimed to examine how bank credit to non-financial corporations in the euro area was reallocated across sectors following the 2022 shock, with particular emphasis on distinguishing between immediate level shifts and subsequent trend dynamics in sectoral loan shares. By focusing on the composition of credit rather than its aggregate volume, the analysis sought to clarify whether post-2022 developments reflect a durable sectoral reallocation of bank lending or a temporary adjustment followed by renewed concentration.

The empirical analysis relied on quarterly euro-area data on estimated outstanding bank loans to NFCs by sector, covering the period from 2015 Q3 to 2025. Sectoral loan shares were constructed to capture relative portfolio allocation. Methodologically, the study combined descriptive analysis with baseline post-period regressions and a structural-break framework that decomposes post-2022 adjustment into level effects and trend effects. Robustness was ensured by estimating the structural-break model at alternative break dates (2022 Q1–Q3), thereby allowing the stability of the results to be assessed.

The results point to a clear and consistent pattern. Descriptively, the euro-area credit portfolio remains persistently dominated by real estate and professional services, whose proportion of total NFC lending increased from around 34–36% in the mid-2010s to just above 40% by 2024–2025. Pre–post comparisons indicate that real estate and professional services alone expanded by +3.35 percentage points, while construction (–1.47 pp) and manufacturing (–1.15 pp) experienced the largest relative declines. Baseline regressions show that statistically significant average post-period effects are limited, with a robust increase only for electricity, gas and water (+0.66 pp) and significant declines for agriculture, forestry and fishery (–0.42 pp) and other activities (–0.25 pp). The structural break analysis reveals a two-stage adjustment process: construction and real estate and professional services exhibit large negative level shifts at the 2022 break (around –2.8 pp and –2.3 pp, respectively), followed by strong positive post-break trends (+0.47 pp and +0.27 pp per quarter), while manufacturing, trade and repair, and accommodation and food services display positive level shifts (+2.3 to +2.7 pp) combined with persistently negative trends (around –0.15 to –0.37 pp per quarter). These dynamics are robust across alternative break dates, indicating that the post-2022 credit adjustment is structural.

From a policy perspective, the findings carry several important implications. First, the persistence and post-shock recovery of credit concentration in real estate-related sectors suggest that bank lending continues to gravitate toward collateral-intensive activities, even after apparent reallocation periods. This raises concerns for financial stability and for the alignment of credit flows with long-term growth and productivity objectives. Second, the temporary nature of credit expansion towards manufacturing and tradable sectors implies that crisis-driven or stabilisation lending does not automatically translate into sustained investment reorientation. Policies aimed at strengthening productive investment in the euro area, therefore, need to go beyond short-term credit support and address underlying risk-return asymmetries faced by banks. Finally, the results underline the importance of monitoring credit composition, i.e., not only aggregate credit growth, while designing monetary, macroprudential, and industrial policies. A durable reallocation of funding channelled towards strategic and productive sectors is unlikely to emerge without complementary instruments that reduce sector-specific financing risks (and subsequent funding obstacles) and counteract the structural pull of real-estate-centred lending in the euro-area banking system.

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