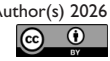
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Financialisation of workers and the erosion of trade union density in the European Union

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Abstract

The erosion of trade union density has been a stylised fact for the last five decades all over the world, which has been contributing to a strong deterioration of labour conditions, a dizzying loss of labour rights, a proliferation of exploitative labour practices and a persistence of high levels of income inequality. Our argument to explain this puzzling paradox of worsening labour conditions yet strong de-unionisation or non-unionisation emphasises that this is due to the financialisation of workers. On the one hand, workers' financial wealth stimulates de-unionisation or non-unionisation because they are more financially secure, more aligned with the interests of capital, perceive fewer benefits from unionisation, adopt an owner-like mindset, occupy well-paid managerial positions, and experience a greater alignment of interests with employers. On the other hand, workers' financial indebtedness encourages de-unionisation or non-unionisation because they are more financially vulnerable and risk-averse, focus on job and income stability, concerned with avoiding the social stigma from financial default, and are more inclined to individualism and self-interest rather than collective solidarity. This article aims to address the relationship between the financialisation of workers and trade union density by employing a panel data econometric analysis focused on all the countries of the European Union from 1995 to 2023. We find that the financialisation of workers negatively impacts trade union density, especially via financial assets due to their being more widespread among workers than are financial liabilities, and more pronounced in those countries of the European Union with the highest levels of financialisation of workers. We also confirm that the financialisation of workers, alongside the decline of industrial employment and the surge of trade openness, has indeed been one of the main factors behind the erosion of trade union density in the European Union in the last three decades.

Keywords

trade union density, financialisation of workers, workers' financial assets, workers' financial liabilities, European Union

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Introduction

Trade unions have historically represented one of the fundamental mechanisms available for workers and their organisations to promote their economic and social interests, through the negotiation of higher wages and better labour conditions with their employers and/or policy makers (Chan, 2023; Gouzoulis, 2023). Nevertheless, the erosion of trade union density has been a stylised fact since the 1970s and 1980s all over the world, including in the countries of the European Union (EU), which has been contributing to a strong deterioration of labour conditions, a dizzying loss of labour rights, a proliferation of exploitative labour practices and a persistence of high levels of income inequality (Barradas, 2025a, 2025b; Barradas and Lakhani, 2024; Feres et al., 2024; Korpi and Shalev, 1979; Gouzoulis, 2023, 2024; Gouzoulis et al., 2023, 2025).

This paradox of worsening labour conditions yet strong de-unionisation or non-unionisation is somewhat puzzling in the field of labour relations, ultimately because these reflect an individual worker's decision that, through such behaviour, seems to agree with the neoliberal agenda and the liberalisation, deregulation and flexibilisation of labour relations (Barradas, 2026). Our argument emphasises that this is due to the financialisation of workers and their greater and deeper involvement with the financial system via the accumulation of a great diversity of both financial assets and financial liabilities (Gonçalves and Barradas, 2021; Lapavitsas, 2011; Van der Zwan, 2014). On the one hand, workers' financial wealth stimulates de-unionisation or non-unionisation because workers tend to exhibit a more pro-capital predisposition (Smith et al., 2019), a psychological sense of ownership similar to that of capital owners (Carberry et al., 2024) and greater alignment with the interests of capital (employers) (Fakhfakh and FitzRoy, 2024). On the other hand, workers' financial indebtedness encourages de-unionisation or non-unionisation because workers tend to be in a more financially fragile position (Gouzoulis, 2024), characterised by fear of job and income loss and concerns about defaults (Gouzoulis, 2021, 2024; Wood, 2017).

This article aims to address the relationship between the financialisation of workers and trade union density by employing a panel data econometric analysis focused on all countries of the EU from 1995 to 2023. This article extends the existing literature on this matter by offering at least five different contributions. First, it systematises the main theoretical channels through which the financialisation of workers via both financial assets and financial liabilities has fed the erosion of trade union density in the last five decades worldwide. Scholars of industrial relations have been more focused on the negative effects of the financialisation of workers via financial liabilities on trade union density (Gouzoulis, 2023, 2024; Kelly and Kelly, 1994; Langley, 2007; Lazzarato, 2012; Palley and LaJeunesse, 2007; Stockhammer, 2009; Sweet, 2018; Van der Zwan, 2014; Wood, 2017), overlooking the potential negative effects of the financialisation of workers via their financial assets (Barradas, 2026). Second, this article addresses the determinants of trade union density in all countries of the EU by focusing on the potential negative effects related to the financialisation of workers, for which the empirical evidence is almost non-existent. Gouzoulis (2024) and Barradas (2026) are the only two exceptions. The former reports that the financialisation of workers via financial liabilities exerts a negative impact on trade union density in Japan, Sweden and South Korea.

The latter finds that the financialisation of workers via both financial assets and financial liabilities also impacts negatively trade union density in Portugal. Third, this article is focused on all countries of the EU, for which empirical evidence is also absent. The countries of the EU represent an interesting case study because the erosion of trade union density has also been a stylised fact in the EU since 1995, and has occurred simultaneously with a trend towards increased workers' financial wealth *and* financial indebtedness (Figure 1). This seems to suggest that the de-unionisation or non-unionisation in the countries of the EU cannot be dissociated from the financialisation of workers. Fourth, this article performs a panel data econometric analysis in a context in which previous empirical studies of the nexus between the financialisation of workers and trade union density have employed time series econometric analysis (Barradas, 2026; Gouzoulis, 2024). Panel data econometric analysis allows the collection of more observations, dealing with larger samples with higher heterogeneity and lesser collinearity by supporting more consistent and more efficient estimates in comparison to those produced by time series econometric analysis (Brooks, 2019). Fifth, this article also analyses the economic effects of the statistically significant estimates in order to identify the main drivers behind the erosion of trade union density in the countries of the EU from 1995 to 2023 (McCloskey and Ziliak, 1996; Ziliak and McCloskey, 2004).

Our models are based on aggregate equations according to which trade union density depends on the financialisation of workers via both financial assets and financial liabilities and other control variables that have been theoretically and empirically identified in the literature as the long-term forces, structural adjustments and economic and social transformations behind the erosion of trade union density in the last five decades all over the world (financialisation of corporations, inflation rate, industrial employment, public employment and trade openness) in order to mitigate the problem of omitted relevant variables and to get more consistent and more efficient estimates (Brooks, 2019). Our estimates are arrived at by performing a fixed effects two-stage least squares (FE2SLS) estimation in order to take into consideration the unobservable heterogeneity across the countries of the EU over time (Greene, 2017) and to mitigate the potential problems of endogeneity in our models (Wooldridge, 2025).

We find that the financialisation of workers negatively impacts trade union density in the countries of the EU, especially via financial assets, due to their being more widespread among workers than financial liabilities, and more pronounced in those countries of the EU with the highest levels of financialisation of workers. We also confirm that the financialisation of workers, together with the decline in industrial employment and the surge in trade openness, has been a key factor behind the erosion of trade union density in the European Union over the last three decades.

The rest of this article is organised as follows. In the next section, we systematise the theoretical channels and the empirical evidence on the relationship between the financialisation of workers via both financial assets and financial liabilities and trade union density. The third section presents the models' designs and hypotheses. The dataset and the econometric method are described in the fourth and fifth sections, respectively. The sixth section presents the results and a corresponding discussion. Finally, the seventh section concludes.

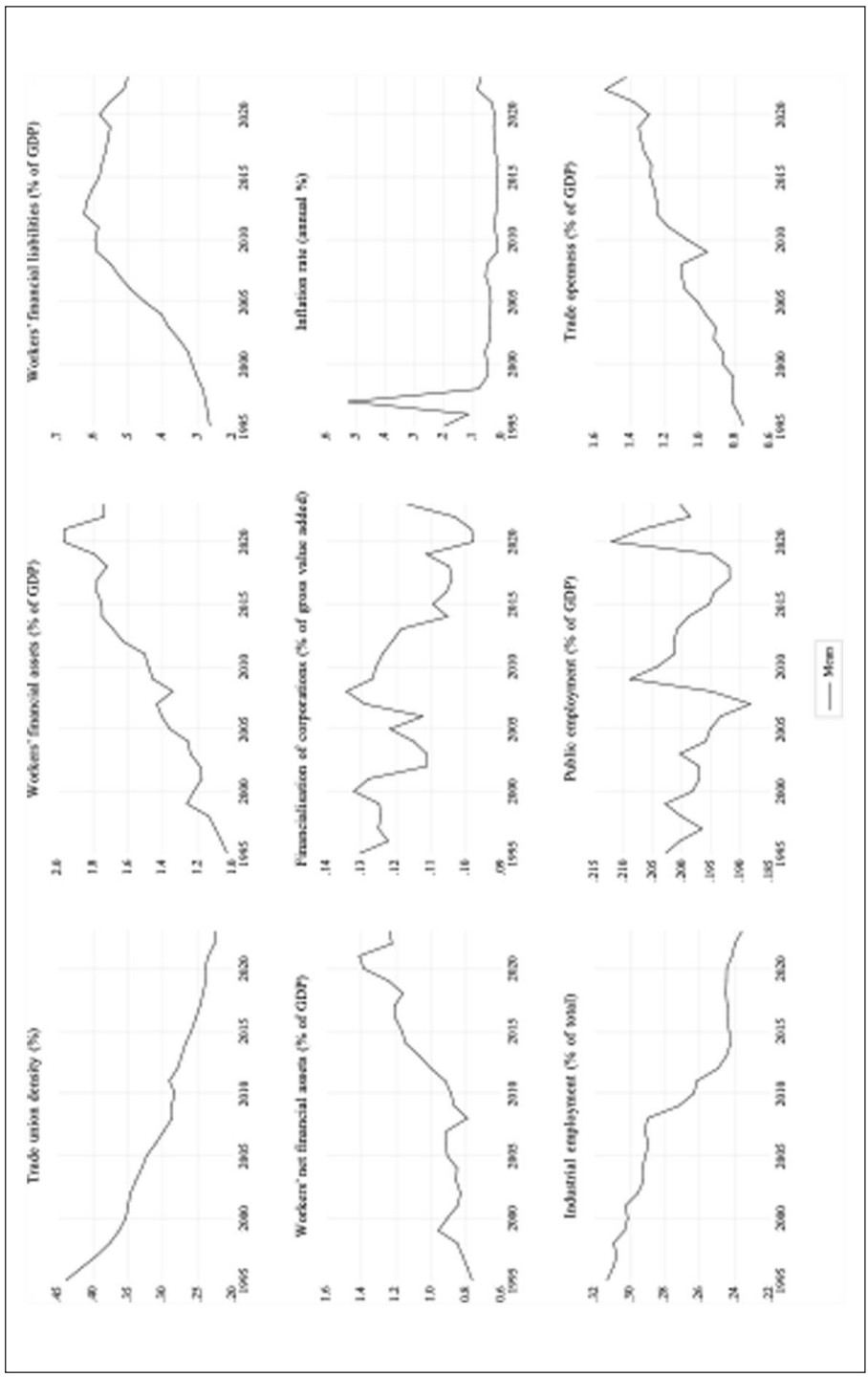


Figure 1. Plots for all the variables.

Theoretical background for financialisation of workers and the erosion of trade union density

The financialisation of workers, encompassing low-income, low-wealth and middle-class workers, has been a stylised fact for the last five decades all over the world, particularly notorious with regard to their greater and deeper involvement with the financial system via the accumulation of a great diversity of both financial assets and financial liabilities (Gonçalves and Barradas, 2021; Lapavitsas, 2011; Van der Zwan, 2014).

As a consequence, workers' financial wealth and workers' financial indebtedness have been increasing since the 1970s and 1980s in the majority of developed countries to unprecedented levels, even reaching historical maximum ones, especially in the run up to the Great Recession (Barradas, 2022a; Barradas and Tomás, 2023; Romão and Barradas, 2024).

The theoretical and empirical literature has especially been focused on the causes related to the financialisation of workers (Barradas, 2026), in a context in which discussion of the consequences has been more neglected, especially in the field of industrial relations and of their potential impact on the erosion of trade union density registered in the last five decades worldwide (Gouzoulis, 2024).

The financialisation of workers via financial assets could contribute to the erosion of trade union density through at least six potential combined and mutually interacting factors (Barradas, 2026). The first one relates to the more financially solid position of workers with financial assets, which encourages them to de-unionise or to be non-unionised (Bryson and Freeman, 2012). The second one emerges from the defence of capital by workers with financial assets, which persuades them to de-unionise or to be non-unionised given the detrimental effects of unions on the prices of financial assets, on the share of capital in income and on their financial wealth (Tippet et al., 2024). Note that workers are currently also capitalists because they receive not only income from working (labour) but also income from ownership (capital) (Smith et al., 2019). The third factor is allied to the perception by workers with financial assets that unionisation is not beneficial, which increases the appeal of de-unionising or of being non-unionised given their general recognition that trade unions are typically more concerned to protect and/or to improve the interests of low-income, low-wealth and middle-class workers (Cronert and Forsén, 2023; Kristal, 2023). The fourth one is due to the existence of a (psychological) feeling among workers with financial assets that they are also owners (employers), which induces them to de-unionise or to be non-unionised because they are more committed, motivated and productive, with greater reciprocity and clearer expectations, and they experience less absenteeism, lower intentional turnover and fewer workplace conflicts (Carberry et al., 2024). The fifth one is a result of workers with financial assets assuming management positions, which motivates them to de-unionise or to be non-unionised because they have already received very attractive remuneration schemes and a number of fringe benefits (Kristal, 2023). The sixth factor arises from the principal–agent problem, which is mitigated in the case of workers with financial assets due to the greater alignment of their interests with employers, better relations with them, fewer tensions and conflicts in the workplace and a better work environment and improved job security, prompting them to de-unionise or to be non-unionised (Bryson and Freeman, 2018;

Cappelli et al., 2019; Fakhfakh and FitzRoy, 2024; Green and Heywood, 2010; Pendleton and Robinson, 2010; Olsen, 2024).

The financialisation of workers via financial liabilities could also favour an erosion of trade union density through at least four potential combined and mutually interacting determinants (Barradas, 2026). The first one is linked to the more financially vulnerable position of workers with financial liabilities, which leads them to be more self-disciplined and have a risk-averse attitude in their workplaces and to de-unionise or to be non-unionised due to fear of job and income losses and financial default in the face of the risks of being replaced and/or dismissed (Gouzoulis, 2024; Langley, 2007; Lazzarato, 2012; Stockhammer, 2009; Sweet, 2018; Wood, 2017). This occurs due to the general recognition that the protection from dismissal has been decreased (Emmenegger, 2014; Gouzoulis, 2024) and the trend to replace and fire unionised workers has been increased (Gourevitch, 2018; Gouzoulis, 2024; Stelzner, 2017) in the last five decades all over the world as a consequence of the neoliberal agenda and the liberalisation, deregulation and flexibilisation of labour relations. The second determinant is connected to the preference of workers with financial liabilities to hold onto their job and maintain a steady flow of income, which incentivises them to de-unionise or to be non-unionised in order to honour their financial obligations and to avoid a potential default (Gouzoulis, 2023, 2024). Furthermore, unionised workers need to pay monthly union dues, which reduces their income and increases the likelihood of a potential default in the short-term, while the advantages of being unionised typically manifest themselves only in the medium- and long-term (Palley and LaJeunesse, 2007). This behaviour could be more preponderant in sectors, industries and/or countries with wider bargaining collective coverage, namely due to the so-called 'free-riding' problem, which implies that the benefits achieved by the unionised workers are automatically shared with the non-unionised ones (Bryson, 2008; Freeman and Medoff, 1984; Olson, 1965). The third determinant relates to the self-protection from social stigma by workers with financial liabilities, which persuades them to de-unionise or to be non-unionised in order to avoid being treated as incompetents in managing their personal finance in the case of financial default (Wood, 2017). This attitude could be significant in countries that treat personal insolvency more negatively, in countries with a more liberal/pro-creditor bankruptcy law, in countries with lesser credit regulations by the state and/or in countries in which there is no credit directly provided by the state-owned banks to less advantaged workers (Gouzoulis, 2021, 2024; Wood, 2017). The fourth issue is associated with the prioritisation of honouring financial obligations by workers with financial liabilities, which motivates them to de-unionise or to be non-unionised given their lesser solidarity, group identification and collective action, and greater individualism, self-interest, rationalism, market-value-oriented behaviour and utilitarian financial culture (Gazda et al., 2021; Kelly and Kelly, 1994; Van der Zwan, 2014).

From an empirical point of view, the evidence regarding the relationship between the financialisation of workers and trade union density is almost non-existent. To the best of our knowledge, Gouzoulis (2024) and Barradas (2026) are the only two exceptions. The former focuses on Japan, Sweden and South Korea from 1965 and 2016. The latter focuses on Portugal over the period from 1980 to 2023. Both of them conclude that the financialisation of workers has been one of the main factors behind the erosion of trade union density in the last decades in these countries. Nonetheless, Gouzoulis (2024)

neglects the potential role played by the financialisation of workers via financial assets and both studies offer only a limited generalisability to other regions and/or countries given their focus on specific countries through time series econometric analyses.

This article aims to overcome such flaws by taking into account simultaneously the financialisation of workers via both financial assets and financial liabilities and by employing a panel data econometric analysis for all the countries of the EU from 1995 to 2023 in order to produce more generalised conclusions.

Model designs and hypotheses

In order to address the relationship between the financialisation of workers and trade union density in the countries of the EU, we rely on four different models, which are described by the following four aggregate equations:

$$TUD_{i,t} = \beta_0 + \beta_1 FW_{i,t}^{FA} + \beta_2 X_{i,t} + \alpha_{i,t} \quad (1)$$

$$TUD_{i,t} = \beta_0 + \beta_1 FW_{i,t}^{FL} + \beta_2 X_{i,t} + \alpha_{i,t} \quad (2)$$

$$TUD_{i,t} = \beta_0 + \beta_1 FW_{i,t}^{FA} + \beta_2 FW_{i,t}^{FL} + \beta_3 X_{i,t} + \alpha_{i,t} \quad (3)$$

$$TUD_{i,t} = \beta_0 + \beta_1 FW_{i,t}^{NFA} + \beta_2 X_{i,t} + \alpha_{i,t} \quad (4)$$

where i is the country, t is the time period (years), TUD is the trade union density, FW^{FA} is the financialisation of workers via financial assets, FW^{FL} is the financialisation of workers via financial liabilities, FW^{NFA} is the financialisation of workers via net financial assets (i.e. the difference between financial assets and financial liabilities), X is a set of control variables, and α is a two-way error term component to account for unobservable country-specific effects and time-specific effects.

The use of these four different models allows us to assess the robustness of our estimates and to address the different forms of financialisation of workers and their impacts on trade union density. The first model aims to take into account the existence of workers that are exclusively financialised via financial assets. The second model captures the existence of workers that are only financialised via financial liabilities. The third model reflects the workers that are financialised via both financial assets and financial liabilities. The fourth model is also useful to analyse the case of workers that are financialised via both financial assets and financial liabilities, but relying on only one consolidated variable that measures the general effect of financialisation of workers (namely, workers' net financial assets) on trade union density.

As discussed in the previous section, we hypothesise that the financialisation of workers via both financial assets and financial liabilities is expected to exert a negative effect

on trade union density. We also expect that the negative effect allied to the financialisation of workers via financial assets should be greater than the negative effect connected to the financialisation of workers via financial liabilities, for two different reasons (Barradas, 2026). First, financial assets are more widespread among workers than financial liabilities, including in the EU (Figure 1). Second, the role played by workers' financial assets in trade union density translates as a directly perceived benefit (e.g. financial security and independence), whilst that played by workers' financial liabilities represents an indirect perceived danger (e.g. financial insecurity and fear of job and income loss).

In all of our four models, our set of control variables include those that have been theoretically and empirically identified in the literature as the long-term forces, structural adjustments and economic and social transformations behind the erosion of trade union density in the last five decades all over the world, namely the dominance of shareholder value and the financialisation of corporations (Barradas, 2023; Correia and Barradas, 2021; Dupuis et al., 2020; Gouzoulis, 2024; Gouzoulis et al., 2024; Kollmeyer and Peters, 2019; Peters, 2011); the reduction in inflationary pressures (Bain and Elsheikh, 1976; Checchi and Visser, 2005; Western, 1997); deindustrialisation and the decline in industrial employment (Blaschke, 2000; Jensen, 2020; Lee, 2005; Schnabel, 2013); the cost-cutting among welfare states and the fall in public employment (Checchi and Visser, 2005; Visser, 2002); and the globalisation and the rise of trade openness (Bluestone and Harrison, 1982; Boulhol et al., 2011; Brady and Wallace, 2000; Harrison and Bluestone, 1988; Sasson, 1996; Slaughter, 2007; Western, 1997). This approach allows us to mitigate the problem of omitted relevant variables and to get more consistent and more efficient estimates (Brooks, 2019).

The financialisation of corporations should exert a negative influence on trade union density due to fear of redundancy and/or non-hiring in the presence of financialised corporations that prioritise the maximisation of shareholder value by containing labour costs through the replacement and/or non-hiring of unionised workers in order to avoid paying union wage premiums (Dupuis et al., 2020; Gouzoulis, 2024; Gouzoulis et al., 2024; Kollmeyer and Peters, 2019; Peters, 2011).

Trade union density should be positively affected by the inflation rate due to the demand for higher wages and better labour conditions by workers during episodes of inflation to maintain and/or increase their purchasing power (Bain and Elsheikh, 1976; Checchi and Visser, 2005; Western, 1997).

Industrial employment and public employment are expected to impact positively trade union density because workers in these sectors are typically more unionised, have more typical labour contracts and are less likely to be self-employed than are workers in non-industrial sectors and/or workers in the private sectors that normally exhibit a less militant stance (Blaschke, 2000; Checchi and Visser, 2005; Gouzoulis, 2023; Jensen, 2020; Lee, 2005; Schnabel, 2013; Visser, 2002).

Finally, trade union density should negatively depend on trade openness due to the fear of job and income loss in the presence of multinational, transnational and 'nomadic' corporations that recurrently threaten to offshore and/or relocate their production to countries with lower levels of trade union density and, consequently, lower labour costs (Bluestone and Harrison, 1982; Boulhol et al., 2011; Brady and Wallace, 2000; Harrison and Bluestone, 1988; Sasson, 1996; Slaughter, 2007; Western, 1997; Zamagni, 2003). As

argued by Gouzoulis (2024), the negative relationship between trade openness and trade union density tends to be stronger in countries that do not occupy dominant positions in global value chains by favouring the implementation of offshoring and relocating as competitive strategies based on cutting labour costs.

Dataset

Our dataset consists of annual data for all the countries of the EU from 1995 to 2023, constituting a panel dataset with a total of 27 cross-sectional units (countries) observed over 29 years. This corresponds to the time span and frequency for which all data were available. Effectively, the proxies to measure the financialisation of workers were only available from 1995 onwards, the proxy to assess industrial employment is not yet available for 2024 and the proxy to weigh trade union density is only available on a yearly basis. All data were collected in October 2025.

Our dataset was structured as an unbalanced panel because not all variables were available for all countries and all years of our sample. Our dataset comprises 719 observations and 83 missing ones, as shown in Table 1.

Our dataset was suitable to produce our estimates due to four different factors. First, the erosion of trade union density is a long-term stylised fact in the EU, which is better analysed through the use of data on a yearly basis (Waddington et al., 2023). Second, our dataset comprises a relatively large sample covering at least three different decades, which allows identification of the main long-term forces, the structural adjustments and the economic and social transformations behind the erosion of trade union density in the EU. Third, our dataset covers the period when the financialisation of workers became more prevalent in the EU in the wake of vigorous liberalisation, deregulation and privatisation of the financial system following the rules of the European Economic Community (Barradas, 2020, 2022b; Van der Zwan, 2014). Fourth, our dataset comprises a relatively large sample encompassing some heterogeneity with regard to the financialisation of workers, which contributes to obtaining more consistent and more efficient estimates (Brooks, 2019).

Figure 1 displays the plots for all the variables; Table 2 describes the proxies, units and sources for all variables; Table 3 contains the descriptive statistics for each variable; Table 4 provides the correlations between all the variables; and Table 5 includes the recent Karavias and Tzavalis (2014) panel unit root test for each variable.[1]

All correlations between all the variables are less than 0.8 in absolute terms, which implies that we can completely discard the existence of severe multicollinearity in our estimated models (Studenmund, 2016). The only exception occurred between the variables of workers' financial assets and workers' net financial assets, albeit they will not be used simultaneously in the same models.

We can confirm that the erosion of trade union density is indeed a stylised fact in the EU since 1995, which has occurred simultaneously with an increasing trend of financialisation of workers via both financial assets and financial liabilities (Figure 1). This seems to reinforce our argument about the existence of a negative relationship between the financialisation of workers and trade union density. However, the slightly positive correlations between the financialisation of workers and trade union density does not seem to support such beliefs (Table 3).

Table 1. The structure and composition of our unbalanced panel.

Country	Period	Observations	Missing
Austria	1995–2023	29	0
Belgium	2011–2023	13	16
Bulgaria	1995–2022	28	1
Croatia	1995–2023	29	0
Cyprus	1995–2023	29	0
Czechia	1995–2023	29	0
Denmark	1995–2023	29	0
Estonia	1995–2023	29	0
Finland	1995–2023	29	0
France	1995–2023	29	0
Germany	1995–2023	29	0
Greece	1995-2023	29	0
Hungary	1995–2023	29	0
Ireland	2012–2023	12	17
Italy	1995–2023	29	0
Latvia	1995–2023	29	0
Lithuania	1995–2023	29	0
Luxembourg	2002–2023	22	7
Malta	1995–2023	29	0
Netherlands	2012–2023	12	17
Poland	1995–2023	29	0
Portugal	1995–2023	29	0
Romania	1995–2023	29	0
Slovakia	1995–2023	29	0
Slovenia	2001–2023	23	6
Spain	1995–2023	29	0
Sweden	1995–2023	29	0

Results of the panel unit root test confirmed that we had a mixture of variables that are stationary in levels and variables that are stationary only in the first differences. Trade union density, workers' financial assets, workers' financial liabilities, workers' net financial assets, financialisation of corporations, the inflation rate and trade openness are stationary in levels. Industrial employment and public employment are stationary only in the first differences.

Econometric method

Our estimates were produced by relying on the FE2SLS estimator.[3] Two different factors motivate the choice of this econometric method in particular. First, the FE2SLS estimator allows taking into account the unobservable heterogeneity across our cross-sectional units (countries) that were observed over time, that is, country-specific effects and time-specific effects (Greene, 2017). Second, the FE2SLS estimator produces reliable

Table 2. Proxies, units and sources for all variables.[2]

Variable	Proxy and unit	Source
Trade union density	Trade union density (%)	OECD/AIAS ICTWSS
Workers' financial assets	Total financial assets of households (% of GDP)	Eurostat
Workers' financial liabilities	Total financial liabilities of households (% of GDP)	Eurostat
Financialisation of corporations	Net financial payments of non-financial corporations (% of gross value added)	Eurostat
Inflation rate	Inflation, GDP deflator (annual %)	World Bank
Industrial employment	Employment in industry (% of total)	World Bank
Public employment	General government final consumption expenditure (% of GDP)	World Bank
Trade openness	Trade (% of GDP)	World Bank

Table 3. The descriptive statistics for each variable.

Variable	Mean	Median	Maximum	Minimum	Standard deviation	Skewness	Kurtosis
Trade union density	0.298	0.229	0.831	0.045	0.197	0.986	2.881
Workers' financial assets	1.502	1.402	4.181	0.246	0.748	0.773	3.281
Workers' financial liabilities	0.484	0.438	1.459	0.015	0.295	0.806	3.473
Workers' net financial assets	1.018	0.904	3.111	0.214	0.546	0.991	3.562
Financialisation of corporations	0.117	0.108	0.500	–0.231	0.073	0.429	4.764
Inflation rate	0.056	0.024	9.132	–0.099	0.351	24.158	620.580
Industrial employment	0.270	0.273	0.420	0.092	0.064	–0.149	2.661
Public employment	0.199	0.194	0.278	0.111	0.030	0.093	2.995
Trade openness	1.116	0.946	4.122	0.361	0.584	1.893	8.206

estimates in terms of consistency and efficiency, even in cases where endogeneity could exist (Wooldridge, 2025), which is relevant here given the hypothetical existence of simultaneity (and/or reverse causation) among our variables, the possible existence of measurement errors in the proxies chosen for our variables and the probable omission of other important determinants of trade union density in the countries of the EU.

In order to employ the FE2SLS estimator, a set of instrumental variables should be defined. The number of instrumental variables should be at least equal to the number of

Table 4. The correlations between all the variables.

Variable	TUD	FW^{FA}	FW^{FL}	FW^{NFA}	FC	IR	IE	PE	TO
TUD	1.000								
FW^{FA}	0.296***	1.000							
FW^{FL}	0.303***	0.790***	1.000						
FW^{NFA}	0.242***	0.943***	0.542***	1.000					
FC	–0.009	0.080**	0.040	0.088**	1.000				
IR	0.015	–0.135***	–0.139***	–0.110***	–0.033	1.000			
IE	–0.245***	–0.541***	–0.615***	–0.408***	–0.033	0.101***	1.000		
PE	0.323***	0.352***	0.301***	0.319***	–0.317***	–0.144***	–0.177***	1.000	
TO	–0.038	0.039	0.068*	0.017	0.007	–0.035	–0.276***	–0.277***	1.000

Note: *** indicates statistically significant at 1% level, ** indicates statistically significant at 5% level and * indicates statistically significant at 10% level.
TUD – trade union density; FW^{FA} – financialisation of workers via financial assets; FW^{FL} – financialisation of workers via financial liabilities; FW^{NFA} – financialisation of workers via net financial assets; FC – financialisation of corporations; IR – inflation rate; IE – industrial employment; PE – public employment; TO – trade openness.

Table 5. *p*-Values of the Karavias and Tzavalis (2014) panel unit root test for each variable.

Variable	Levels	First differences
Trade union density	0.000 (2021 and 2022)	0.000 (1996 and 1997)
Workers' financial assets	0.000 (1996 and 2022)	0.000 (1996 and 1997)
Workers' financial liabilities	0.000 (2021 and 2022)	0.000 (1996 and 1997)
Workers' net financial assets	0.000 (1996 and 2022)	0.000 (1996 and 1997)
Financialisation of corporations	0.000 (1996 and 2012)	0.000 (1996 and 1997)
Inflation rate	0.000 (1997 and 1998)	0.000 (1997 and 1998)
Industrial employment	1.000 (2001 and 2002)	0.000 (1996 and 1997)
Public employment	1.000 (1996 and 1997)	0.000 (1996 and 2021)
Trade openness	0.000 (1996 and 1997)	0.000 (1996 and 1997)

Note: Estimated break dates are reported in parentheses.

our independent variables and should be variables that are not independent variables in our models but are strongly correlated with them and are exogeneous (orthogonal) in relation to the regression error component (Greene, 2017; Wooldridge, 2025). The conventional strategy for choosing appropriate instrumental variables is to use lagged variables. We validate the suitability of our estimates and our instrumental variables by performing the Sargan test (or the so-called Hansen test or the so-called J test), which confirms the over-identifying restrictions in a given statistical model (Sargan, 1958, 1975). We used the second to fifth lags of each independent variable presented in our models as our set of instrumental variables, which is a relatively small set, and, consequently, favours more efficient estimates (Ravenna and Walsh, 2006) and improves the power of the Sargan test (Mavroeidis, 2005).

We use the first differences of the variables pertaining to industrial employment and public employment because they are only stationary in first differences (Table 5) and the FE2SLS estimator requires that all variables be stationary in levels. The remaining variables were used directly in levels because they are indeed stationary in levels (Table 5). Time dummies were included in our estimates in order to take into account the specific features of each year in the evolution of trade union density in the countries of the EU and to mitigate the risk of the existence of structural breaks.

We also re-estimated our four models by relying only on those countries of the EU with the highest levels of financialisation of workers and we also employed a jackknife examination that re-estimated our four models for all countries of the EU and for those countries of the EU with the highest levels of financialisation of workers by excluding one country at a time, respectively (Quenouille, 1949, 1956; Tukey, 1958).[4] This allowed us to confirm whether the negative effects of financialisation of workers on trade union density is stronger in countries with more financialised workers, to take advantage of the cross-sectional dimension of our panel dataset and to assess the robustness of our estimates to resampling (Barradas, 2025c).

Lastly, we further analysed the economic effects of our statistically significant estimates in order to identify the main drivers behind the erosion of trade union density in

Table 6. Estimates of trade union density for all countries of the EU.

Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.550***	0.541***	0.557***	0.530***
	(0.017)	(0.017)	(0.016)	(0.017)
	[33.246]	[32.711]	[34.060]	[31.098]
Workers' financial assets$_t$	–0.055***	n.a.	–0.045***	n.a.
	(0.008)		(0.009)	
	[–7.031]		[–5.165]	
Workers' financial liabilities$_t$	n.a.	–0.090***	–0.042*	n.a.
		(0.018)	(0.022)	
		[–4.748]	[–1.931]	
Workers' net financial assets$_t$	n.a.	n.a.	n.a.	–0.043***
				(0.010)
				[–4.440]
Financialisation of corporations$_t$	0.193***	0.272***	0.243***	0.159**
	(0.071)	(0.072)	(0.070)	(0.073)
	[2.706]	[3.780]	[3.461]	[2.169]
Inflation rate$_t$	0.242***	0.214***	0.226***	0.281***
	(0.083)	(0.080)	(0.078)	(0.085)
	[2.916]	[2.676]	[2.899]	[3.303]
ΔIndustrial employment$_t$	0.944*	0.543	0.890*	1.064*
	(0.561)	(0.487)	(0.494)	(0.573)
	[1.681]	[1.115]	[1.802]	[1.856]
ΔPublic employment$_t$	–1.055**	–1.080**	–1.000**	–1.157**
	(0.461)	(0.463)	(0.442)	(0.474)
	[–2.287]	[–2.331]	[–2.262]	[–2.439]
Trade openness$_t$	–0.191***	–0.224***	–0.194***	–0.206***
	(0.012)	(0.011)	(0.012)	(0.012)
	[–15.507]	[–19.812]	[–16.069]	[–17.216]
Observations	557	557	557	557
Years	23	23	23	23
Countries	27	27	27	27
Time effects	Yes	Yes	Yes	Yes
Sargan test (*p*-value)	0.305	0.022	0.156	0.575
R-squared	0.971	0.971	0.971	0.969
Adjusted *R*-squared	0.969	0.969	0.969	0.967

Note: Standard errors in parentheses, *t*-statistics in square brackets, Δ is the operator of the first differences, *** indicates statistically significant at 1% level, ** indicates statistically significant at 5% level and * indicates statistically significant at 10% level. Coefficients, standard errors and *t*-statistics for the time dummies are not reported.

the countries of the EU from 1995 to 2023 (McCloskey and Ziliak, 1996; Ziliak and McCloskey, 2004).

Results and discussion

This section presents and discusses the estimates for our four models. Table 6 presents the estimates of trade union density for all countries of the EU and Table 7 presents the

estimates of trade union density for those countries of the EU with the highest levels of financialisation of workers. All of these estimates are trustworthy, and we accept our set of instrumental variables because we do not reject the null hypothesis of the Sargan test that the over-identifying restrictions are valid at the 1% significance level (Sargan, 1958, 1975). All of our estimates describe considerably well the evolution of trade union density in all countries of the EU and in those countries of the EU with the highest levels of financialisation, as indicated by the very high levels for *R*-squared and adjusted *R*-squared. Our estimates are also quite robust because they did not change radically in terms of statistical significance, signs and magnitudes of coefficients across the four different models.

With regard to the estimates for all countries of the EU (Table 6), all variables are statistically significant at the traditional significance levels, and six main conclusions can be drawn. First, the financialisation of workers via both financial assets and financial liabilities exerts a negative impact on trade union density in the countries of the EU. This supports our argument that workers' financial assets stimulate de-unionisation or non-unionisation due to the stronger alignment of financially wealthy workers with capital interests and the lower perceived benefits of unionisation (Carberry et al., 2024; Fakhfakh and FitzRoy, 2024; Smith et al., 2019).

This also supports our argument that workers' financial liabilities encourage de-unionisation or non-unionisation due to the greater financial vulnerability and risk aversion of indebted workers (Gouzoulis, 2024), their stronger concerns about job and income stability (Gouzoulis, 2023, 2024), and their lower propensity for collective action and solidarity (Gazda et al., 2021; Kelly and Kelly, 1994; Van der Zwan, 2014). Also as expected, we found that the negative effect associated with the financialisation of workers via financial assets is, on average, greater than the negative effect linked to the financialisation of workers via financial liabilities, which should be related to the fact that financial assets are more widespread among workers than are financial liabilities in countries of the EU (Figure 1) and with the role played by workers' financial assets and liabilities in shaping trade union density, as the former translate into directly perceived benefits (e.g. financial security and independence) whilst the latter represent indirect perceived dangers (e.g. financial insecurity and fear of job and income loss). This is the reason why workers' net financial assets also influence negatively trade union density in all countries of the EU. Barradas (2026) also found quite similar results for Portugal.

Second, the financialisation of corporations affects positively trade union density in the countries of the EU.[5] This unexpected result is not in accordance with the theoretical argument that workers prefer to de-unionise or to remain non-unionised due to fears of redundancy and/or non-hiring in the presence of financialised corporations that prioritise shareholder value maximisation by suppressing labour costs, including through the substitution of unionised labour and the avoidance of hiring unionised workers in order to circumvent wage premiums (Dupuis et al., 2020; Gouzoulis, 2024; Gouzoulis et al., 2024; Kollmeyer and Peters, 2019; Peters, 2011). A positive relationship between the financialisation of corporations and trade union density is also reported by Barradas (2026), who points to two different factors to explain this unexpected result. First, the financialisation of corporations could prompt workers to unionise to demand higher wages and better labour conditions as a reaction to the maximisation of shareholder value (Milkman, 2013). Second, the de-unionisation or non-unionisation of workers in the face

of financialised corporations could prompt trade unions to engage in more efforts and new strategies and campaigns to stem the erosion of trade union density (Grady and Simms, 2019; Simms et al., 2013).

Third, the inflation rate has also a positive influence on trade union density in the countries of the EU.[6] This result corroborates the theoretical claims that inflationary episodes lead workers to unionise in order to avoid losing purchasing power by demanding higher wages and better labour conditions (Bain and Elsheikh, 1976; Checchi and Visser, 2005; Western, 1997). Gouzoulis (2024) and Barradas (2026) also find a positive relationship between the inflation rate and trade union density in Japan and Portugal, respectively.

Fourth, industrial employment also impacts positively trade union density in the countries of the EU. This seems to confirm that industrial workers are indeed more unionised, have more typical labour contracts and are less likely to be self-employed than are workers in non-industrial sectors that normally exhibit a less militant stance (Blaschke, 2000; Checchi and Visser, 2005; Gouzoulis, 2023; Jensen, 2020; Lee, 2005; Schnabel, 2013; Visser, 2002). This result is also in line with those reported by Gouzoulis (2024) for the specific cases of Japan and South Korea and by Barradas (2026) for Portugal.

Fifth, the level of public employment has a negative effect on trade union density in the countries of the EU. This counterintuitive result seems to not confirm the stronger militant stance exhibited by public servants to obtain collective support and to be unionised in the countries of the EU, which could be explained by the relatively high levels of bargaining coverage in these countries (Waddington et al., 2023). This could motivate public servants to de-unionise or to be non-unionised and act like 'free-riders' because they will continue to receive the benefits acquired by unionised workers and trade unions (Bryson, 2008; Freeman and Medoff, 1984; Olson, 1965).

Sixth, trade openness is also a negative determinant of trade union density in the countries of the EU.[7] This is an expected result, confirming that the rise of trade openness persuades workers to de-unionise or to remain non-unionised due to fear of job and income losses caused by the potential offshoring and/or relocation of their corporations to countries with lower labour costs and lower levels of union militancy (Bluestone and Harrison, 1982; Boulhol et al., 2011; Brady and Wallace, 2000; Harrison and Bluestone, 1988; Sasson, 1996; Slaughter, 2007; Western, 1997; Zamagni, 2003). This result is not too surprising given the general recognition that the countries of the EU have lost some competitiveness in global value chains (Ciani and Gregori, 2025), which favour the adoption of competitive strategies regarding offshoring and relocating to support lower labour costs (Gouzoulis, 2024). A similar result was also reported by Barradas (2026) for Portugal.

In relation to the results for countries of the EU with the highest levels of financialisation (Table 7), they did not substantially change in comparison to the results for all countries of the EU (Table 6), albeit the inflation rate lost its statistical significance in all of our four models. The financialisation of corporations and industrial employment maintain their statistical significance by also impacting trade union density positively, whilst public employment and degree of globalisation remain statistically significant too by preserving their negative influences on trade union density.

The most important finding is connected with the variables of financialisation of workers. All of them are also statistically significant and continue to exert negative effects on trade union density. Nonetheless, their negative effects are, on average, greater than the negative effects on trade union density in all countries of the EU. This seems to suggest that the negative effects of the financialisation of workers are stronger for financially wealthier workers and for financially more indebted workers, namely due to their higher alignment with the interests of capital (Carberry et al., 2024; Fakhfakh and FitzRoy, 2024; Smith et al., 2019) and more self-disciplined behaviour and a risk-averse attitude in their workplaces (Gouzoulis, 2023, 2024), respectively.

Estimates of trade union density for all countries of the EU (Table 6) and estimates of trade union density for those countries of the EU with the highest levels of financialisation of workers (Table 7) are also quite robust to resampling, according to a jackknife analysis (Quenouille, 1949, 1956; Tukey, 1958).[8] By excluding one country at a time, the estimates did not change significantly in terms of statistical significance, signs and magnitudes of coefficients across the four different models for all countries of the EU and for those countries of the EU with the highest levels of financialisation of workers. All of these estimates remain quite reliable, due to the acceptance of our set of instrumental variables and the maintenance of very high levels for R-squared and adjusted R-squared.

Table 8 presents the economic effects of trade union density for all EU countries, and Table 9 presents the economic effects of trade union density for EU countries with the highest levels of financialisation of workers, which allows us to assess the comparative role of financialisation of workers relative to other structural determinants of trade union density by decomposing the contribution of each factor to the observed decline in trade union density across EU countries over the period 1995–2023.

Regarding the first model, we conclude that the increase of workers' financial assets, the deceleration of the financialisation of corporations, the decline in industrial employment and the surge in trade openness were the main causes behind the erosion of trade union density in all countries of the EU from 1995 to 2023. During that time, trade union density in all countries of the EU would have effectively been higher by around 0.1%, 0.1%, 0.2% and 0.6%, respectively, on average per year if there had not been an increase of workers' financial assets, a deceleration of the financialisation of corporations, a decline in industrial employment and a surge in trade openness. The increase of workers' financial assets and the surge in trade openness were also the main causes behind the decline in trade union density in those countries of the EU with the highest levels of financialisation of workers during that time.

In relation to the second model, we confirm that the main drivers behind the erosion of trade union density in all countries of the EU from 1995 to 2023 were the rise of workers' financial liabilities, the deceleration of the financialisation of corporations and the surge in trade openness, which accounted for about 0.3%, 0.1% and 0.7% on average per year, respectively. During that time, the rise of workers' financial assets and the surge in trade openness also represented the main drivers behind the erosion of trade union density in those countries of the EU with the highest levels of financialisation of workers.

Table 7. Estimates of trade union density for countries of the EU with the highest levels of financialisation of workers.

Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.641***	0.637***	0.668***	0.577***
	(0.029)	(0.024)	(0.026)	(0.028)
	[22.183]	[26.346]	[25.411]	[20.775]
Workers' financial assets$_t$	–0.061***		–0.044***	n.a.
	(0.010)	n.a.	(0.013)	
	[–6.225]		[–3.497]	
Workers' financial liabilities$_t$	n.a.	–0.138***	–0.076**	n.a.
		(0.027)	(0.035)	
		[–5.039]	[–2.207]	
Workers' net financial assets$_t$	n.a.		n.a.	–0.044***
		n.a.		(0.012)
				[–3.577]
Financialisation of corporations$_t$	0.347***	0.424***	0.403***	0.295***
	(0.090)	(0.090)	(0.085)	(0.088)
	[3.855]	[4.724]	[4.769]	[3.356]
Inflation rate$_t$	0.073	0.039	0.046	0.174
	(0.225)	(0.276)	(0.246)	(0.225)
	[0.327]	[0.141]	[0.189]	[0.774]
ΔIndustrial employment$_t$	1.855*	1.197	1.759*	1.291
	(1.022)	(1.072)	(1.035)	(1.059)
	[1.816]	[1.116]	[1.700]	[1.219]
ΔPublic employment$_t$	–0.686	–1.344*	–1.002	–0.574
	(0.658)	(0.692)	(0.675)	(0.651)
	[–1.042]	[–1.943]	[–1.485]	[–0.881]
Trade openness$_t$	–0.182***	–0.215***	–0.196***	–0.183***
	(0.021)	(0.021)	(0.019)	(0.020)
	[22.183]	[26.346]	[–10.521]	[–9.307]
Observations	311	311	311	311
Years	23	23	23	23
Countries	16	16	16	16
Time effects	Yes	Yes	Yes	Yes
Sargan test (*p*-value)	0.052	0.022	0.044	0.026
R-squared	0.968	0.970	0.969	0.970
Adjusted *R*-squared	0.966	0.967	0.966	0.968

Note: Standard errors in parentheses, *t*-statistics in square brackets, Δ is the operator of the first differences, *** indicates statistically significant at 1% level, ** indicates statistically significant at 5% level and * indicates statistically significant at 10% level. Coefficients, standard errors and *t*-statistics for the time dummies are not reported.

With regard to the third model, we observe that the increase of workers' financial assets, the rise of workers' financial liabilities, the deceleration of the financialisation of corporations, the decline in industrial employment and the surge in trade openness were the main triggers behind the erosion of trade union density in all countries of the EU from 1995 to 2023. Effectively, the trade union density in all countries of the EU from 1995 to

Table 8. Economic effects of trade union density for all countries of the EU.

Model	Variable	Estimated coefficient	Actual cumulative change	Economic effect
Model 1	Workers' financial assets$_t$	–0.055	0.025	–0.001
	Financialisation of corporations$_t$	0.193	–0.004	–0.001
	Inflation rate$_t$	0.242	0.056	0.014
	ΔIndustrial employment$_t$	0.944	–0.002	–0.002
	ΔPublic employment$_t$	–1.055	–0.0001	0.0001
	Trade openness$_t$	–0.191	0.032	–0.006
Model 2	Workers' financial liabilities$_t$	–0.090	0.032	–0.003
	Financialisation of corporations$_t$	0.272	–0.004	–0.001
	Inflation rate$_t$	0.214	0.056	0.012
	ΔPublic employment$_t$	–1.080	–0.0001	0.0001
	Trade openness$_t$	–0.224	0.032	–0.007
Model 3	Workers' financial assets$_t$	–0.045	0.025	–0.001
	Workers' financial liabilities$_t$	–0.042	0.032	–0.001
	Financialisation of corporations$_t$	0.243	–0.004	–0.001
	Inflation rate$_t$	0.226	0.056	0.013
	ΔIndustrial employment$_t$	0.890	–0.002	–0.002
	ΔPublic employment$_t$	–1.000	–0.0001	0.0001
	Trade openness$_t$	–0.194	0.032	–0.006
Model 4	Workers' net financial assets$_t$	–0.043	0.022	–0.001
	Financialisation of corporations$_t$	0.159	–0.004	–0.001
	Inflation rate$_t$	0.281	0.056	0.016
	ΔIndustrial employment$_t$	1.064	–0.002	–0.002
	ΔPublic employment$_t$	–1.157	–0.0001	0.0001
	Trade openness$_t$	–0.206	0.032	–0.007

Note: The actual cumulative change corresponds to the average of the annual growth rates of the corresponding variable from 1995 to 2023 and the economic effect is the multiplication of the estimated coefficient by the actual cumulative change.

2023 would have been higher by around 0.1%, 0.1%, 0.1%, 0.2% and 0.6% on average per year if there had not been an increase of workers' financial assets, a rise of workers' financial liabilities, a deceleration of the financialisation of corporations, a decline in industrial employment and a surge in trade openness, respectively. The increase in workers' financial assets, the rise of workers' financial liabilities, the decline in industrial employment and the surge in trade openness were also the main triggers behind the erosion of trade union density in those countries of the EU with the highest levels of financialisation of workers during that time.

Concerning the fourth model, we verify that the main reasons behind the erosion of trade union density in all countries of the EU from 1995 to 2023 were the growth of workers' net financial assets, the deceleration of the financialisation of corporations, the decline in industrial employment and the surge in trade openness, which accounted for about 0.1%, 0.1%, 0.2% and 0.7% on average per year, respectively. During that time, the growth of workers' net financial assets and the surge in trade openness also

Table 9. Economic effects of trade union density for countries of the EU with the highest levels of financialisation of workers.

Model	Variable	Estimated coefficient	Actual cumulative change	Economic effect
Model 1	Workers' financial assets$_t$	–0.061	0.020	–0.001
	Financialisation of corporations$_t$	0.347	–0.001	0.0003
	ΔIndustrial employment$_t$	–1.855	–0.003	0.006
	Trade openness$_t$	–0.182	0.037	–0.007
Model 2	Workers' financial liabilities$_t$	–0.138	0.019	–0.003
	Financialisation of corporations$_t$	0.424	–0.001	0.0004
	ΔPublic employment$_t$	–1.344	0.0002	0.0003
	Trade openness$_t$	–0.215	0.037	–0.008
Model 3	Workers' financial assets$_t$	–0.044	0.020	–0.001
	Workers' financial liabilities$_t$	–0.076	0.019	–0.001
	Financialisation of corporations$_t$	0.403	–0.001	0.0004
	ΔIndustrial Employment$_t$	1.759	–0.003	–0.005
	Trade openness$_t$	–0.196	0.037	–0.007
Model 4	Workers' net financial assets$_t$	–0.044	0.021	–0.001
	Financialisation of corporations$_t$	0.295	–0.001	0.0003
	Trade openness$_t$	–0.183	0.037	–0.007

Note: The actual cumulative change corresponds to the average of the annual growth rates of the corresponding variable from 1995 to 2022 and the economic effect is the multiplication of the estimated coefficient by the actual cumulative change.

represented the main reasons behind the erosion of trade union density in those countries of the EU with the highest levels of financialisation of workers.

To sum up, we are able to conclude that the financialisation of workers negatively impacted trade union density in the EU. We also confirm that this negative impact was stronger in those countries of the EU with the highest levels of financialisation of workers. The financialisation of workers, the decline in industrial employment, and the surge in trade openness have been the main drivers behind the erosion of trade union density in EU countries from 1995 to 2023.

Conclusion

This article aimed to assess the effect of the financialisation of workers via both financial assets and financial liabilities on trade union density by employing a panel data econometric analysis focused on all countries of the EU from 1995 to 2023.

During that time, workers' financial assets and workers' financial liabilities underwent a profound expansion and trade union density underwent a strong decline. This

seems to sustain our theoretical argument that the erosion of trade union density in the EU in the last three decades cannot be detached from the financialisation of workers due to their higher alignment with the interests of capital (Carberry et al., 2024; Fakhfakh and FitzRoy, 2024; Smith et al., 2019) and more self-discipline and a risk-averse attitude in their workplaces (Gouzoulis, 2023, 2024).

Our models are based on aggregate equations according to which the trade union density depends on the financialisation of workers via both financial assets and financial liabilities and other control variables that have been theoretically and empirically identified in the literature as the long-term forces, structural adjustments and economic and social transformations behind the erosion of trade union density in the last five decades all over the world (financialisation of corporations, inflation rate, industrial employment, public employment and trade openness) in order to mitigate the problem of omitted relevant variables and to get more consistent and more efficient estimates (Brooks, 2019). Our estimates were produced by the FE2SLS estimator in order to take into consideration the unobservable heterogeneity across our countries of the EU over time (Greene, 2017) and to avoid the potential problems of endogeneity in our models (Wooldridge, 2025).

We found that the financialisation of workers negatively impacts trade union density in the countries of the EU (especially via financial assets, due to their being more widespread among workers than are financial liabilities), and more pronounced in those countries of the EU with the highest levels of financialisation of workers. We also confirmed that the financialisation of workers, the decline in industrial employment and the surge in trade openness have been the main factors behind the erosion of trade union density in the EU since the mid-1990s.

Our results suggest that the ongoing fall in workers' financial assets and in workers' financial liabilities (Figure 1) could produce a reversal in the decline of trade union density in EU in the coming years, which would be desirable to promote higher wages and better labour conditions, to recapture some lost labour rights, to reduce some exploitative labour practices and a fall in income inequality. Against this backdrop, public policies could promote a sustained fall of workers' financial wealth and workers' financial indebtedness. On the one hand, policy makers should restrain the retrenchment of the welfare states and make tax systems more favourable to labour because they have represented the main determinants of workers' financial wealth (Finlayson, 2009; Kus, 2012; Lapavitsas, 2013). On the other hand, policy makers should contain the climb in both financial assets and housing prices and the drop in real wages because they have represented the main determinants of workers' financial indebtedness (Barradas and Tomás, 2023). As argued by Alcobia and Barradas (2023, 2024), an increase in public housing, the introduction of rent controls, an increase in taxes on capital gains, on financial transactions and on stock market returns and/or other financial assets and the re-regulation and de-flexibilisation of labour relations could be necessary to achieve such goals.

Further research about this matter should focus on an empirical analysis of the effects of different workers' financial assets (e.g. currency, deposits, commercial paper, bonds, stocks, mutual funds, money market funds, exchange traded funds, hedge funds, private equity funds, venture capital funds, stock options, life insurance pensions, other insurance products, crypto-assets and financial derivatives) and different workers' financial

liabilities (e.g. mortgage credits, car loans, consumer credits, credit cards with high credit limits or without any credit limits, overdraft bank charges with small penalties or without any penalties and student loans) in order to identify the main sources of workers' financial wealth and workers' financial indebtedness that have been responsible for the erosion of trade union density in the EU in the last few decades.

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Notes

1. This panel unit root test was performed in the Stata software by employing the 'xtbunitroot' routine, which was developed by Chen et al. (2022).
2. Please note that information on trade union density for Bulgaria, Croatia, Cyprus, Estonia, France, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia and Slovenia is not available for all the years in our sample. As such, this information was obtained through our own calculations by relying on the technique of linear interpolation for the missing years. We used the general government final consumption expenditure as a percentage of GDP to measure public work, given the absence of a database with available data on public servants (Barradas, 2025c; Gouzoulis, 2024; Kollmeyer and Peters, 2019).
3. Our estimates were produced in the Stata software by employing the 'xtirvreg' and 'xtivreg2' routines.
4. Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Spain and Sweden are the countries of the EU with the highest levels of financialisation of workers. Effectively, the average of workers' financial assets and/or of workers' financial liabilities in these countries is higher than the corresponding average of approximately 150.2% of GDP and 48.4% of GDP for all countries of the EU, respectively (Table 3).
5. The financialisation of corporations retained its positive impact on trade union density in the countries of the EU if we used the financial payments (i.e. interest and distributed income)

paid by non-financial corporations as a percentage of the gross value added of the non-financial corporations instead of the net financial payments (i.e. the difference between the financial payments paid by non-financial corporations and financial receipts received by non-financial corporations) as a percentage of the gross value added of the non-financial corporations. Results are available upon request.

6. The positive influence of the inflation rate on trade union density in the countries of the EU did not change if we used the annual percentage growth rate of the consumer price index instead of the annual percentage growth rate of the GDP deflator. Results are available upon request.
7. The negative effect of trade openness on trade union density in the countries of the EU did not change if we used imports as a percentage of GDP (i.e. the import penetration rate) or the net inflows related to foreign direct investment as a percentage of GDP instead of the trade (i.e. exports and imports of goods and services) as a percentage of GDP. Results are available upon request.
8. Estimates of the jackknife analysis are available upon request.

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