Research in Higher Education (2025) 66:42
https://doi.org/10.1007/s11162-025-09858-2

Postsecondary Education Attendance and the Business Cycle in Europe. Is the Future of Young Adults Related to the Welfare Regime?

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Received: 22 November 2024 / Accepted: 11 August 2025

Abstract
This study explores the relationship between the economic cycle and the educational choices of young adults in a set of European countries. Using EU-SILC data from 2005 to 2021, this research focuses on individuals aged between 18 and 29 years who still live with their parents and have at least completed secondary education. The results show a general countercyclical trend in participation in postsecondary education (PSE), with a 1 percentage point (p.p.) increase in the male employment rate associated with a 0.2 p.p. decrease in the likelihood of attending PSE. This relationship varies by socioeconomic background: it is more pronounced among youth from wealthier families and weaker—and less statistically significant—among those from low-income backgrounds. The observed patterns also differ by welfare regime. In more generous systems—such as Scandinavian and corporatist regimes—trends are mainly acyclical. In Mediterranean regimes, the association is countercyclical but socially unequal, with wealthier youth more likely to attend education during downturns, whereas others face unemployment or inactivity. Liberal and postsocialist regimes have similar dynamics: economic stress tends to increase both educational participation and unemployment, especially among the most vulnerable groups.

Keywords Post-secondary education attendance · Business cycles · Welfare regimes · European Union · Youth education choice

JEL Classification I23 · J24 · E32 · H52

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Published online: 06 September 2025

Introduction

Postsecondary education (PSE) supports economic growth and productivity while offering personal benefits such as higher incomes, better career prospects, and greater adaptability to labor market shifts (Beuermann et al., 2024; Jorgenson & Fraumeni, 1992; Oppedisano, 2014; Vignoles et al., 2004). Although the advantages of education manifest throughout a person's life, the decision to continue studying is particularly influenced by actual economic conditions and cyclical dynamics. This relationship is potentially ambiguous: downturns may reduce family financial resources, discouraging PSE enrollment (Adamopoulou & Tanzi, 2017; Terriquez & Gurantz, 2014), but at the same time, worsening job market opportunities may encourage young people to invest in education (Becker, 2009).

The scientific literature seems to converge on a countercyclical relationship between PSE participation and the business cycle. Indeed, most research focused on this interaction highlights an inverse association between economic conditions and investment decisions in education (Johnson, 2013). The effects become more mixed when the socioeconomic background of students is considered, with scholars highlighting both countercyclical (Hazarika, 2002) and acyclical effects for students from wealthier family backgrounds (Card & Lemieux, 2001) and effects that are in some cases more procyclical for those from poorer ones (Christian, 2007).

The relationship between the economic cycle and educational choices also depends on the context in which these decisions are made, including the level of social protection that welfare structures provide for young adults. Systems that offer more extensive social protection can be better equipped to cushion times of economic strain (Figari et al., 2011; Hein et al., 2021), potentially reducing the pressure to adjust educational plans during downturns. In contrast, regimes that rely more on market mechanisms or family support may expose young adults more directly to labor market risk (Andreotti & Mingione, 2016; Hassel & Palier, 2023), thereby reinforcing the incentive to reconsider their options in times of economic stress. Moreover, welfare structures are not only intertwined with individual-level dynamics but also with embedded economic processes, with the potential to either stabilize or amplify cyclical fluctuations (Hein, 2019; Kohler & Stockhammer, 2022).

Our paper builds on this framework, aiming to explore the relationship between economic fluctuations and PSE attendance. While existing studies rely mainly on data from the United States, with limited cross-country comparisons, we propose an analysis that includes a set of European countries. These countries are classified according to different welfare regimes,[1] recognizing the role that different institutional settings can play in shaping access to higher education and exposure to labor market risks during periods of economic weakness. On the basis of these considerations, we formulate four guiding research questions: (i) Does the established countercyclical relationship between economic conditions and PSE attendance hold across the countries and years analyzed? (ii) How do the observed patterns vary across welfare regimes? (iii) To what extent is family socioeconomic background associated with this relationship? (iv) What alternative activities (employment, study, unemployment, or inactivity) do young adults pursue during economic downturns, and how do these activities vary across different welfare regimes and socioeconomic groups?

[1] The concept of welfare regimes refers to typologies of national social policy systems that differ in their degree of decommodification, stratification, and the role assigned to the family, the market, and the state in welfare provision (Esping-Andersen, 1990).

To do so, we use the EU-SILC dataset in its cross-sectional version, covering the years from 2005 to 2021. We focus on young adults aged 18–29 years who still live with their parents and have at least completed secondary education. This choice is dictated by the availability of data: information on the family context (e.g., parental income, education, and occupation) is only available for individuals living with their parents. These data, as reported in the literature (Kirchsteiger & Sebald, 2010), are essential for analyzing how young people from different socioeconomic groups adjust their educational choices in response to worsening economic conditions. We analyze nine European countries that represent distinct welfare regimes, as identified in the literature (Esping-Andersen, 1990; Ferrera, 1996; Whelan & Maître, 2010). For each welfare regime, we selected the two most populous countries, with the exception of the liberal regime, which in Europe is solely represented by Ireland. Specifically, the corporatist regime includes France (FR) and Belgium[2] (BE); the social–democratic regime includes Denmark (DK) and Finland[2] (FI); the liberal regime is represented by Ireland (IE); the Mediterranean regime includes Italy (IT) and Spain (ES); and the postsocialist regime includes Hungary (HU) and Lithuania (LT).

Following Ghignoni (2017), we choose the employment rate as a proxy of the economic cycle rather than the unemployment rate because unemployment statistics do not include discouraged workers, which could lead to overestimating the opportunity cost of studying and underestimating the severity of economic downturns. Furthermore, to avoid distortions related to the increase in female employment, which may stem more from cultural changes, the analysis focuses on male employment. To further explore the heterogeneity in the national territory, we employ data at the NUTS–1[3] macroregion level.

Our research contributes to the literature in three ways. First, we analyze the relationship between economic cyclicality and enrollment in PSE exploring a time frame that has rarely been investigated, which extends beyond the global financial crisis (2007–2009) and the sovereign debt crisis (2011–2013). Second, to the best of our knowledge, we are among the first to conduct a cross-country analysis that includes European data, whereas a substantial portion of the literature is based on analyses from the United States. Finally, acknowledging the interdependence between institutional settings, economic conditions, and individual choices, we compare different welfare systems to better understand how these configurations interact with the relationship between business cycles and PSE.

The findings reveal a countercyclical trend consisting of a decrease of 0.2 p.p. in the likelihood of attending PSE when the male employment rate increase by 1 p.p. This trend varies by socioeconomic background, with young adults from wealthier families showing a more pronounced countercyclical pattern, whereas for their less affluent peers the association appears weaker and less statistically significant. These relationships also differ across welfare regimes. In more generous systems, such as Scandinavian and corporatist systems, public support seems to offer young people greater stability, resulting in mainly acyclical trends. In Mediterranean regimes, the association is countercyclical but unequal: youth from

[2] Belgium and Finland are chosen respectively for the corporatist and Scandinavian regimes, respectively, despite Germany and Sweden being the most populous countries in their regimes. Indeed, for these two countries data on the area of residence are not available at the NUTS-1 level.

[3] From the French *Nomenclature des unités territoriales statistiques*, the NUTS identifies different levels of territorial breakdown of the European Union for statistical purposes. While the NUTS-0 level corresponds to the 28 member states, the NUTS-1 level identifies large regional entities (e.g., federal states in Germany, regions in Belgium, or supraregional economic areas in Italy). As the coefficient increases, a more detailed territorial subdivision corresponds.

higher-income families are more likely to choose education when labor market conditions worsen, whereas those from lower-income backgrounds experience rising unemployment and inactivity. In liberal regimes, economic downturns more strongly reduce job opportunities, and while some young people—mainly from wealthier families—respond by turning to education, others are more likely to fall into unemployment. Postsocialist regimes show a similar pattern to liberal regimes, with a mix of increased PSE participation and rising unemployment during times of economic stress.

The rest of the paper is organized as follows. Sect. "Theoretical framework and related literature" outlines the theoretical framework, providing an overview of the differences in welfare systems across Europe and examining the links between welfare systems and the business cycle, as well as between the business cycle and participation in PSE. Sect. "Data" describes the datasets used and provides some descriptive statistics. Sects. "Econometric strategy" and "Results" present, respectively, the econometric method adopted and the results, respectively. The last section concludes.

Theoretical Framework and Related Literature

The decision to invest in education is particularly sensitive to the timing of economic fluctuations (Beuermann et al., 2024). The direction of this relationship is not necessarily univocal: economic downturns may both discourage participation by tightening household budgets and encourage it by reducing the opportunity cost of education (Adamopoulou & Tanzi, 2017; Becker, 2009). This relationship is also intrinsically associated with the institutional configurations within which educational decisions are made. To frame our investigation, we adopt a comparative institutional perspective that considers how different regimes mediate the role of the economic cycle in individuals' choices. This framework recognizes that welfare structures—in education, labor markets, and social protection—can alter both the incentives and the resources to attend education. Moreover, these regimes also differ in their macroeconomic stabilizing capacity, potentially affecting the intensity and duration of downturns (Hein et al., 2021).

We structure the theoretical discussion into three parts. First, we describe the main features of European welfare regimes with a focus on education, employment, and income support policies. Second, we examine how these institutional arrangements respond to the business cycle. Third, we review the literature on the relationship between the business cycle and PSE attendance, highlighting both general patterns and variations by socioeconomic status.

Welfare Models in Europe: Education, Unemployment, and Labor Policy Characteristics

Welfare systems in Europe can be classified into different categories on the basis of their structure, historical legacy, and approach to redistribution and social protection. Depending on the type of system, the levels of expenditure allocated to pensions, healthcare, and policies for labor, family, and education vary. The welfare system in each country thus determines the protective guarantees offered to individuals. In accordance with the literature (e.g., Esping-Andersen, 1990; Whelan & Maître, 2010), European welfare systems are

typically divided into five types: social-democratic, corporatist, Mediterranean, liberal, and postsocialist. Focusing on the policies of interest—education, unemployment, and labor—the welfare regimes can be outlined as follows.

The social-democratic regime, characterized by strong redistribution and an emphasis on universalism, aims to ensure equity in access to education (Pechar & Andres, 2011). This system, which is typical in Scandinavian countries, not only provides free education for national students but also offers extensive support through universal student grants and state-supported loans. Higher education is a central element of the welfare strategy and is closely linked to support policies for unemployed individuals and active labor market policies (ALMPs). In these countries, the wide availability of unemployment benefits and training programs as part of ALMPs aims to ensure that education and skills development are accessible to all, thereby promoting equal opportunities regardless of market or family support.

Compared with social-democratic regimes, corporatist systems take a less radical approach to redistribution but still offer significant support. Public universities have relatively low fees, and the scholarship system is largely targeted at students with financial difficulties. While this approach ensures accessibility to education (Pechar & Andres, 2011), it tends to preserve social structures and places less emphasis on promoting equality than Scandinavian models. Unemployment policies in these countries, although structured and generous, tend to support primarily those already integrated into the labor market. ALMP spending is significant, channeling substantial investments into training programs and placement services.

In the Mediterranean model, state support is more fragmented, and public investment in education is lower than that in other regimes. PSE fees vary significantly, and scholarships are often limited and intended for students with greater economic difficulties. This results in greater dependence on family support and higher levels of inequality in educational performance, with a stronger correlation between students' socioeconomic background and their academic outcomes (West & Nikolai, 2013). The Mediterranean model is characterized by higher unemployment rates, and unemployment policies are generally less generous than are corporatist and social-democratic regimes. The emphasis on ALMPs varies across the selected countries; for example, Spain attempts to promote job creation, whereas Italy's labor market policies are less developed and focus more on training.

The liberal regime is characterized by an approach focused on the equality of opportunity rather than the equality of outcomes (Mosher, 2015). PSE fees are high, and there is a strong dependence on private student loans. While public support for education is significant, access remains limited by economic barriers (Czarnecki, 2014; West & Nikolai, 2013), with private expenses representing a potential burden (Sieg & Wang, 2018). In terms of unemployment, these countries offer a relatively modest support system, placing greater responsibility on individuals and a stronger reliance on the labor market. The role of the government is to nurture rather than replace the market.

Finally, in postsocialist countries, welfare regimes reflect a complex combination of old systems and market-oriented reforms (Czarnecki, 2014). Access to higher education varies considerably, with significant differences in tuition costs and the availability of scholarships and loans. Unemployment policies and ALMPs are generally less developed than in other regimes, with benefits limited in both scope and duration. This context creates a heterogeneous situation in which access to education and support during periods of economic

slowdowns is strongly influenced by individual economic circumstances, making it difficult to identify a single pattern of access.

Table 5 in the appendix provides details on education, unemployment, and labor characteristics for the selected countries (Eurydice, 2011—2020; MISSOC, 2024; OECD, 2005—2021; OECD, 2023). The description of different welfare models helps in understanding how each regime organizes access to education and structures labor market policies. As already mentioned, welfare systems are not only concerned with individual opportunities: they also interact with macroeconomic dynamics.

Welfare Systems and the Business Cycle

Social protection systems act as automatic stabilizers, cushioning the effects of adverse economic phases through mechanisms such as taxation, monetary transfers, and active labor market policies (Figari et al., 2011; Hein et al., 2021). The effectiveness of this function varies depending on institutional configuration, the degree of universalism, and public spending capacity.

In general, the most universalistic and redistributive regimes have proven more resilient during challenging economic periods owing to the breadth of social protection, strong social investment components, and robust activation instruments (Figari et al., 2011). These systems are better equipped to sustain consumption, reduce cyclical inequalities, and maintain investment in human capital, thereby helping to mitigate cyclical effects (Andreotti & Mingione, 2016). Corporatist systems show an intermediate profile. During economic slowdown, they offer a good level of protection and redistributive capacity, oriented toward groups already integrated into the labor market, thus providing some degree of economic stabilization, even if not reaching the inclusiveness and coverage of Scandinavian models (Busch, 2010; Dodig et al., 2016).

In contrast, liberal and Mediterranean regimes are more vulnerable to business fluctuations. The former relies on market logic and individual responsibility, with a more limited role for the state in social protection leading to greater employment volatility (Busch, 2010) and a weaker capacity to moderate cyclical inequalities (Josifidis et al., 2015). The latter are characterized by fragmented systems where families serve as informal safety nets (Andreotti & Mingione, 2016; Hassel & Palier, 2023). Limited public resources and a lack of universal redistributive instruments weaken the social protection function of the welfare system, exposing households to greater vulnerability during phases of economic stress (Andreotti & Mingione, 2016; Figari et al., 2011). In postsocialist regimes, the postcommunist transition has led to segmented institutional arrangements. The resulting fragility, stemming from welfare systems still in development, has reduced their protective capacity, leaving these countries more exposed to business shocks, particularly under budgetary constraints (Figari et al., 2011; Hassel & Palier, 2023).

Finally, welfare regimes themselves have undergone transformations in response to crises. Hassel and Palier (2023) noted that recent reforms have increasingly tied social policy to competitiveness strategies, especially in fiscally constrained contexts. However, this evolution has often led to rising inequalities and a weakening of the stabilizing function of welfare regimes (Busch, 2010).

Understanding how participation in PSE responds to the business cycle constitutes the last element of the theoretical framework. The following subsection reviews the literature that examines this relationship.

Business Cycle and PSE Participation

Research on how the business cycle influences higher education has focused primarily on U.S. data, with significantly fewer studies examining the European context. Even rarer are those that adopt a comparative perspective across multiple countries (a notable exception is the study by Heylen and Pozzi (2007), which analyzes data from 86 countries over the period 1970–2000).

Table 1 shows evidence of this. The selection of papers illustrates the breadth of the literature on the basis of U.S. data and highlights the general findings that report a countercyclical relationship between economic conditions and investment decisions in education. For example, Light (1995) finds that higher tuition and wages decrease the hazard rate of reenrollment, whereas higher unemployment rates increase it, suggesting a countercyclical enrollment pattern relative to economic conditions. Betts and McFarland (1995) noted that enrollment in community colleges in the USA is countercyclical and that a 1% increase in the unemployment rates of recent high school graduates and of all adults is associated with increases in full-time attendance of approximately 0.5% and 4%, respectively. Similarly, Pennington et al. (2002) indicate that enrollment in community colleges tends to increase during economic downturns, with higher unemployment rates positively correlated with higher enrollment rates. Still focusing on the United States, Dellas and Koubi (2003) report that school enrollment exhibits a countercyclical pattern, with increases in enrollment rates during economic downturns, supporting the theory that opportunity costs associated with schooling decrease during recessions, making education more attractive. Another analysis covering the years 1968–1988 in the United States suggested that individuals are more likely to pursue education when the labor market is weak, likely because of lower opportunity costs associated with schooling during such times (Dellas & Sakellaris, 2003). Again, a one-percentage-point increase in unemployment is associated with a 1.1%–3.3% increase in enrollment demand in the USA between 1990 and 2009 (Hillman & Orians, 2013). Ford et al. (2021) reported that the Great Recession did not exacerbate stratification in access to colleges. In contrast, during the COVID-19 shock, Bulman and Fairlie (2022) reported a sharp and atypical decline in enrollment at California community colleges, especially among minority and low-income students, revealing a more procyclical behavior.

Outside the United States, Fredriksson (1997) finds that fluctuations in the university wage premium significantly influence enrollment in higher education, with the decline in the wage premium during the 1970s and early 1980s in Sweden associated with a decrease in university enrollment. In the UK, higher local unemployment rates significantly increase the probability of young individuals, especially males with weaker academic qualifications, opting for further education over entering the labor market (Rice, 1999). In Spain, both Albert (2000) and Petrongolo and San Segundo (2002) highlight that higher unemployment rates encourage further education as an alternative to entering a challenging labor market. In contrast to conventional expectations, two South American studies reported no significant effect on school attendance rates during the crisis (Schady, 2004), with a significant decrease in real household incomes of 55%, and a decrease in the probability of attend-

Table 1 Overview of selected studies by publication year.
Source: Elaborations by the authors

Authors	Data and methods	Countries and years	Cyclicality measures	Relationship with business cycle	Socioeconomic family background heterogeneity
Edwards (1976)	Macro-Regression model	USA; 1960s and early 1970s	Unemployment rates	Nuanced countercyclical	No
Gustman and Steinmeier (1981)	Micro-Probit and multinomial logit model	USA; late 1970s	Unemployment rates and wage levels	Countercyclical	No
Polzin (1984)	Micro-Regression model	USA; 1963 to 1981	Local and national unemployment rates	Acyclical	No
Betts and McFarland (1995)	Macro-Fixed effects and random effects model	USA; 1969 to 1985	Unemployment rates	Countercyclical	No
Light (1995)	Micro-Semiparametric proportional hazard model	USA; late 1970s to early 1990s	Unemployment rates and wage levels	Countercyclical	No
Fredriksson (1997)	Macro-Time-series analysis	Sweden; 1967 to 1991	Unemployment, wages	Countercyclical	No
Rice (1999)	Micro-Logit model	UK; late 1980s to early 1990s	Unemployment rates	Countercyclical	No
Albert (2000)	Micro-Logit model	Spain; 1987 to 1998	Unemployment rates	Countercyclical	More countercyclical for the wealthier
Sakellaris and Spilimbergo (2000)	Macro-Regression model	USA; 1961 to 1992	GDP growth and unemployment rates	Mixed	No
Card and Lemieux (2001)	Micro-Normalized logistic regression model	USA; 1970s	Unemployment rates, wage trends	Mixed	More acyclical for the wealthier
McVicar and Rice (2001)	Macro-Time-series analysis	UK; 1954 to 1994	Youth unemployment rates	Countercyclical	No
Hazarika (2002)	Micro-Probit and multinomial logit	USA; 1975 to 1983	Regional unemployment rates	Countercyclical	Less countercyclical for the less wealthy
Petrongolo and San Segundo (2002)	Micro-Logit models	Spain; years 1987, 1991, 1996	Youth and adult employment rates	Countercyclical	More countercyclical for higher educated family
Pennington et al. (2002)	Macro-Correlational analysis	USA; 1965 to 1996	Unemployment rate	Countercyclical	No
Dellas and Koubi (2003)	Macro-Regression model	USA; 1950 to1990	GDP growth and unemployment rates	Countercyclical	No
Dellas and Sakellaris (2003)	Micro-Probit and multinomial logit model	USA; 1968 to 1988	Unemployment rates	Countercyclical	No
Giannelli & Monfradini (2003)	Micro-Multinomial probit model	Italy; late twentieth century	Unemployment rates and housing costs	Countercyclical	No

Table 1 (continued)

Authors	Data and methods	Countries and years	Cyclicality measures	Relationship with business cycle	Socioeconomic family background heterogeneity
Rucci (2003)	Micro-Logit and OLS model	Argentina; 1996 to 2002	Nominal exchange rate	Cyclical	Lower educated family are more severely affected
Schady (2004)	Micro-Probit model	Peru; 1988–92	Inflation rates	Acyclical	No
Di Pietro (2006)	Micro-Fixed effects model	Italy; 1987 to 1997	Regional unemployment rates	Countercyclical	No
Christian (2007)	Micro-Probit model estimation and OLS regression	USA; 1968 to 2000	Unemployment rates	Mixed	More acyclical for poorest
Heylen and Pozzi (2007)	Macro-GMM panel data technique	86 countries; 1970 to 2000	Inflation rates	Countercyclical	No
Kienzl et al. (2007)	Micro-Reduced form regression model	USA; 1990s	Local unemployment rates	Countercyclical	No
Flannery & O'Donoghue (2009)	Micro-Logit models	Ireland; 1994 to 2001	Employment & lifetime earnings	Countercyclical	No
Clark (2011)	Micro-Normalized logistic regression model	UK; 1975 to 2008	Regional youth unemployment rates	Countercyclical	No
Méndez and Sepúlveda (2012)	Micro-Probit and multinomial logit model	USA; 1975 to 1983	Unemployment rate	Countercyclical	No
Hillman and Orians (2013)	Macro-Fixed effects model	USA; 1990 to 2009	Local unemployment rates	Countercyclical	No
Johnson (2013)	Micro-Probit and multinomial logit model	USA; 1975 to 1983	Unemployment rates	Mixed	No
Long (2014)	Micro-Regression model	USA; 2007 to 2012	Unemployment rates, housing market	Nuanced countercyclical	No
Reiling and Strøm (2015)	Micro-Regression model and instrumental variable	Norway; 1981 to 2004	Regional unemployment rates	Countercyclical	No
Sievertsen (2016)	Micro-Linear probability model and OLS	Denmark; 1984 to 1992	Local unemployment rates	Countercyclical	No
Adamopoulou and Tanzi (2017)	Micro-Linear probability model	Italy; 2007 and 2011	Adult and youth unemployment	Countercyclical	Less countercyclical for poorest
Ghignoni (2017)	Micro-Bivariate probit model	Italy; 2007 and 2011	Employment rates	Mixed	Wealthier are less impacted
Ford et al. (2021)	Micro –Fixed effects model	USA, 2004–2012	Employment rate	Acyclical	Not worse for poorer states
Bulman and Fairlie (2022)	Micro-Descriptive stats	USA: 2019–2021	Pre/Post Covid	Cyclical	More procyclical for poorest

Table 1 (continued)

Authors	Data and methods	Countries and years	Cyclicality measures	Relationship with business cycle	Socioeconomic family background heterogeneity
Ulvestad and Skjelbred (2023)	Micro-event study design	Norway; 2007–2021	Field-specific unemployment rate	Countercyclical	No
Sadaba et al. (2024)	Micro-Structural time series	UK; 1995–2019	GDP series	Mixed	More procyclical for poorest

The 'cyclicality measures' column refers to the indicators used in the studies to capture the dynamics of the business cycle

ing school of 4.7%–12% for youths aged 12–17 years, suggesting that the economic crisis had a deleterious effect on school attendance (Rucci, 2003). In a broader context, Heylen and Pozzi (2007) provide evidence that crises can lead to increased investment in human capital across 86 countries from 1970 to 2000. Their findings suggest that during temporary crises, young individuals are more likely to prioritize education over immediate employment because of reduced returns from work. Flannery and O'Donoghue (2009) suggest that weaker labor markets for young people in Ireland may positively impact higher education participation. Reiling and Strøm (2015) conclude that upper secondary education completion rates are countercyclical, with higher regional unemployment rates leading to increased graduation rates. Ulvestad and Skjelbred (2023) show a countercyclical effect in Norway, with higher unemployment rates increasing master's level enrollment. Sadaba et al. (2024) find that the relationship between GDP trends and enrollment in the UK is mixed: countercyclical during the Great Recession but procyclical in other phases, depending on liquidity constraints and opportunity cost dynamics.

The effects become more mixed when considering the students' socioeconomic background (Ghignoni, 2017). For example, Christian (2007) finds that the propensity to enroll US students is countercyclical but becomes procyclical for individuals from households with lower incomes. On the same point, Di Pietro (2006) analyzes Italian students' choices and finds that, given the modest tuition fees of Italian universities, entering university is the most rational thing to do when faced with the absence of job opportunities. In Italy, Adamopoulou and Tanzi (2017) reported a decrease in dropout probability during the Great Recession, but this impact varied by gender and family background, with a higher dropout probability for students from disadvantaged families. In Denmark, Sievertsen (2016) finds that local unemployment in the short term leads to immediate school continuation after high school, whereas long-term effects influence those who would otherwise delay further education.

The literature review reveals some unexplored aspects. First, little is known about the relationship between the economic cycle and PSE participation outside of America and Europe–although this is beyond the scope of our study. Second, while the link between the business cycle and higher education has received increasing attention over time, comparative cross-country analyses remain limited. In light of this gap, our theoretical framework emphasizes the importance of examining how institutional configurations interact with both economic dynamics and educational decision-making. The three theoretical domains are indeed closely interwoven. Welfare systems contribute to shaping educational opportunities through the regulation of costs, the availability of financial support, and the structure of

labor market policies. Moreover, they are connected to the business cycle. These dynamics intersect in the way young adults respond to periods of economic slowdown, with responses varying across institutional contexts. What we might expect, in principle, is that in systems with broader social protection, young people and their families are better able to stick to their intended educational plans in response to less favorable labor market phases. In contrast, in regimes where public support is more limited, young adults' decisions may be more sensitive to changes in the economic scenario.

Data

We use the EU-SILC dataset in its cross-sectional version, with annual data from 2005 to 2021.[4] We choose to adopt the cross-sectional version of the EU-SILC dataset rather than the panel version for two main reasons. First, the short rotating panel design leads to a significant reduction in sample size, undermining the robustness of the estimates especially for subpopulations that are already numerically limited. Second, the panel component is subject to attrition bias, which may compromise the representativeness of disadvantaged or vulnerable groups, such as young people (Tortora, 2009) or poor households (Marcus & Telesky, 1983; Rothenbühler & Voorpostel, 2016), who are more likely to drop out of longitudinal surveys. We analyze nine European countries that represent different welfare regimes, as identified in the literature (Esping-Andersen, 1990; Ferrera, 1996; Whelan & Maître, 2010). To provide a comprehensive overview, we select two countries for each chosen welfare cluster, except for the liberal regime, which, in the European Union, is adopted only by Ireland. Specifically, the corporatist regime is represented by France (FR) and Belgium (BE); the Scandinavian regime is represented by Denmark (DK) and Finland (FI); the liberal regime is represented by Ireland (IE); the Mediterranean regime is represented by Italy (IT) and Spain (ES); and the postsocialist regime is represented by Hungary (HU) and Lithuania (LT). As already mentioned, Belgium and Finland are chosen instead of Germany and Sweden because data at the NUTS–1 level are not available for these two countries. This dataset provides detailed microdata on demographic and socioeconomic characteristics at both the individual and household levels, including a total of 2,471,886 observations.

The analysis focuses on individuals aged 18–29 who are still living with their parents and have at least completed secondary education. The decision to focus on young adults who still live with their parents may seem bold, but it is dictated by the dataset itself. Information about the family context, such as parental income, education, and occupation, is available only for those who continue to live at home. These data are essential for examining how young people change their choices according to the economic cycle and controlling for the socioeconomic backgrounds of their families, so we cannot disregard them. This information can only be obtained through this particular sample selection, since as the dataset is cross-sectional and not panel, we are not able to track the same individuals over time and retroactively associate parental data with those who have already left home. The alternative of including the entire population of 18–29-year-olds would result in the analysis of heterogeneous groups, as for some individuals, their personal income data would be considered, whereas for others, the family income—likely higher than that of a young person

[4] The analysis excludes data for 2005 for France, Italy, and Spain, as well as for 2006 for France and Italy, owing to the unavailability of information regarding education-related allowances for these periods.

just starting to live independently—would be used. Therefore, we focused exclusively on young adults who still live with their parents. As we find no correlation between economic cycles and the likelihood of living with parents, this choice does not seem to be a source of endogeneity with respect to this specific relationship.

However, this selection is not without its challenges, resulting in a partial sample of young people aged 18–29, with disparities between countries. Remaining in the parental household is not a neutral condition but rather the result of a complex interplay of individual factors (family income, employment, education), institutional elements (welfare structure, the labor market, access to education), and cultural norms (e.g., ideas about the "right" age to leave home), which combine differently across European countries (Aassve et al., 2013; Arundel & Ronald, 2016). In social-democratic countries such as Denmark and Finland, cohabitation with parents is less common—a pattern that is also evident in our sample (see Table 6 in the Appendix). In these contexts, early departure from the parental home is facilitated by a mix of public support for autonomy—housing benefits, student grants, and access to services—which reduce young people's economic dependence on their families (Aassve et al., 2013; Arundel & Lennartz, 2017). In contrast, in Mediterranean or postsocialist regimes, where public support is more limited, the family acts as a substitute safety net, and remaining in the parental home represents a widespread and functional strategy (Albertini & Kohli, 2013; Buchmann & Kriesi, 2011). These limitations must be taken into account when comparing regimes, as they may reflect not only substantial differences but also a diverse compositions of the sample.

On the basis of this sample selection, our dataset comprises 194,208 individuals (91,011 females and 103,197 males) without missing values. These young adults represent 61.2% of 18–29-year-olds with at least a high school diploma. This proportion increases over time, and it is consistent with Eurostat (2025a) data.

For our research purposes, we need to construct four key variables, one dependent variable and one independent variable, for each of the two estimated models. In the first model, the dependent variable is a dummy indicating whether an individual is a PSE student. A PSE student is defined as an individual who is on an educational track, holds at least a high school diploma, and is currently enrolled in a short tertiary program, a bachelor's degree (or equivalent), or a master's degree (or equivalent). In this model the key independent variable to capture the business cycle is the yearly male employment rate (15–64 years) at the NUTS–1 level. Following Ghignoni (2017), we decided to use it instead of the unemployment rate because discouraged workers are not counted in unemployment statistics, which could lead to distortions, especially in countries with a high number of discouraged workers. Consequently, the unemployment rate might overestimate the opportunity cost of studying and underestimate the severity of economic downturns. In addition, we use the male employment rate (for the age group 15–64) instead of the total employment rate to avoid distortions caused by the recent increase in female employment, which has significantly impacted the overall employment rate. Finally, considering the structural differences in employment across macroregions within the same country (Marelli, 2006), we rely on data from Eurostat's Labor Force Survey at the NUTS–1 level.

In the second model, the dependent variable is a categorical variable representing the status of young adults, where 1 indicates workers, 2 PSE students, 3 unemployed individuals, and 4 inactive individuals. To evaluate whether individuals' status is influenced by macroeconomic conditions, we construct a dummy variable indicating whether the year is

characterized by an economic downturn (*ED*). Specifically, we define a given year *t* as a crisis year for a NUTS–1 region if the male employment rate (ages 15–64) in that region and year falls below the 25th percentile of that region's own distribution of male employment rates over the period 2005–2021. The years identified as economic downturn years for each NUTS–1 region are shown in Table 7 in the Appendix.

As an initial exploration of the dataset, Fig. 1 shows the relationship between the PSE attendance rates of our sample population and the average 15–64 male employment rate (Eurostat, 2025b) by welfare regime. A countercyclical pattern can be identified when the two curves move in opposite directions—that is, when a decline in the male employment rate (grey line) coincides with an increase in average PSE participation (black line) and vice versa. Visually, this trend does not appear to be clearly present in the corporatist and Scandinavian regimes, whereas in the Mediterranean, especially in postsocialist and liberal schemes, such a relationship seems more apparent.

The distinctive features of the Scandinavian population included in our sample clearly emerge when examining the condition of young adults aged 18–29 living with their parents (Table 2). Regardless of the phase of the business cycle, the share of students is lower than that in other welfare regimes. Conversely, the incidence of inactive individuals is notably high, exceeding 20% and significantly surpassing the levels observed in other contexts. This pattern contrasts with the general characteristics of young adults in Scandinavian countries, who are generally characterized by high educational participation (Eurostat, 2025c) and low inactivity levels (Eurostat, 2025d). This discrepancy reflects the specific subpopulation considered in our analysis. While Scandinavian countries are included for the sake of completeness, these data suggest that the results should be interpreted with caution, particularly when compared with other regimes.

A preliminary descriptive analysis of youth conditions across different welfare regimes reveals diverging patterns. The corporatist system does not appear to exhibit significant

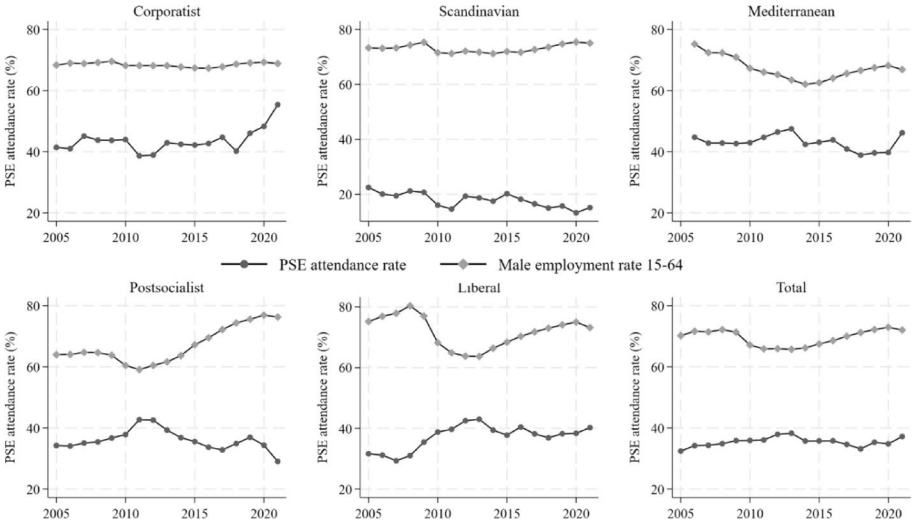

Fig. 1 Attendance rate and business cycle by welfare regime. *Notes*: The average attendance rate refers to our sample population while the average male employment rate 15–64 is provided by Eurostat statistics. Source: Elaborations by the authors on EU-SILC and Eurostat data

Table 2 Conditions of young individuals by welfare regime, economic downturn period and income tertiles. *Source*: Elaborations by the authors on EU-SILC data

	Non-ED periods				ED periods			
	Worker (%)	Student (%)	Unemployed (%)	Inactive (%)	Worker (%)	Student (%)	Unemployed (%)	Inactive (%)
Corporatist	33.8	47.6	9.5	9.1	31.4	47.0	10.7	10.9
Scandinavian	47.4	18.9	11.2	22.5	42.8	19.0	14.8	23.3
Mediterranean	36.3	43.6	12.7	7.5	30.1	44.2	16.4	9.3
Postsocialist	48.5	37.2	9.1	5.1	38.7	44.0	13.3	4.0
Liberal	45.3	39.4	10.3	4.9	29.8	45.5	20.7	4.0
Total	37.6	43.7	11.3	7.8	31.2	44.6	14.7	9.5

Economic downturn periods are identified with the definition of the dummy variable ED provided above

responsiveness to economic fluctuations. Similarly, in Scandinavian countries no major changes emerge, except for a slight increase in the share of unemployed youth, seemingly linked to a decline in the share of workers. The liberal and postsocialist regimes, by contrast, appear to follow a similar trajectory: the decrease in the share of employed youth is accompanied by an increase in both students and unemployed individuals, with more pronounced shifts observed in the liberal regime. Finally, the Mediterranean system seems to follow a distinct dynamic, where the decline in employment is mainly offset by an increase in unemployment and inactivity.

Econometric Strategy

The econometric strategy aims to identify the relationship between the business cycle and PSE attendance and to understand how the choices of young adults change according to the institutional setting in which they live. To do this, we employ two econometric models.

The first is a discrete choice (probit) model that identifies the relationship between the economic cycle and the probability of being on a PSE path. We estimate the following probit regression function:

$$Pr(Yit = 1|Xit) = \Phi\,(Z)\,, \tag{1}$$

where the dependent variable Y_{it}=1 if individual i is enrolled in a PSE course in year t and 0 otherwise. Since the model is nonlinear, we calculate average marginal effects following maximum likelihood estimations, employing clustered standard errors at the NUTS–1 level and household sample weights.

We assume that the probability of being enrolled in PSE follows this equation:

$$Z = \alpha + \beta E + \gamma R + \theta H + \vartheta P + \lambda, \tag{2}$$

where E is the 15–64 male employment rate at NUTS–1 level that identifies the business cycle (as defined in Sect. "Data"). Vector R includes dummies for the welfare regime to which the individuals belong, thus assuming regime fixed effects. To account for potential

confounding factors, we include several socioeconomic variables that may influence the likelihood of being a student in vectors *H* and *P*. Specifically, the vector *H* contains a set of household head[5] socioeconomic characteristics (i.e., logarithm of the total equivalized disposable income,[6] education level, occupational status, tenure status and origin of the head), whereas the vector *P* contains the student's personal information (gender, age, a dummy to signal if the individual has the citizenship of the country where he or she resides, and a dummy to signal if the individual receives education-related allowances[7]) to control for socioeconomic background and personal features.

To estimate possible differences across welfare systems, we develop a second model specification considering the interaction between the employment rate and the vector of the welfare regime dummies. This specification follows the equation below:

$$Z = \alpha + \beta E + \gamma R + \delta E \times R + \theta H + \vartheta P + \lambda, \tag{3}$$

where the vector *ER* allows us to capture regime-specific responsiveness to economic fluctuations, testing for potential institutional heterogeneity in shaping educational responses during the economic cycle. A complete description of all the variables in the models is provided in Table 8 in the Appendix.

To explain the change in youth preferences according to the business cycle and considering their economic conditions, we develop a second econometric model. This is a multinomial discrete choice model (multinomial logit) that identifies the role of the business cycle in individuals' conditions. We compare four possible conditions that an individual can assume: 1 if the individual is working, 2 if the individual is enrolled in a PSE course of study, 3 if unemployed, and 4 if inactive. We have the following multinomial logit regression function:

$$Pr(Y_{it} = j|X_{it}) = \frac{\exp(W_j)}{\sum_{k=1}^{J} \exp(W_k)}, \tag{4}$$

where the dependent variable $Y_{it}=j$ is based on the condition of individual *i*. The probability of being in a given condition is estimated through the following equation:

$$W_j = \alpha + \gamma T + \theta H + \vartheta P + \lambda. \tag{5}$$

Vector *T* includes dummies indicating the tertile of equivalent family income to which the young adult belongs. Tertiles are computed separately by NUTS–1 region and survey year,

[5] The household head is the survey respondent.

[6] We decided to look at total disposable income because, by including the benefits and allowances received by family members among the different sources of income, it can also capture the characteristics of different welfare schemes. Specifically, it is calculated by summing the previous year's gross personal income of all household members, which includes gross employee cash or near-cash income, company car benefits, pensions from private individual plans, income from property or land rentals, interest, dividends, profits from capital investments in unincorporated businesses, social benefits (such as unemployment and disability benefits), and allowances (including housing and education-related allowances, such as scholarships or grants). From this total, taxes and transfers are subtracted. In the equivalised version, family members are equated or made equivalent by weighting each by age, using the so-called modified OECD equivalence scale.

[7] Education allowances refer to grants, scholarships and other assistance for education that is received by students.

on the basis of the weighted distribution of household equivalent income. Specifically, individuals are assigned to the first tertile (*low income*) if their household income falls within the bottom third of the income distribution in their region and year; to the second tertile (*middle income*) if they fall in the middle third; and to the third tertile (*high income*) if they fall in the top third. As before, vectors *H* and *P* refer to household and personal characteristics. Here, we estimate the probability of being in a certain condition distinguishing across phases of the business cycle, as identified by the economic downturn dummy (*ED*) described in Sect. "Data". We compare these estimated probabilities for each condition and income tertile, assuming NUTS–1 fixed effects, sample weights and robust standard errors.[8] In this case, we calculate the predicted probabilities of the average individual for each outcome category, keeping all the independent variables in the model constant. In this way, the predicted probabilities are obtained without considering the specific contributions of the other independent variables. The results are reported for the full sample and separately by welfare regime.

Results

In this section, we present the results obtained from the econometric models shown in the previous section. For each model, although all the covariates shown in Table 8 are included, we emphasize only the role of the business cycle combined with the welfare system.

PSE Participation and the Business Cycle Across Welfare Regimes

Table 3 illustrates the estimated marginal effects of the economic cycle on the likelihood of being on a PSE path. In line with results already reported in the literature (see Table 1 for an overview), PSE attendance exhibits a countercyclical pattern, with participation probability rates decreasing by 0.20 percentage points (p.p.) when the male employment rate (15–64 years) at the NUTS–1 level (*MER*, from here on) increases by 1 p.p.

To explore how the relationship between the business cycle and PSE participation varies across welfare regimes, the second specification of the model includes an interaction term between the *MER* and welfare regime dummies. The coefficient on the *MER* refers to the liberal regime, which is the omitted category, while the interaction terms indicate how the effect differs in other regimes relative to the liberal one.

The findings confirm a general countercyclical pattern: in the liberal regime, a 1 p.p. increase in the *MER* is associated with a 0.7 p.p. decline in the probability of PSE participation. The coefficients on the interaction terms for the Scandinavian (+0.006) and Mediterranean (+0.005) regimes imply a reduced countercyclical pattern relative to the liberal regime. When considering the sum of the coefficients (i.e., the total marginal effect of *MER* within each regime), the resulting marginal effects are –0.1 p.p. and –0.2 p.p., respectively, with differences that may not be particularly meaningful from an economic standpoint. In the postsocialist regime, the interaction term (+0.003) indicates that the intensity of the

[8] The choice to use robust standard errors in this specification is motivated by the fact that we estimate separate regressions for each welfare regime, resulting in a limited number of clusters for some of them (namely, the Scandinavian, liberal, and postsocialist regimes). Therefore, following the recommendations of Cameron and Miller (2015), we rely on robust standard errors given the low number of clusters.

Table 3 Marginal effects of the MER from probit regression on PSE attendance.
Source: Own elaborations on EU-SILC data

Variables	Base model	Interaction model
MER	−0.002**	−0.007***
	(0.001)	(0.000)
MER *corporatist		0.007
		(0.005)
MER *Scandinavian		0.006**
		(0.003)
MER *Mediterranean		0.005***
		(0.001)
MER*post socialist		0.003***
		(0.000)
MER*liberal		–
NUTS–1 Fixed Effects	Yes	Yes
Welfare regime Fixed Effects	Yes	Yes
Mean of the dependent variable	0.422	0.422
Pseudo R-squared	0.192	0.193
Observations	194,208	194,208

Corporatist regimes include Belgium and France; Scandinavian regimes include Denmark and Finland; Mediterranean regimes include Italy and Spain; postsocialist regimes include Hungary and Lithuania; and liberal regimes include Ireland. The model specifications also include all the other covariates listed in Sect. "Econometric strategy". The full estimates are provided in Table A9 in the Appendix. SE in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

countercyclical trend is approximately half of that observed in the liberal regime, resulting in a marginal effect of −0.4 p.p. The corporatist regime is more difficult to interpret: the interaction coefficient is positive (+0.007) but not statistically significant; if it were, it would suggest an acyclical pattern. In sum, the total marginal effects confirm a countercyclical trend in most regimes, with decreasing intensity from the liberal to the postsocialist, Mediterranean, and Scandinavian regimes, and no statistically significant association in the corporatist regime.

Heterogeneity Analysis

To account for potential variation due to individual and socioeconomic characteristics, we perform a series of heterogeneity analyses that investigate how the observed patterns differ across subgroups.

Heterogeneity by Income Tertiles We begin by focusing on equivalized household income, one of the most commonly recognized factors in shaping educational outcomes during economic fluctuations (Kirchsteiger & Sebald, 2010). To this end, we estimate Eqs. (2) and (3) separately by income tertile. The tertile variable is constructed—as in Model 2—within each NUTS–1 region and survey year on the basis of the weighted distribution of household equivalized income.

The results reported in Table 4 reveal that the overall countercyclical pattern documented in Table 3 does not hold uniformly across the income distribution. The corporatist regime remains nonsignificant across all groups. In Mediterranean countries, the countercyclical

Table 4 Marginal effects of the MER from probit regression on PSE attendance, by income tertiles. *Source*: Own elaborations on EU-SILC data

Variables	BM–low income	Interaction–low income	BM–middle income	Interaction–middle income	BM–high income	Interaction–high income
MER	−0.001	−0.010***	−0.002*	−0.005***	−0.004***	−0.007***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
MER*corporatist		0.008		0.008		0.007
		(0.007)		(0.007)		(0.005)
MER*Scandinavian		−0.001		0.010***		0.006***
		(0.012)		(0.003)		(0.002)
MER*Mediterranean		0.011***		0.004***		0.004***
		(0.002)		(0.001)		(0.001)
MER*post socialist		0.006***		0.004***		0.002***
		(0.000)		(0.001)		(0.000)
MER*liberal		–		–		–
NUTS–1 Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Welfare regime Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mean of the dependent variable	0.420	0.420	0.413	0.413	0.431	0.431
Pseudo R-squared	0.166	0.166	0.194	0.194	0.232	0.233
Observations	48,415	48,415	64,864	64,864	80,929	80,929

Corporatist regimes include Belgium and France; Scandinavian regimes include Denmark and Finland; Mediterranean regimes include Italy and Spain; postsocialist regimes include Hungary and Lithuania; and liberal regimes include Ireland. The model specifications also include all the other covariates listed in Sect. "Econometric strategy". SE in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

relationship appears somewhat stronger among high-income youth, whereas it is more acyclical for individuals belonging to low and middle-income groups. In contrast, liberal and postsocialist regimes maintain a countercyclical association across all income groups, although the magnitude of the effect varies. In Scandinavian countries, three distinct dynamics emerge: the marginal effect is not significant for low-income individuals, turns procyclical for those in the middle-income group, and is weakly countercyclical only among the high-income group.[9]

Notably, these differences are unlikely to stem from variation in group composition: the mean of the dependent variable remains relatively stable across income tertiles and aligns closely with the overall mean reported in Table 3.

[9] We also test the robustness of our heterogeneity analysis using alternative definitions of socioeconomic background. We replicate the analysis using (i) national-level income thresholds instead of regional tertiles, and (ii) parental education instead of household income. In both cases, the association between the business cycle and PSE attendance remains consistent (see Tables S6 and S7). The rationale behind these tests is presented in Sect. "Robustness Checks", while the full set of results—including tables and detailed discussions—is reported in the Supplementary Material file.

Heterogeneity by Gender The overall relationship between economic conditions and PSE enrollment is similar for both genders (Table 10 in the Appendix).

Although women exhibit on average higher levels of participation in PSE than men do, when considering welfare differences, their educational decisions tend to be more responsive to changes in the business cycle. This greater responsiveness is observed across all welfare regimes, although with varying directions and magnitudes. The only exception is represented by Mediterranean countries, where men show a slightly stronger countercyclical relationship (–0.2 vs. –0.1 p.ps). In corporatist and Scandinavian regimes, females tend to shift slightly in a procyclical direction. In contrast, in liberal and postsocialist contexts, the association is more strongly countercyclical for women than for men, suggesting that education may serve as a more relevant fallback strategy for them during periods of economic distress.

Heterogeneity by Age Class Given the broad age range in our sample, we further subdivided it into two distinct age groups: 18–24 years and 25–29 years. These groups typically differ in terms of labor market status and educational stage, making it important to analyze them separately to determine whether their responses to business cycles differ.

Overall, the results are consistent with those of the baseline model, with only minor differences between age groups. For both the corporatist regime and for the Scandinavian regime, we find no association between the business cycle and the probability of attending PSE (Table 11 in the Appendix). In the Mediterranean regime, individuals aged 18–24 are slightly more influenced by economic cycles than are those aged 25–29-years. In postsocialist and liberal systems, responses are similar across age groups, indicating limited age-based heterogeneity.

What do Young Adults do During a Business Slowdown?

The response of young adults to economic fluctuations extends beyond the decision to attend PSE, encompassing a broader set of alternatives: entering the labor market, continuing education, being unemployed or inactive. These choices are not independent of the resources available in the family of origin, which shape the perceived opportunities and risks associated with each option. To account for these different factors, we extend our analysis via multinomial logit model described in Sect. "Econometric strategy". Specifically, through Eq. (5), we estimate how the probabilities of each condition (employment, education, unemployment, inactivity) vary according to household income across the business cycle, distinguishing results by welfare regime.

The differences between the expected probabilities in the presence and in the absence of a economic downturn are illustrated in Fig. 2.[10] The predicted probabilities at the mean are calculated by keeping all the independent variables constant. In this way, we can compare the predicted probabilities of the average individual for each outcome category as the business cycle changes.

[10] For completeness, the coefficient plot showing the predicted probabilities, both in the event and in the absence of a economic downturn, is presented in Figure S1 of the Supplementary Material file.

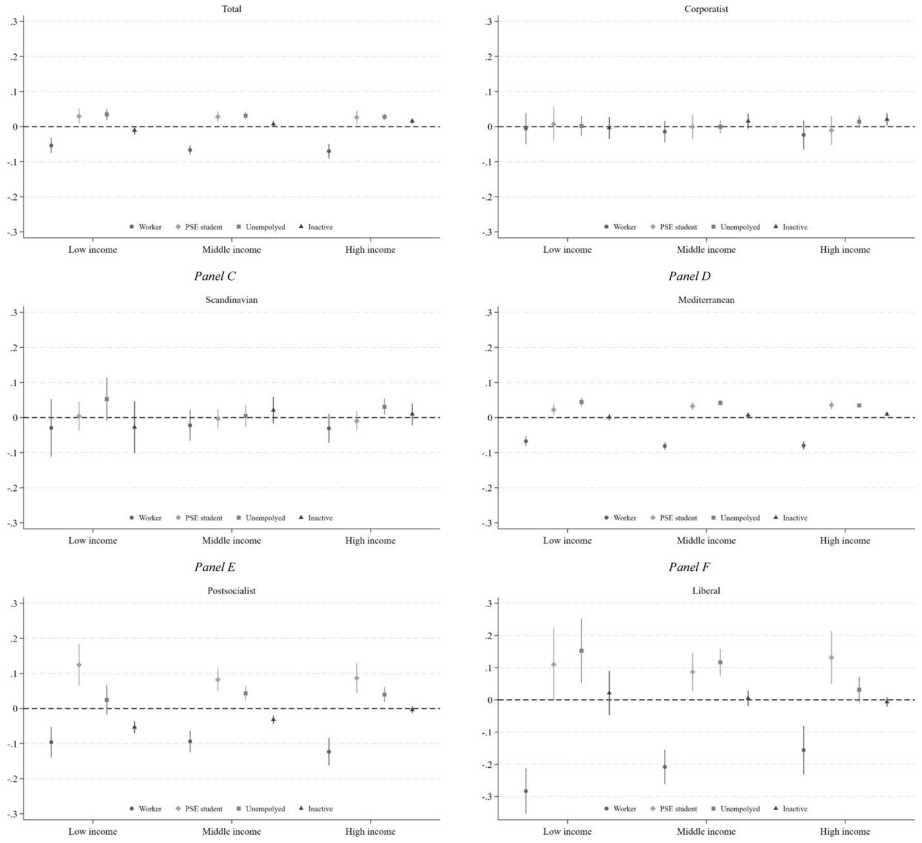

Fig. 2 Difference in estimated probabilities between ED and Non-ED periods, by condition, income tertile, and welfare regime. *Notes*: Corporatist regimes include Belgium and France; Scandinavian regimes include Denmark and Finland; Mediterranean regimes include Italy and Spain; postsocialist regimes include Hungary and Lithuania; and liberal regimes include Ireland.
Source: Authors' elaborations on EU-SILC data

Panel A reveals the general trends of youth conditions. Our findings indicate that young people's choice is essentially between working or not working during an economic slowdown. The predicted probability of being a worker shows the largest variations according to the business cycle, with a more pronounced change as income increases (−7.0 p.p. for the richest versus −5.4 p.p. for the poorest). Young people are then redistributed into alternative categories, but their choices vary according to income. While both high- and low-income youth experience an increase in PSE participation (+2.6 p.p. for high-income and +2.9 p.p. for low-income youth), the increase in attendance among low-income youth is accompanied by an even greater increase in unemployment (+3.5 p.p.), whereas the increase in unemployment is lower for high-income youth (+2.8 p.p.).

Differentiating by welfare regime, the results found for the whole sample do not hold for each scheme. In the corporatist model (*Panel B*), the reduced probability of being a worker is not significant for all the income groups. Only the probability of being inactive of the wealthier is sensitive to economic slowdowns, leading to a slight increase (+2.1 p.p.).

In the Scandinavian system (*Panel C*) PSE enrollment does not appear to be sensitive to changes in the business cycle. In this regime, economic downturns seem to be slightly associated with only the likelihood of being unemployed among individuals from high-income families (−3.1 p.p.).

The Mediterranean regime (*Panel D*) more closely mirrors the pattern observed in the whole sample. The probability of being a young worker decreases regardless of family income, although more markedly for young people from wealthy families (−8.1 p.p. for middle income and −8.0 p.p. for high income). For wealthier individuals the probability of studying (+3.5 p.p.) and the probability of being unemployed (+3.5 p.p.) increase. For young people in the first tertile, however, a worrying picture emerges: the decrease in the probability of being a worker (−6.7 p.p.) leads to an increase in the likelihood of being unemployed (+4.4 p.p.) greater than the increase in the probability of being a PSE student (+2.3 p.p.). No significant changes are evident in the probability of being inactive.

In the postsocialist welfare regime (*Panel E*) the reduction in the probability of being a worker for low-income youth (−9.5 p.p.) is completely absorbed by a substantial increase in the likelihood of being a PSE student (+12.4 p.p.), accompanied by an increase in the probability of being unemployed (+2.5 p.p.) and a reduction in the probability of being inactive (−5.3 p.p.). For high-income individuals, the relevant decrease in the probability of being a worker (−12.3 p.p.) is not completely compensated by the increase in the probability of being a PSE student (+8.6 points), and it is also accompanied by a contemporary increase in the probability of being unemployed (+4.0 p.p.).

In the liberal regime (*Panel F*), except for the probability of inactivity, the predicted probabilities for each condition undergo very marked variations when an economic slowdown occurs. This regime appears to be very sensitive to the business cycle. The most affected youth population is the low-income segment, which shows a significant reduction in the probability of being a worker (−28.4 p.p.). This would not necessarily be a bad aspect if these individuals took refuge in the PSE system, but this accommodates only a portion of these young people (+11.0 p.p.). The rest converge to increase the already high share of unemployed young people (+15.3 p.p.). While the same is true for middle incomes, a separate consideration must be made for high incomes. Although they follow the same trend, the reduction in the probability of being a worker (−15.6 p.p.) is absorbed mainly by the PSE system (+13.1 p.p.).

Importantly, the interpretation of the estimated coefficients differs depending on the model specification. When the dummy variable *ED* is used, the coefficients capture the discrete change in the probability of being in a given condition between periods of economic downturn and normal times. In contrast, when the continuous variable *MER* is used, the probit coefficients represent the marginal change in the probability of the outcome associated with a one p.p. increase in *MER*. This difference in interpretation helps explain why the estimated effects appear larger when using the multinomial model with the dummy. Therefore, differences in magnitudes across welfare regimes should be interpreted with caution when comparing results from the two approaches.

To further investigate potential within-regime heterogeneity, we extend the analysis by estimating Eq. (5) separately for each country (Figure S2). This approach allows us to assess whether countries within the same regime respond similarly to adverse economic conditions. For the Scandinavian, postsocialist, and liberal regimes, the patterns observed

at the regime level are generally confirmed at the country level. Notably, the liberal regime includes only Ireland in our sample, so no within-regime comparison is possible in that case.

Some differences emerge within the corporatist and Mediterranean regimes. In the corporatist scheme, while the overall pattern suggests an acyclical trend with limited responsiveness to the business cycle, Belgium shows a partly distinct behavior. Among young people from higher-income families, the observed pattern aligns with the general features of the regime, and the probabilities of being unemployed or inactive remain consistent across income groups. However, as income decreases, a progressive divergence emerges: youth from middle- and especially low-income families are less likely to be employed and more likely to attend PSE. In France, the pattern follows that of the regime as a whole.

In the Mediterranean regime, the main difference lies in the destinations of those who exit employment during periods of economic slowdown. In Spain, they tend to shift toward PSE, in line with findings from previous studies (Albert, 2000; Petrongolo & San Segundo, 2002). In Italy, however, economic slowdowns do not significantly increase PSE enrollment; instead, declines in youth employment are mostly absorbed by rising inactivity. This divergence between Spain and Italy is challenging to attribute to clearly identifiable institutional differences, given that both countries are similar in terms of access to, and the costs of, higher education (Table A1), as well as their high youth unemployment rates (Eurostat, 2025e). Moreover, while the Italian deviation from our theoretical expectations might appear unexpected, the literature on PSE and the business cycle does not offer a homogeneous picture for that country (Adamopoulou & Tanzi, 2017; Ghignoni, 2017).

The results are available in a supplementary file.

Robustness Checks

We conduct several robustness checks to verify the stability of our models under varying definitions and scenarios. In the main text, we briefly describe the rationale behind each test, while the description on how we construct these tests and the full set of results—including tables and detailed discussions—is reported in the Supplementary Material file.

As a first step, if the relationship between the business cycle and PSE attendance is robust, it should hold regardless of how we construct the variable identifying an economic slowdown. In the baseline specification, the business cycle is captured through the yearly male employment rate (15–64 years) at the NUTS–1 level. To test this, we replace the *MER* variable with the dummy variable (*ED*) used in Model 2.

Second, given the potential omitted variable bias in our analysis, we aim to account for regime-specific characteristics that may influence the relationship under investigation. To this end, we include additional covariates that capture how each country addresses three key policy domains: higher education, unemployment, and labor market policies.

To address the specific features of our sample and their implications for the Scandinavian regime already discussed throughout the text, we reestimate the Eqs. (2) and (3) on the subsample of 18–29-year-olds who have completed upper secondary education, without imposing the condition that they must still live with their parents. This relaxation implies that the variables capturing the socioeconomic background of the household head may no longer refer to the parents. In cases where the young adult lives independently, these characteristics refer to the individual themselves. As a result, we lose information on family background for part of the sample.

Additionally, we perform a robustness check by excluding the years affected by the COVID-19 pandemic (from 2020 onwards). Indeed, several elements suggest that the COVID-19 pandemic may have guided young people's educational decisions in distinctive ways, setting it apart from other periods of economic slowdown. As a health crisis first and foremost, it brought lockdowns, university closures, and logistical barriers that may have made PSE participation less feasible or attractive (Smalley, 2020). At the same time, remote learning introduced new flexibility that could have encouraged some to continue studying (Chen et al., 2022). The shift to online education likely deepened inequalities, particularly affecting students from disadvantaged backgrounds (Neuwirth et al., 2021). In addition, health concerns, family stress, and increased domestic responsibilities, all of which may have changed traditional decision-making patterns (Liu, 2021). Finally, the labor market impact, concentrated in sectors with high youth employment, may have reinforced the incentive to attend education, although not uniformly across groups (Montenovo et al., 2022).

We also test the robustness of our heterogeneity analysis by household income by replicating the Eqs. (2) and (3) via two alternatives background classification. First, instead of assigning individuals to income tertiles within each NUTS–1 region and survey year, we define income groups based on thresholds derived from the national equivalized income distribution. Second, parental education—identified as the highest educational qualification obtained by the head of household—is another variable capable of capturing significant dimensions of the family's socioeconomic background. The correlation between parental education and children's educational attainment is a well-established component in the literature on the intergenerational transmission of human capital (Black et al., 2005). This is also evident in our sample, where the average enrollment rate in PSE steadily increases with the education level of the household head.

Taken together, the robustness checks generally confirm the main findings of our model. The direction and statistical significance of the interaction remain stable across welfare systems, particularly within Mediterranean, liberal, and postsocialist regimes. Scandinavian and corporatist regimes continue to show more acyclical patterns, with some robustness checks indicating a slight shift toward a procyclical direction.

Discussion and Conclusions

We explored the relationship between the economic cycle and PSE attendance across nine European countries, categorized into four different welfare regimes. In line with the bulk of the literature, our findings confirm a countercyclical pattern in PSE participation, with the probability of attendance decreasing by 0.2 p.p. for each 1 p.p. increase in the male employment rate. This relationship also varies by socioeconomic background: young adults from wealthier families exhibit a more pronounced countercyclical pattern, whereas for their less affluent peers, the association seems weaker and less statistically significant.

The response of young adults to the economic cycle is not independent of interactions with welfare institutions, their educational setting or social protection systems. For this reason, rather than analyzing countries separately, we examine the relationship between economic conditions and PSE within a theoretical framework that considers how different welfare regimes interact with young adults' choices.

Across different systems, a key factor shaping young people's responses to economic fluctuations is the relative role of the state compared with the private market or the family in providing support. In regimes where the State assumes a more central function, such as Scandinavian and corporatist systems, young people appear to be less affected by economic downturns. The slight or statistically insignificant changes in PSE participation and employment status during periods of economic stress may suggest that these welfare systems—characterized by low tuition fees, substantial public investment in education, and strong labor protections—are more effective in shielding young people's choices from economic uncertainty.

In other welfare regimes, reliance on family support becomes a more important factor. The Mediterranean systems exemplify this model, where the family often functions as one of the main sources of stability. Our results confirm a countercyclical relationship between economic conditions and PSE participation, but this dynamic is more pronounced among youth from higher-income families. For these individuals, economic downturns may represent an opportunity to invest in further education. Among low-income youth, by contrast, the association weakens and tends to become acyclical, with an increase in unemployment and inactivity rates rather than participation in education. The familistic nature of this regime may thus reinforce preexisting inequalities during negative phases of the economic cycle, as young people's opportunities are more strongly tied to the family's economic condition.

In the liberal regime, characterized by an emphasis on market and individual solutions, the consequences of the business cycle can be felt more acutely. Economic shocks seem to quickly translate into reduced job opportunities and increased vulnerability, particularly among low-income young people. While some manage to enter the education system in response to market difficulties, many others do not, resulting in increased unemployment rates. In contrast, young people from wealthier backgrounds are more often able to leverage their financial stability to continue their studies, seeing it as an opportunity to improve their prospects during periods of economic uncertainty.

Postsocialist regimes offer a complex scenario in which the legacy of historical welfare structures interacts with more recent market-oriented reforms. The shift toward a more market-driven system reflects a broader structural transformation that may also be observed in the behaviors of young adults. Their responses resemble the countercyclical association between the business cycle and PSE participation found in liberal regimes—where economic downturns are accompanied by declining employment and parallel increases in both PSE attendance and unemployment.

Importantly, our analysis presents limitations that should be considered when interpreting the results. First, although our robustness checks include a set of additional covariates aimed at capturing institutional features, our empirical design does not allow for the identification of causal mechanisms. The interpretive hypotheses we propose are primarily grounded in the existing literature but are not tested from a causal perspective.

Second, the core elements analyzed in our study—welfare regimes, economic cycles, and educational decisions—are not independent of one another. As discussed in the theoretical framework, institutional configurations interact with both the business cycle and educational decision-making. These dynamics are jointly associated with how young people respond to periods of economic slowdown, and how these responses differ across institutional contexts. Furthermore, while we treat welfare regimes as analytically stable categories, policy responses within regimes are dynamic and vary in response to changing

conditions. For this reason, the regime typology is employed as an interpretive framework rather than a deterministic factor.

Third, our sample is limited to young adults living with their parents because of the need to access background information. Living with parents is not a neutral condition—it is shaped by an interplay of individual (e.g., family income, employment, education), institutional (e.g., welfare configuration, labor market, education system), and cultural factors (Aassve et al., 2013; Arundel & Ronald, 2016). In social-democratic countries such as Denmark and Finland, public support for youth autonomy—through housing subsidies, student grants, and access to services—makes early home–leaving more feasible (Aassve et al., 2013; Arundel & Lennartz, 2017). In contrast, in Mediterranean and postsocialist contexts, where public support is more limited, family coresidence often functions as a substitute safety net (Albertini & Kohli, 2013; Buchmann & Kriesi, 2011). As a result, the condition of living with parents is not exogenous to the welfare regime, which shapes opportunities for autonomy in different ways. Although we tested the model on the full sample of 18–29-year-olds and found our results to be robust, this selection affects the composition of the sample unevenly across countries and may therefore influence the interpretation of comparisons across regimes.

Fourth, we are unable to include Sweden and Germany—the most populous countries in those regimes—due to the unavailability of NUTS–1 level residence data. This limitation, while purely technical, may partially weaken the comparative strength of our analysis by reducing the representativeness of these two welfare regimes.

Despite these limitations, it is evident that the resilience and adaptability of young people do not depend solely on individual and family characteristics but are also linked to the institutional frameworks within which they operate. For this reason, we consider it appropriate to view welfare structures as a key lens for understanding young people's responses—particularly in relation to economic cycles—an aspect that has been too often overlooked in the literature.

Finally, while our analysis focuses on European countries, the theoretical framework we adopt could be extended to other countries or institutional settings. The United States, for example, is typically classified as a liberal welfare regime (Esping-Andersen, 1990; Whelan & Maître, 2010). Several studies on the U.S. have documented a countercyclical relationship between economic conditions and participation in PSE (e.g., Johnson, 2013), which is consistent with both our theoretical expectations and what we observe in Ireland. In other countries with commonly recognized welfare classifications, such as Canada, Australia, and New Zealand, the relationship between PSE and the business cycle has received much less attention, opening a space for further investigation. In other regions, established welfare regime typologies are less common or fall outside those considered in our study. Some scholars, for example, propose the recognition of a distinct productivist regime for East Asian countries (Kwon, 1997; Lee & Ku, 2007), which also offers opportunities for future research both to study the not explored PSE and business cycle dynamics and to apply the welfare regime approach to the specific institutional configurations present in that area.

Appendix

See Tables 5, 6, 7, 8, 9, 10 and 11.

Table 5 Country education, unemployment, and labor market characteristics (selected years).
Source: Elaborations by the authors on Eurydice, MISSOC and OECD data

Year	Regime	Country	% Paying fees	Most common tuition (€)	% Receiving grants	Most common grant (€)	Max unemployment benefit duration (days)	Unemployment benefit amount (% previous wage)	Eligibility criteria	ALMP (% GDP)
2005	Co	BE	88	708	23	1420	No limits	60	312 days (d) in the previous 18 months (m)	0.43
	Sc	DK	0	0	100	9100	1460	90	1 year (y) in the previous 3 y	0.77
	Sc	FI	0	0	100	7200	500	28	43 weeks (w) in the previous 28 m	0.70
	Co	FR	70	204	30	2000	1260	57	6 m in the previous 22 m	0.75
	PS	HU	42	1380	40	400	270	60	1 y in the previous 4 y	0.30
	Li	IE	76	6000	43	4600	390	22	39 w of contributions	0.53
	Me	IT	89	1434	10	3300	300	50	1 y in the previous 2 y	0.47
	PS	LT	48	2000	14	710	270	30	18 m in the previous 3 y	0.17
	Me	ES	70	1460	27	2500	730	70	1 y in the previous 6 y	0.57
2010	Co	BE	88	708	23	1420	No limits	60	312 d in the previous 18 m	0.47
	Sc	DK	0	0	100	9100	730	90	1 y in the previous 3 y	1.08
	Sc	FI	0	0	100	7200	500	26	34 w in the previous 28 m	0.84
	Co	FR	70	204	30	2000	1080	57	4 m in the previous 22 m	0.77
	PS	HU	42	1380	40	400	270	60	1 y in the previous 4 y	0.45
	Li	IE	76	6000	43	4600	312	23	104 w (39 w in the previous y)	0.76
	Me	IT	89	1434	10	3300	360	60	1 y in the previous 2 y	0.32
	PS	LT	48	2000	14	710	270	22	18 m in the previous 3 y	0.24
	Me	ES	70	1460	27	2500	730	70	1 y in the previous 6 y	0.66

Table 5 (continued)

Year	Regime	Country	% Paying fees	Most common tuition (€)	% Receiving grants	Most common grant (€)	Max unemployment benefit duration (days)	Unemployment benefit amount (% previous wage)	Eligibility criteria	ALMP (% GDP)
2015	Co	BE	88	879	21	1420	No limits	65	312 d in the previous 21 m	0.46
	Sc	DK	0	0	85	9100	730	90	80 d in the previous 3 y	0.96
	Sc	FI	0	0	66	7200	500	30	26 w in the previous 28 m	0.8
	Co	FR	65	213	35	2000	1080	57	4 m in the previous 28 m	0.64
	PS	HU	37	1550	45	400	90	60	1 y in the previous 3 y	0.3
	Li	IE	76	4200	47	4600	234	22	104 w (39 w in the previous y)	0.49
	Me	IT	88	1220	8	3300	730	75	13 w in the past 4 y (≥1 m in the past 12 m)	0.42
	PS	LT	51	2000	10	710	270	17	18 m in the previous 3 y	0.26
	Me	ES	72	1460	29	2500	730	70	1 y in the previous 6 y	0.43
2020	Co	BE	93	906	29	1420	No limits	65	312 d in the previous 21 m	0.63
	Sc	DK	0	0	86	9100	730	90	≥1 y of work	0.42
	Sc	FI	0	0	36	7200	400	28	26 w in the previous 28 m	0.6
	Co	FR	67	228	32	2000	1080	57	4 m in the previous 24 m	0.52
	PS	HU	32	1700	38	400	90	60	1 y in the previous 3 y	0.32
	Li	IE	74	3400	42	4600	270	21	104 w (39 w in the previous y)	1.24
	Me	IT	75	1480	14	3300	730	75	13 w in the past 4 y (≥1 m in the past 12 m)	0.43
	PS	LT	38	2000	18	710	270	23	12 m in the previous 30 m	0.32
	Me	ES	75	1240	28	2500	730	70	1 y in the previous 6 y	0.72

Table 6 Share of 18–29 individuals with at least a high school diploma who live with their parents by country and year.
Source: Elaborations by the authors on EU-SILC data

	BE (%)	DK (%)	ES (%)	FI (%)	FR (%)	HU (%)	IE (%)	IT (%)	LT (%)	Total (%)
2005	48.9	10.4	–	20.8	–	55.4	68.7	–	50.6	45.9
2006	51.7	9.8	68.9	19.4	–	61.2	65.8	–	56.2	58.4
2007	52.8	5.9	65.4	19.2	31.9	60.4	66.0	74.7	58.9	52.3
2008	53.4	7.9	66.0	20.1	35.8	62.3	63.6	74.6	58.0	54.1
2009	56.3	9.1	67.2	17.8	39.2	67.9	60.8	75.4	61.2	56.4
2010	55.2	10.9	63.6	18.0	39.9	71.2	62.0	76.2	58.0	55.6
2011	55.8	14.0	68.0	16.9	40.5	69.6	64.2	72.8	57.6	56.2
2012	56.7	14.7	67.8	17.5	40.6	70.4	59.2	74.3	59.7	56.5
2013	56.7	12.2	69.9	17.9	41.3	72.3	63.4	76.6	58.0	57.9
2014	58.8	12.4	71.5	18.8	43.9	72.3	62.6	77.9	57.9	59.6
2015	58.4	14.4	76.4	13.0	43.1	68.6	72.4	81.0	57.0	60.7
2016	59.6	12.0	76.3	18.3	45.3	66.9	74.3	76.9	51.5	60.1
2017	58.4	12.7	76.1	16.3	45.9	67.6	71.4	78.1	51.3	60.6
2018	59.6	13.4	74.8	16.3	47.0	74.6	75.3	76.9	46.6	60.8
2019	59.5	8.8	74.7	17.0	44.5	74.0	71.0	80.0	50.9	61.1
2020	61.6	7.6	73.7	17.3	54.3	73.2	71.8	78.4	37.6	63.7
2021	60.9	9.4	77.2	16.5	57.4	65.2	78.7	81.9	36.5	65.9
Total	56.8	10.9	70.9	17.7	43.1	67.4	67.7	77.1	54.3	58.5

Table 7 Economic downturn years according to NUTS–1 level.
Source: Elaborations by the authors on EU-SILC data

NUTS–1 code	Name	Economic downturn years	Number of economic downturn years
BE1	Brussels Capital Region	2012 2013 2014 2015 2016	5 out of 17
BE2	Flemish Region	2014 2015 2016 2017	4 out of 17
BE3	Walloon Region	2014 2015 2016 2017 2018	5 out of 17
DK0	Denmark	2011 2012 2013 2014 2015	5 out of 17
ES1	North West	2013 2014 2015 2016 2017	5out of 17
ES2	North East	2012 2013 2014 2015 2016	5 out of 17
ES3	Community of Madrid	2013 2014 2015 2016	4 out of 17
ES4	Centre	2012 2013 2014 2015 2016	5 out of 17
ES5	East	2012 2013 2014 2015 2016	5 out of 17
ES6	South	2012 2013 2014 2015 2016	5 out of 17
ES7	Canary Islands	2011 2012 2013 2014 2015	5 out of 17
FI1	Mainland Finland	2010 2011 2014 2015 2016	5 out of 17
FR1	Île-de-France	2007 2011 2012 2015 2016	5 out of 17
FRB	Centre-Val de Loire	2014 2015 2016	3 out of 17
FRC	Bourgogne-Franche-Comté	2014 2015 2016 2017	4 out of 17
FRD	Normandy	2011 2014 2015 2018	4 out of 17
FRE	Hauts-de-France	2010 2015 2017 2019	4 out of 17
FRF	Grand-Est	2013 2014 2016 2017	4 out of 17
FRG	Pays de la Loire	2009 2012 2014 2016 2017 2019	6 out of 17
FRH	Brittany	2008 2011 2012	3 out of 17
FRI	Nouvelle-Aquitaine	2012 2015 2016	3 out of 17
FRJ	Occitanie	2011 2013 2016 2017	4 out of 17
FRK	Auvergne-Rhône-Alpes	2010 2012 2015 2016	4 out of 17
FRL	Provence-Alpes-Côte d'Azur	2007 2008 2020	3 out of 17
FRM	Corsica	2008 2014 2016 2015 2016	5 out of 17
HU1	Central Hungary	2011 2012 2013	3 out of 17
HU2	Transdanubia	2010 2011 2012	3 out of 17
HU3	Great Plain and North	2010 2011 2012	3 out of 17
IE0	Ireland	2011 2012 2013 2014	4 out of 17
ITC	North West	2012 2013 2014 2015 2016	5 out of 17
ITH	North East	2014 2015 2016 2017	4 out of 17
ITI	Centre	2014 2015 2016 2017 2018	5 out of 17
ITF	South	2013 2014 2015 2016 2017	5 out of 17
ITG	Islands	2013 2014 2015 2016 2017	5 out of 17
LT0	Lithuania	2010 2011 2012 2013	4 out of 17

Table 8 Descriptive statistics of all variables in the model.
Source: Elaborations by the authors on EU-SILC data

Variables		Mean	Std. Dev.	Min	Max
University student		0.421854	0.493857	0	1
Economic downturn		0.478354	0.499533	0	1
Low income		0.274188	0.446105	0	1
Middle income		0.33487	0.471946	0	1
High income		0.390943	0.487963	0	1
Logarithm of equivalised household income		9.651275	0.857185	0	15,01244
Head with primary or less education		0.106044	0.307895	0	1
Head with lower secondary education		0.230272	0.421008	0	1
Head with upper secondary education		0.380008	0.48539	0	1
Head with a bachelor or more		0.283675	0.450782	0	1
Employed head		0.045816	0.209086	0	1
Self-employed head		0.565975	0.495629	0	1
Unemployed head		0.116337	0.32063	0	1
Student head		0.064999	0.246524	0	1
Retired head		0.00653	0.080544	0	1
Disabled head		0.099463	0.299283	0	1
Other		0.030503	0.171967	0	1
Home ownership		0.116193	0.320457	0	1
Rental house		0.808745	0.39329	0	1
Free accommodation		0.153571	0.360538	0	1
Foreign-born head		0.037684	0.190431	0	1
Citizenship		0.955718	0.205722	0	1
Male		0.523102	0.499467	0	1
Age		22.53822	3.145759	18	29
Education allowances		0.093542	0.291191	0	1
Brussels Capital Region	(BE1)	0.004641	0.067967	0	1
Flemish Region	(BE2)	0.038892	0.193337	0	1
Walloon Region	(BE3)	0.018734	0.135586	0	1
Denmark	(DK0)	0.005263	0.072357	0	1
North West	(ES1)	0.021382	0.144655	0	1
North East	(ES2)	0.024942	0.155949	0	1
Community of Madrid	(ES3)	0.035199	0.184283	0	1
Centre	(ES4)	0.027279	0.162895	0	1
East	(ES5)	0.06567	0.247705	0	1
South	(ES6)	0.050277	0.218516	0	1
Canary Islands	(ES7)	0.010862	0.103655	0	1
Mainland Finland	(FI1)	0.008733	0.093044	0	1
Île-de-France	(FR1)	0.054409	0.226824	0	1
Centre-Val de Loire	(FRB)	0.007679	0.087295	0	1
Bourgogne-Franche-Comté	(FRC)	0.009622	0.097619	0	1
Normandy	(FRD)	0.012218	0.109859	0	1
Hauts-de-France	(FRE)	0.026706	0.161223	0	1
Grand-Est	(FRF)	0.022463	0.148183	0	1
Pays de la Loire	(FRG)	0.01452	0.119621	0	1
Brittany	(FRH)	0.012684	0.111909	0	1
Nouvelle-Aquitaine	(FRI)	0.020264	0.140903	0	1
Occitanie	(FRJ)	0.018018	0.133018	0	1

Table 8 (continued)

Variables		Mean	Std. Dev.	Min	Max
Auvergne-Rhône-Alpes	(FRK)	0.026281	0.159969	0	1
Provence-Alpes-Côte d'Azur	(FRL)	0.017121	0.129723	0	1
Corsica	(FRM)	0.000733	0,027065	0	1
Central Hungary	(HU1)	0.018786	0,135769	0	1
Transdanubia	(HU2)	0.020796	0,142703	0	1
Great Plain and North	(HU3)	0.027653	0,163977	0	1
Ireland	(IE0)	0.035214	0,18432	0	1
North West	(ITC)	0.076199	0,265318	0	1
North East	(ITH)	0.091764	0,288694	0	1
Centre	(ITI)	0.036902	0,188522	0	1
South	(ITF)	0.057643	0,233067	0	1
Islands	(ITG)	0.062886	0,242758	0	1
Lithuania	(LT0)	0.017564	0,131361	0	1

Table 9 Marginal effects of the MER from probit regression on PSE attendance: full estimates. *Source*: Elaborations by the authors on EU-SILC data

Variables	Whole sample	Interaction
Male	−0.068***	−0.068***
	(0.006)	(0.006)
Rental house	−0.085***	−0.085***
	(0.006)	(0.006)
Free accommodation	−0.020**	−0.020**
	(0.009)	(0.009)
Age	−0.049***	−0.049***
	(0.002)	(0.002)
Head with lower secondary education	0.016**	0.017**
	(0.007)	(0.007)
Head with upper secondary education	0.109***	0.110***
	(0.012)	(0.012)
Head with a bachelor or more	0.255***	0.256***
	(0.013)	(0.013)
Foreign-born head	0.030	0.030
	(0.022)	(0.022)
Citizenship	0.174***	0.173***
	(0.029)	(0.029)
Self-employed head	−0.000	−0.001
	(0.010)	(0.010)
Unemployed head	−0.064***	−0.064***
	(0.011)	(0.011)
Student head	−0.029	−0.029
	(0.024)	(0.024)
Retired head	0.004	0.003
	(0.010)	(0.010)
Disabled head	−0.046***	−0.046***
	(0.014)	(0.015)
Other	−0.036***	−0.036***
	(0.007)	(0.007)
Education allowances	0.322***	0.322***
	(0.012)	(0.012)
Logarithm of equivalised household income	−0.001	−0.000
	(0.004)	(0.004)
MER	−0.002**	−0.007***
	(0.001)	(0.000)
MER*corporatist		0.007
		(0.005)
MER*Scandinavian		0.006**
		(0.003)
MER*Mediterranean		0.005***
		(0.001)
MER*post socialist		0.003***
		(0.000)
MER*liberal		–
NUTS–1 fixed effects	Yes	Yes
Welfare regime fixed effects	Yes	Yes

Table 9 (continued)

Variables	Whole sample	Interaction
Mean of the dependent variable	0.422	0.422
Pseudo R-squared	0.192	0.193
Observations	194,208	194,208

Corporatist regimes include Belgium and France; Scandinavian regimes include Denmark and Finland; Mediterranean regimes include Italy and Spain; postsocialist regimes include Hungary and Lithuania; and liberal regimes include Ireland. SE in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 10 Marginal effects of the MER from probit regression on PSE attendance, by gender.
Source: Own elaborations on EU-SILC data

Variables	BM-females	Interaction—females	BM-males	Interaction-males
MER	−0.002*	−0.009***	−0.002***	−0.005***
	(0.001)	(0.000)	(0.001)	(0.000)
MER*corporatist		0.011*		0.005
		(0.006)		(0.005)
MER*Scandinavian		0.010**		0.002
		(0.005)		(0.002)
MER*Mediterranean		0.008***		0.003***
		(0.002)		(0.001)
MER*post socialist		0.003***		0.003***
		(0.001)		(0.001)
MER*liberal		–		–
NUTS–1 fixed effects	Yes	Yes	Yes	Yes
Welfare regime fixed effects	Yes	Yes	Yes	Yes
Mean of the dependent variable	0.477	0.477	0.372	0.372
Pseudo R-squared	0.187	0.187	0.188	0.188
Observations	91,011	91,011	103,197	103,197

Corporatist regimes include Belgium and France; Scandinavian regimes include Denmark and Finland; Mediterranean regimes include Italy and Spain; postsocialist regimes include Hungary and Lithuania; and liberal regimes include Ireland. The model specifications also include all the other covariates listed in Sect. "Econometric strategy". SE in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 11 Marginal effects of the MER from probit regression on PSE attendance, by age group. *Source*: Own elaborations on EU-SILC data

Variables	BM-18–24	Interaction-18–24	BM-25–29	Interaction-25–29
MER	−0.003**	−0.007***	−0.001	−0.007***
	(0.001)	(0.000)	(0.001)	(0.000)
MER*corporatist		0.007		0.007
		(0.005)		(0.007)
MER*Scandinavian		0.006		−0.002
		(0.005)		(0.006)
MER*Mediterranean		0.005***		0.006***
		(0.002)		(0.001)
MER*post socialist		0.003***		0.003***
		(0.000)		(0.000)
MER*liberal		–		–
NUTS–1 Fixed Effects	Yes	Yes	Yes	Yes
Welfare regime Fixed Effects	Yes	Yes	Yes	Yes
Mean of the dependent variable	0.515	0.515	0.183	0.183
Pseudo R-squared	0.146	0.146	0.107	0.108
Observations	142,929	142,929	51,279	51,279

Corporatist regimes include Belgium and France; Scandinavian regimes include Denmark and Finland; Mediterranean regimes include Italy and Spain; postsocialist regimes include Hungary and Lithuania; and liberal regimes include Ireland. The model specifications also include all the other covariates listed in Sect. "Econometric strategy". SE in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s11162-025-09858-2) contains supplementary material, which is available to authorized users.

Data Availability The data utilized in this analysis are not publicly accessible; however, requests for access can be made to the data owner, Eurostat.

Declarations

Conflict of interest The authors report that there are no competing interests to declare. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Generative AI and AI-Assisted Technologies in the Writing Process During the preparation of this work, the authors used ChatGPT in the writing process to improve the readability and language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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