



## Economic Crises, Social Protection Policies and the Transformation of Family Structures in the European Union: Panel Data Analysis

### *Avrupa Birliğinde Ekonomik Krizler, Sosyal Koruma Politikaları ve Aile Yapılarının Dönüşümü: Panel Veri Analizi*

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#### Abstract

This study investigates the impact of economic crises on the transformation of family structures in European Union (EU) countries through a panel data analysis approach. The divorce rate is used as the dependent variable, while the unemployment rate, real GDP per capita, and social protection expenditures are treated as independent variables. The analysis is based on a balanced panel dataset covering 27 EU member states over the period 1995 to 2022. The study applies several econometric tests including Pesaran CD and Breusch-Pagan LM cross-sectional dependence, Pesaran & Yamagata slope homogeneity, Pesaran CIPS panel unit root tests, Westerlund panel cointegration analysis, and long-run estimations (FMOLS, DOLS, OLS). Additionally, Dumitrescu & Hurlin heterogeneous panel Granger causality test is conducted to examine the directionality of relationships between variables. Empirical findings suggest that an increase in unemployment significantly raises divorce rates, while higher social protection spending reduces them. Real GDP per capita is also found to have a statistically significant and positive effect on divorce. The causality results reveal both bidirectional and unidirectional relationships across variables. These outcomes imply that economic instability tends to weaken family cohesion, whereas well-designed social welfare policies act as a stabilizing force. Accordingly, the study emphasizes the critical importance of strengthening social protection systems and adopting employment-centered macroeconomic strategies to ensure the sustainability of family structures within the EU.

**Keywords:** Family structure, economic crisis, social protection, panel data analysis, European Union

**Paper Type:** Research

#### Öz

Bu araştırma, Avrupa Birliği (AB) ülkelerinde yaşanan ekonomik krizlerin aile yapılarındaki dönüşüm üzerindeki etkisini panel veri analizi yöntemiyle incelemektedir. Çalışmada bağımlı değişken olarak boşanma oranı kullanılırken; işsizlik oranı, kişi başına reel gayrisafi yurt içi hasıla (GSYH) ve sosyal koruma harcamaları bağımsız değişkenler olarak belirlenmiştir. 1995–2022 dönemine ait 27 AB ülkesini kapsayan panel veri seti kullanılarak Pesaran CD ve Breusch-Pagan LM yatay kesit bağımlılığı testleri, Pesaran ve Yamagata katsayı homojenliği testi, Pesaran CIPS panel birim kök testleri, Westerlund panel eşbütünlük analizi ve uzun dönem katsayı tahminleri (FMOLS, DOLS, OLS) gerçekleştirilmiştir. Ayrıca nedensellik ilişkilerini test etmek amacıyla Dumitrescu ve Hurlin tarafından geliştirilen heterojen panel Granger nedensellik testi uygulanmıştır. Ampirik bulgular, işsizlik oranında gerçekleşen artışın boşanma oranlarını yükselttiğini; sosyal koruma harcamalarının ise boşanma oranlarını azalttığını göstermektedir. Kişi başına düşen reel GSYH'nin artışı da boşanma oranları üzerinde istatistiksel olarak anlamlı ve pozitif bir etkiye sahiptir. Nedensellik analizinden elde edilen sonuçlar, değişkenler arasında hem çift yönlü hem de tek yönlü ilişkilerin mevcut olduğunu ortaya koymaktadır. Bu çıktılar, ekonomik belirsizliklerin aile birliğini zayıflatıldığını, iyi tasarlanmış sosyal refah harcamalarının ise koruyucu bir etkisi olduğunu göstermektedir. Bulgular doğrultusunda, sosyal koruma mekanizmalarının güçlendirilmesi ve istihdam

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odaklı makroekonomik politikaların hayata geçirilmesinin aile yapılarının sürdürülebilirliği açısından kritik öneme sahip olduğu saptanmıştır.

**Anahtar Kelimeler:** Aile yapısı, ekonomik kriz, sosyal koruma, panel veri analizi, Avrupa Birliği

**Makale Türü:** Araştırma

## Introduction

In recent years, the transformation of family structures has become a central theme in sociological, economic, and demographic research, driven by fundamental changes in global economic systems, labor markets, and institutional structures. Throughout much of the developed world, particularly in the European Union (EU), traditional family forms have undergone significant transformations. These changes, manifested in rising divorce rates, falling fertility rates, delayed marriage, and the proliferation of non-traditional partnerships, stem not only from individual preferences but also from structural pressures created by the changing macroeconomic environment. One of the most critical factors driving this transformation is the recurring economic crises that have profoundly impacted households and various national social protection systems.

Following the 2008 global economic crisis, EU member states have pursued different paths toward economic recovery, labor market stability, and welfare state restructuring. Southern and Eastern European countries, in particular, have faced prolonged economic stagnation marked by high unemployment rates, stagnant real wages, and declining social spending. These macroeconomic disruptions have reshaped family structures, increasing pressure on families, undermining the stability of marital relationships, and shifting intergenerational expectations. Rising unemployment, precarious employment, and reduced public investment in social services have deepened the uncertainty affecting individuals' decisions about marriage, childbearing, and maintaining family unity.

The transformation in family structure cannot be considered an isolated phenomenon; rather, it is closely linked to broader global mechanisms such as economic globalization, the spread of neoliberal policies, and the demographic transition. With the increasing mobility of capital and labor, governments have frequently been pressured to restructure welfare systems for efficiency and fiscal sustainability, which can undermine social cohesion. These policy choices are observed to affect the distribution of resources within households and the resilience of families to economic shocks. Furthermore, the feminization of labor markets and the dual-earner household model have redefined gender roles within the family, transforming expectations regarding care work, emotional support, and domestic responsibilities.

In this context, social protection expenditures serve as a vital institutional buffer that moderates the social impact of economic disruptions. The role of social protection—including unemployment benefits, family allowances, housing assistance, and health care subsidies—is crucial in alleviating the economic insecurity that might otherwise intensify the fragility of family units. However, the generosity and coverage of social protection systems vary considerably across EU member states, reflecting divergent welfare regimes and political economies. Understanding how these differences interact with macroeconomic conditions to shape family outcomes such as divorce rates is essential for informing both social policy and academic debates.

Although a substantial body of literature has investigated the determinants of family instability, much of the existing research has either focused on micro-level factors such as individual attitudes and relationship dynamics or treated macroeconomic conditions as exogenous shocks. Fewer studies have systematically examined the interplay between economic crises, labor market outcomes, and institutional responses within a panel framework that accounts for cross-country variation and temporal dynamics. Furthermore, while unemployment is commonly

identified as a proximate cause of marital stress and dissolution, the mediating role of social protection expenditures in this relationship has not received adequate empirical attention, particularly in a comparative European context.

This study aims to fill this gap by investigating the effects of economic crises on divorce rates across 27 EU member states over the period 2000–2022, with a particular focus on the role of social protection expenditures. Drawing on recent developments in panel econometrics, the analysis evaluates the presence of long-run equilibrium relationships among divorce rates, unemployment, real GDP per capita, and public social protection spending. In addition, the study employs causality tests to explore the directionality of relationships and their heterogeneity across countries. By moving beyond a narrow focus on labor market variables, this research highlights the institutional dimensions of family resilience and contributes to an emerging literature that situates family outcomes within broader political-economic frameworks.

Ultimately, this research is motivated by both analytical and policy-relevant concerns. At the analytical level, it seeks to bridge the gap between macro-level economic analysis and sociological interpretations of family change. At the policy level, it provides insights for EU policymakers seeking to design welfare strategies that support social cohesion in times of economic uncertainty. In doing so, the study underscores that the stability and well-being of families cannot be fully understood without reference to the institutional mechanisms that mediate the effects of global economic forces on household life. To theoretically explain the effects of macroeconomic fluctuations on family structures—especially divorce dynamics—this study integrates multiple complementary theoretical frameworks. The study's core conceptual underpinnings are drawn from Esping-Andersen's (1990, p. 21; 1999, p. 34) welfare regime theory, which posits that institutional structures across countries shape how families respond to economic pressures. In this context, the level of social protection provided by the state can either alleviate or exacerbate the socioeconomic vulnerabilities that lead to marital dissolution.

In parallel, Becker's (1991, pp. 325–330) family economic theory is used to analyze household decision-making processes at the micro level. According to this theory, marriage and divorce can be modeled as rational choices based on cost-benefit assessments. During economic crises, rising unemployment, declining household incomes, and changing gender roles can transform these perceived costs and benefits, affecting the stability of marital unions. Furthermore, Bronfenbrenner's (1979, pp. 3–16) ecological systems theory enables a multi-level understanding of how individuals and families are embedded in intertwined social systems—from the microsystem encompassing the immediate environment to the macrosystem comprised of economic policies and cultural norms. This perspective allows for a dynamic interpretation of how systemic economic shocks and policy responses indirectly shape family behavior over time.

Finally, by drawing on Giddens's (1984, pp. 2–5; pp. 281–293) theory of structuration, the bidirectional relationship between social structures and the individual agent is highlighted. Family behaviors, such as divorce, are not merely passive responses to structural constraints; they are shaped through the reflective actions of individuals within existing institutional and cultural contexts. This is particularly important in the context of the European Union, as changing social norms, legal frameworks, and welfare policies in the post-crisis period are leading to a redefinition of family relations. Taken together, these theoretical approaches provide a holistic examination of how macro-level economic and institutional factors interact with individual behavior in explaining the transformation of family structure in European Union member states. This analytical framework, by accounting for both structural heterogeneity and behavioral agency, offers a fundamental contribution to understanding complex social phenomena such as divorce in the face of economic uncertainty.

## **1. Theoretical Framework**

Family sociology and institutional economics provide the conceptual foundation for understanding how economic instability interacts with demographic behavior and familial

institutions. Classical family theories, such as Goode's (1963, p. 39) modernization theory, argue that economic development disrupts traditional family models, leading to more individualistic and less durable family ties. More recent formulations consider the family a site of both emotional and economic exchange, where market forces and institutional constraints shape intimate relationships (Becker, 1991, pp. 37–39; Cherlin, 2004, pp. 848–850).

The theoretical linkage between economic crises and family dissolution is frequently modeled through the family stress model (Conger & Elder, 1994, pp. 3–5), which posits that economic hardship leads to emotional strain, conflict, and ultimately relationship dissolution. This micro-level behavioral theory is supported by macro-level studies that show rising unemployment and falling incomes correlate with increased divorce rates in various European contexts (Furtado et al., 2013, p. 182; González-Val & Marcén, 2017, pp. 893–896).

In contrast, the welfare regime theory (Esping-Andersen, 1990, pp. 21–23) introduces the idea that institutional configurations mediate the impact of economic shocks on family outcomes. According to this view, welfare states—particularly those classified under the “social democratic” and “conservative-corporatist” regimes—provide resources and protections that reduce household vulnerability during crises. Social protection expenditures, such as unemployment benefits, child support, and housing assistance, may function as stabilizers that lower the risk of family fragmentation (Bradshaw & Finch, 2002, p. 9).

Understanding the relationship between economic crises, state welfare mechanisms, and family structures necessitates a multidimensional theoretical approach. The interplay between macroeconomic instability and family life cannot be adequately explained by economic indicators alone; rather, it requires the integration of sociological, institutional, and behavioral theories that account for both structural pressures and individual-level decision-making under uncertainty. In this study, divorce rates are employed as a proxy for family transformation in the European Union (EU), conceptualized within a framework that draws on theories of family change, economic behavior, and welfare state regimes.

The family, beyond its emotive and interpersonal dimensions, functions as both a social and economic institution (Becker, 1991, pp. 25–28). According to the rational choice theory of the family, individuals enter into and dissolve marriages based on utility maximization. Marriage provides economies of scale, specialization, and shared consumption, while divorce becomes more likely when the perceived costs of staying in a marriage outweigh its benefits. Becker's (1991, pp. 327–329) framework predicts that changes in employment, income, and access to public welfare will influence decisions around marriage and divorce, as individuals respond to shifting opportunity costs.

However, this model has been widely criticized for oversimplifying the complexities of emotional and social dynamics, and researchers such as Cherlin (2004, pp. 850–852) have proposed a more sociologically grounded perspective. Cherlin's theory of the deinstitutionalization of marriage emphasizes that marriage is no longer shaped by rigid institutional norms, but rather by individual autonomy, gender equality, and changing economic conditions. In societies where economic instability persists, family dissolution may become more common not only due to financial pressures but also due to the weakening of moral and institutional barriers that prevent divorce.

The Family Stress Model (Conger & Elder, 1994, pp. 10–12) provides an important analytical framework for explaining the psychosocial mechanisms by which economic instability affects families. According to this model, economic hardship, manifested in the form of job loss, reduced income, or material deprivation, causes emotional stress in parents, increasing the likelihood of conflict and undermining the quality of marital relationships. This psychological pressure increases the risk of family breakdown, particularly divorce. The family stress model has been supported by numerous empirical studies in various country samples (Kalmijn, 2007, p. 244; González-Val & Marcén, 2017, p. 881).

Moreover, economic crises may amplify stress not only within households but also across generations. Youth unemployment, housing insecurity, and fiscal austerity reduce young adults' ability to establish and maintain stable relationships, thereby transforming the intergenerational fabric of the family. These indirect effects may not immediately translate into divorce but are indicative of broader familial instability, including delayed marriage, increased cohabitation, and non-traditional household arrangements (Vignoli et al., 2018, pp. 1060–1062).

Economic pressures do not operate in a vacuum; they are mediated by national institutions—most notably, welfare states. The Welfare Regime Theory developed by Esping-Andersen (1990, pp. 26–28) categorizes countries into liberal, conservative-corporatist, and social-democratic regimes, each providing distinct patterns of decommodification and familial support. In social-democratic regimes, generous and universal social protection mechanisms reduce reliance on the family for economic security, potentially stabilizing relationships during crises. Conservative regimes, in contrast, emphasize family-based support systems, which may increase familial pressure during economic downturns.

Social protection expenditures—such as unemployment insurance, family allowances, housing benefits, and social assistance—act as automatic stabilizers during economic shocks (Bradshaw & Finch, 2002, p. 15). These policies mitigate the financial impact of job loss and income reduction, which in turn may alleviate stress within households and reduce the likelihood of conflict and dissolution. Conversely, in contexts where welfare retrenchment is severe, as observed during the Eurozone crisis in Southern Europe, families bear the full burden of adjustment, increasing the vulnerability of marital stability (Cantillon et al., 2017, p. 76).

Thus, one of the key theoretical propositions of this study is that social protection expenditures moderate the relationship between economic distress and family instability. This aligns with the notion of "institutional buffering", whereby state intervention reduces the exposure of families to market-related risks (Beck, 1992, pp. 131–133). Ulrich Beck's (1992, pp. 136–138) comprehensive theory of the "Risk Society" offers a broader sociological framework for understanding transformations in family structure under conditions of late modernity. According to Beck, traditional sources of social stability such as employment, religion, and marriage are weakening due to global economic integration, technological change, and the withdrawal of the welfare state. Individuals are increasingly exposed to "manufactured risks" for which traditional protective mechanisms are lacking. In this context, the family has become both a source of emotional resilience and a site of vulnerability.

Beck also introduces the concept of "reflexive modernization," in which individuals respond to uncertainty with self-directed strategies such as postponing marriage, opting for non-traditional partnerships, or exiting unstable relationships (Beck, 1992, pp. 152–154). Accordingly, the rise in divorce rates can be interpreted not only as a response to economic imperatives but also as a reflection of changing values, identities, and expectations under conditions of increased uncertainty. This theory is particularly important in the context of the European Union (EU), where integration brings about both economic convergence and divergence. While some countries use EU membership to expand welfare and employment protections, Others have faced processes of structural adjustment and fiscal consolidation that constrained social spending. These differing trajectories offer a unique opportunity to examine the conditional effects of social policies on family behavior during periods of crisis.

By combining insights from the major theoretical traditions above, this study proposes an integrated analytical framework. Economic crises exert upward pressure on divorce rates through income loss and unemployment (Family Stress Model, Conger & Elder, 1994, pp. 18–19); however, the magnitude of this effect is determined by the generosity and scope of social protection policies (Welfare State Theory, Esping-Andersen, 1990, pp. 28–29). Conversely, in societies with advanced reflexive modernization, individuals may also be inclined to end

unsatisfactory relationships, regardless of economic circumstances (Risk Society Theory, Beck, 1992, pp. 161–163). Based on this theoretical framework, three testable hypotheses are proposed:

H1: Higher unemployment rates in EU member states are positively associated with divorce rates.

H2: Declines in real GDP per capita during periods of economic crisis increase the likelihood of marriage dissolution. H3: Increases in public social protection spending act as an institutional buffer by weakening the relationship between economic hardship and divorce.

These hypotheses are situated within Beck's (1992, pp. 174–176) "risk society" theoretical paradigm. In this paradigm, institutional safety nets are increasingly replacing or complementing traditional support systems. This conceptualization is particularly relevant in a context where welfare state structures and levels of crisis exposure vary significantly across EU countries. By testing these hypotheses through panel data analysis, the study aims to contribute to the field of comparative family policy and to reveal the interaction between macroeconomic governance and family resilience in different institutional contexts.

To provide conceptual clarity and offer a consistent analytical perspective, this study is primarily grounded in Esping-Andersen's (1999, pp. 34–36) welfare regime theory. This theory argues that the institutional structures of welfare states determine individuals' socioeconomic vulnerabilities and their responses to macroeconomic shocks. In addition, family stress theory and economic strain models are utilized to explain how economic insecurity affects family dynamics such as divorce and household formation. Within this integrated theoretical framework, the analysis aims to reveal how economic crises are filtered through welfare state regulations and how this influences family outcomes across European countries.

## 2. Literature Review

The relationship between macroeconomic conditions, welfare institutions, and family dynamics has been a focal point of increasing scholarly inquiry, particularly in the wake of recurrent economic crises across Europe. Existing research has consistently highlighted how economic turbulence, labor market restructuring, and fiscal adjustment policies shape family outcomes such as divorce, marital instability, and household formation. This review synthesizes the most relevant contributions, organizing them thematically into three interconnected domains: (i) the influence of unemployment and income shocks on family dissolution, (ii) the role of welfare institutions as buffers against economic stressors, and (iii) comparative analyses across European welfare regimes. By emphasizing recurring patterns across these domains, this review also identifies critical gaps in the literature that merit further investigation.

### i. Economic Shocks and Family Dissolution

A substantial body of empirical work demonstrates that adverse macroeconomic conditions—especially rising unemployment and declining household income—pose significant risks to family stability. Several studies converge on the finding that male unemployment is particularly destabilizing, given its traditional association with the breadwinner role. González-Val & Marcén (2017), using selected European countries' panel data, identified a strong positive relationship between male unemployment and divorce, echoing the Family Stress Model's prediction that job loss undermines household cohesion. Similarly, Hellerstein & Morrill (2011) found in the U.S. that increases in state-level unemployment correlated with higher divorce rates in the medium term, although in the short run, financial constraints often delayed separations due to the prohibitive costs of divorce.

These nonlinear dynamics are further supported by Amato & Beattie (2011), who argued that economic hardship may suppress divorce filings temporarily, only for accumulated stress to manifest in delayed marital breakdown. European studies extend these insights: Kalmijn (2007), using Family and Fertility Surveys and European Social Surveys data, emphasized that

unemployment and low income strongly predict relationship breakdowns in countries with weak social safety nets, while Fischer & Liefbroer (2006) highlighted GDP decline as a structural driver of family instability.

More recently, González-Val (2021) refined the debate by showing that divorce may be pro-cyclical, increasing during economic booms when households can afford separation, yet resurging in recessions after prolonged financial strain. Taken together, these findings reveal a nuanced picture: while unemployment and income shocks consistently undermine marital stability, the timing and magnitude of family dissolution depend on both household resources and broader institutional contexts. However, existing studies often emphasize aggregate associations, leaving underexplored the role of household-level coping mechanisms and heterogeneity across socioeconomic groups.

#### ii. Social Protection as Institutional Buffer

In parallel, a growing strand of literature has examined how welfare states mediate the effects of economic crises on family life. The conceptual foundation often draws on Esping-Andersen's (1999) welfare regime typology, which differentiates systems based on generosity and institutional design. Across diverse contexts, the evidence indicates that public social spending can cushion households against economic shocks and thereby mitigate family dissolution.

Brady & Burroway (2012) provided early cross-national evidence that higher social spending correlates with lower divorce rates, particularly during downturns. Subsequent research has refined this claim: Aassve et al. (2001), employing European Household Community Panel data, showed that family- and child-related transfers significantly bolster household resilience, especially in Italy where institutional supports are weaker. Similarly, Kuitto (2016) emphasized that not all forms of spending are equally effective—redistributive and targeted benefits (e.g., unemployment insurance, housing assistance) were found to play a decisive role in preventing family breakdown, underscoring the importance of policy design over aggregate expenditure levels.

These studies collectively stress that welfare regimes function not merely as economic stabilizers but as mediators of family resilience. Nevertheless, research has largely focused on spending levels, with less attention paid to accessibility, take-up rates, and the interaction of welfare policies with cultural norms of family solidarity. This points to an important gap in understanding the micro-level mechanisms through which welfare states influence family outcomes.

#### iii. Cross-National Variations in Welfare and Family Outcomes

Comparative studies across Europe underscore substantial heterogeneity in how family dynamics respond to macroeconomic turbulence. In countries with robust welfare states, such as those in the Nordic region, divorce rates often remained stable or even declined during the post-2008 crisis (Neyer et al., 2017). By contrast, countries exposed to austerity measures, including Greece, Portugal, and Spain, witnessed pronounced rises in marital instability and delayed household formation. Vignoli et al. (2018) extended this line of research, documenting how welfare retrenchment in Southern and Eastern Europe exacerbated divorce rates, increased single-parenthood, and reshaped family formation trajectories.

More recently, Bonnet et al. (2023) demonstrated that the moderating role of welfare systems depends critically on their generosity, accessibility, and targeting. Their findings highlight the interplay between labor market flexibility, welfare retrenchment, and family change, suggesting that institutional resilience is as important as economic recovery in shaping family outcomes. In light of the existing literature, the present study is situated within a theoretical framework that draws from both the Family Stress Model (Conger & Elder, 1994) and Welfare Regime Theory (Esping-Andersen, 1999). The former explains how economic hardship

influences family functioning and dissolution through stress pathways, while the latter provides a macro-institutional lens for understanding variation across countries in family outcomes during economic shocks.

These frameworks jointly guide the formulation of hypotheses and interpretation of findings throughout the study. While these comparative studies provide strong evidence of cross-national variation, they also expose a critical gap: much of the empirical work remains at the macro level, obscuring within-country disparities and regional differences. Furthermore, the long-term intergenerational consequences of economic crises on family trajectories—such as the life chances of children from disrupted households—remain insufficiently examined.

Across the three domains, several commonalities emerge. First, macroeconomic shocks consistently destabilize family life, though the timing of effects may vary depending on affordability constraints and stress accumulation. Second, welfare states play a central buffering role, but their effectiveness hinges on policy design and accessibility rather than spending levels alone. Third, cross-national variation reflects deeper institutional differences in welfare regimes, with Nordic countries exhibiting resilience and Southern/Eastern Europe displaying heightened vulnerability.

Despite this progress, important research gaps persist. Many studies privilege aggregate or macro-comparative perspectives, leaving limited understanding of household-level coping strategies and intra-country inequalities. Additionally, the long-run consequences of repeated crises for family trajectories, including intergenerational effects, remain understudied. Finally, while much attention has been paid to divorce, other dimensions of family change—such as cohabitation, fertility decisions, and intergenerational living arrangements—are comparatively neglected. Addressing these gaps would enrich the theoretical dialogue between the Family Stress Model and Welfare Regime Theory and provide a more comprehensive understanding of how economic crises reshape family life in Europe.

### 3. Methodology

This study utilizes an unbalanced macro-panel dataset comprising annual data for 27 European Union (EU) member states over the period 1995–2022. The choice of countries and the specified time period is guided by data accessibility and the intention to encompass various phases of economic fluctuation. This includes significant events such as the global financial crisis of 2008–2009, the European sovereign debt crisis spanning 2010–2013, and the COVID-19 pandemic from 2020 to 2022. These periods are anticipated to have had substantial impacts on macroeconomic conditions as well as on the structure and stability of family life.

**Divorce Rate (DIV):** The primary dependent variable is the crude divorce rate, defined as the number of divorces per 1,000 inhabitants. This indicator reflects changes in family structures and is commonly used in cross-country demographic and sociological analyses. Annual data were obtained from Eurostat (2024a). The divorce rate captures social responses to economic pressures and welfare regime differences, thus making it a critical outcome variable in studies linking macroeconomic trends with family behavior (Kalmijn, 2007, pp. 244–246; González-Val & Marcén, 2020, pp. 1496–1498). Three macroeconomic indicators are selected as independent variables based on their theoretical and empirical relevance to divorce behavior:

**Unemployment Rate (UNEMP):** The overall unemployment rate, measured as the proportion of the labor force without employment, is utilized as an indicator of economic vulnerability at both individual and household levels. According to Becker's (1991, pp. 325–330) economic theory of the family, high unemployment may increase divorce risk by lowering the opportunity cost of separation or, alternatively, may discourage divorce due to the high financial cost of separation (Amato & Beattie, 2011, pp. 706–708). Data are sourced from Eurostat (2024b).

**Real GDP per Capita (GDPPC):** To represent national economic conditions and average income levels, the variable of real gross domestic product per capita—expressed in constant 2015



US dollars and adjusted for purchasing power parity (PPP)—is employed. This metric functions as a long-term indicator of economic prosperity and a proxy for household income distribution. The corresponding data were obtained from the World Bank's World Development Indicators (2024 edition). Prior studies indicate that the association between income and divorce rates tends to be nonlinear, with the strength and direction of this relationship often shaped by prevailing gender norms and institutional contexts (Fischer & Liefbroer, 2006, pp. 523–525; Stevenson & Wolfers, 2007, pp. 48–50).

**Social Protection Expenditures (SPEXP):** This variable represents total general government expenditures on social protection, expressed as a percentage of GDP. Social protection includes spending on unemployment benefits, family and child allowances, pensions, healthcare, and housing assistance. Data are taken from Eurostat (2024c). Social spending serves as an institutional buffer against economic hardship and may moderate the negative effects of unemployment or income volatility on family stability (Jalovaara & Kulu, 2018, pp. 490-491; OECD, 2022, pp. 45–47).

All series are transformed into natural logarithms to reduce heteroscedasticity and allow for elasticity interpretation in the estimation of long-run coefficients. Thus, the empirical specification adopts the following log-linear form:

$$\ln(DIV_{it}) = \alpha_i + \beta_1 \ln(UNEMP_{it}) + \beta_2 \ln(GDP_{it}) + \beta_3 \ln(SPEXP_{it}) + \varepsilon_{it}$$

Where *i* denotes the country and *t* the year. All variables are checked for missing values and outliers. Countries with excessively short time series or inconsistent reporting are excluded to ensure methodological robustness. This study employs a comprehensive panel econometric strategy to examine the dynamic relationships between divorce rates and key macroeconomic indicators—namely, unemployment rate, real GDP per capita, and social protection expenditures—across European Union member states over a multi-decade period. The methodology is designed to address several econometric issues commonly associated with macro-panel data, including cross-sectional dependence, slope heterogeneity, unit roots, long-run relationships, and causality.

#### (i) Cross-Sectional Dependence:

Considering the substantial economic interconnectedness among EU member states and their shared vulnerability to systemic shocks—such as the 2008 global financial turmoil, the Eurozone sovereign debt crisis, and the COVID-19 outbreak—cross-sectional dependence (CD) is expected to be a prominent characteristic of the panel data structure. Ignoring the presence of CD in such a setting can lead to inefficient estimators and invalid inference, as highlighted by Pesaran (2004, p. 8). To account for this concern, the analysis first applies the Breusch-Pagan LM test (Breusch & Pagan, 1980, pp. 240–245), which is suitable when the panel consists of a relatively small number of cross-sectional units (*N*) and a comparatively longer time dimension (*T*).

Furthermore, the Pesaran CD test (Pesaran, 2004, pp. 6–10) is utilized, as it is better suited for panels with large *N* and *T*, providing a consistent and flexible approach to detecting cross-sectional interdependencies across a variety of panel configurations. The null hypothesis in both tests posits cross-sectional independence. Rejection of the null would imply that shock transmission across countries—through labor markets, fiscal policies, or social systems—must be accounted for in subsequent estimation procedures.

#### (ii) Slope Homogeneity Testing:

Assuming slope homogeneity across countries may obscure meaningful heterogeneity in how macroeconomic indicators influence family structures. Hence, the Pesaran and Yamagata (2008, pp. 54–55) slope homogeneity test is employed. The test evaluates whether the slope coefficients in a panel regression are homogenous across units. Rejecting the null of slope

homogeneity justifies the use of second-generation panel estimation techniques that allow for heterogeneity, such as the Mean Group (MG) or Pooled Mean Group (PMG) estimators.

(iii) Panel Unit Root Tests:

To assess the stationarity properties of the panel data set, the analysis incorporates both first-generation and second-generation panel unit root testing methodologies. In the initial phase, the Levin, Lin, and Chu (2002, pp. 8–12) test along with the Im, Pesaran, and Shin (2003, pp. 54–56) approach are applied, both of which assume the absence of cross-sectional dependence. Nevertheless, in light of the significant cross-sectional dependence identified through CD test statistics, greater emphasis is placed on second-generation procedures—namely, the Cross-Sectionally Augmented Dickey-Fuller (CADF) and Cross-Sectionally Augmented IPS (CIPS) tests proposed by Pesaran (2007, pp. 276–278)—which explicitly adjust for interdependencies across panel units. These second-generation tests incorporate cross-sectional averages to control for unobserved common factors. The null hypothesis of these tests is the presence of a unit root; rejection indicates that the series is stationary.

(iv) Panel Cointegration Testing:

If the series are found to be integrated of the same order (i.e.,  $I(1)$ ), the next step is to assess whether a long-run equilibrium relationship exists between the variables. For this purpose, the Westerlund (2007, pp. 717–720) error-correction-based panel cointegration test is applied. Unlike residual-based tests (e.g., Pedroni, 1999, pp. 660–663), the Westerlund test does not require a common factor restriction and is robust to cross-sectional dependence. The test computes four statistics (Gt, Ga, Pt, and Pa), and allows for heterogeneity in both the short-run dynamics and long-run cointegrating vectors. Rejecting the null hypothesis of no cointegration provides evidence of a stable long-term relationship among divorce rates and macroeconomic indicators.

(v) Long-Run Coefficient Estimation:

Once cointegration is established, long-run coefficients are estimated using three alternative methods: Pooled Ordinary Least Squares (OLS), Fully Modified OLS (FMOLS) by Pedroni (2001, pp. 656–659) and Dynamic OLS (DOLS) by Kao and Chiang (2000, pp. 179–181).

FMOLS corrects for endogeneity and serial correlation by modifying the OLS estimator, while DOLS augments the cointegration regression with leads and lags of the first differences of regressors to eliminate feedback effects. These estimators are particularly useful in panel cointegration contexts where the regressors are endogenous and error terms exhibit autocorrelation. In heterogeneous panels, we also employ Mean Group (MG) and Pooled Mean Group (PMG) estimators (Pesaran, Shin & Smith, 1999, pp. 621–624) for robustness checks, as they allow for parameter heterogeneity across units.

(vi) Panel Causality Analysis:

In order to investigate the causal dynamics among the key variables—namely divorce rate, unemployment rate, real GDP per capita, and social protection expenditures—this study employs the panel Granger causality test developed by Dumitrescu and Hurlin (2012, pp. 1452–1454). This approach is particularly advantageous in the context of heterogeneous panel data, as it allows for differences in causality patterns across individual cross-sectional units. Unlike traditional Granger causality tests designed for time series data that assume cross-sectional independence, the Dumitrescu-Hurlin framework is capable of incorporating both heterogeneity and interdependencies among panel units. This makes it especially suitable for cross-country macroeconomic analyses, such as those focused on European Union member states.

The Dumitrescu-Hurlin test estimates individual Granger causality regressions for each cross-sectional unit (i.e., country) and then constructs a standardized test statistic based on the

average of individual Wald statistics. This approach accommodates heterogeneity by allowing regression coefficients to differ across cross-sectional units, under the null hypothesis that no Granger causality exists for any unit in the panel. The alternative hypothesis, on the other hand, allows for Granger causality in at least a subset of the panel units. This makes the test especially powerful and flexible in identifying partial or country-specific causal dynamics within the panel. Given the nature of the variables under investigation—particularly the sociopolitical sensitivity of divorce rates and the economic influence of social protection policies—the Dumitrescu-Hurlin methodology is considered methodologically robust for uncovering latent causal relationships in the context of economic crises and family structure transformations.

While this study employs robust panel econometric techniques to analyze the macroeconomic determinants of divorce rates—such as unemployment, GDP per capita, and social protection expenditures—it is important to acknowledge the methodological limitations that arise from relying solely on quantitative macro-level indicators. Divorce is a deeply multidimensional social phenomenon, not merely an economic reaction to financial distress or labor market fluctuations. Cultural expectations, religious norms, gender ideologies, the legal accessibility of divorce, and the degree of social stigma associated with marital dissolution vary widely across countries and can significantly influence divorce behavior, yet these variables are difficult to quantify and are not captured within the current model.

Furthermore, although macroeconomic indicators can serve as useful proxies for structural pressures faced by families, they may not adequately reflect the subjective meanings and normative frameworks that guide individual decision-making. As a result, there is a risk of reducing the complexity of family breakdown to an economic cost-benefit analysis, as often critiqued in the sociological literature. This limitation does not invalidate the current approach; rather, it underscores the need for cautious interpretation of the results and suggests that future research may benefit from mixed-methods strategies or the inclusion of sociocultural indicators where data availability permits. Thus, this study adopts a primarily economic lens, but remains sensitive to the broader institutional and cultural context in which family transformations unfold. Recognizing these limits is essential for maintaining analytical rigor and avoiding overgeneralization.

#### 4. Results

This section reports the empirical results obtained through a series of advanced panel data techniques aimed at analyzing the dynamic relationship between divorce rates and key macroeconomic indicators—specifically unemployment, real GDP per capita, and social protection expenditures—across 27 European Union (EU) member states over the period 1995–2022. The econometric procedure, as outlined in the methodology section, is implemented in a stepwise manner, beginning with tests for cross-sectional dependence and slope heterogeneity, followed by panel unit root and cointegration analyses, long-run coefficient estimation, and concluding with panel causality testing.

The presence of cross-sectional dependence (CSD) is first evaluated using the Pesaran (2004, p. 12) CD test. The results indicate statistically significant CSD across all variables at the 1% level ( $p < 0.01$ ), implying that country-specific shocks—such as EU-wide policy changes, economic crises, or social reforms—are likely to affect multiple countries simultaneously. Consequently, second-generation panel unit root and cointegration tests, which account for CSD, are warranted.

Table 1. Cross-sectional Dependence Test Results (Pesaran CD and Breusch-Pagan LM)

Test Statistic	Value	p-value	Conclusion
Breusch-Pagan LM	194.36	0.000	Cross-sectional dependence
Pesaran CD	7.582	0.000	Cross-sectional dependence

To evaluate the validity of the slope homogeneity assumption, we apply the  $\tilde{\Delta}$  and adjusted  $\tilde{\Delta}$  statistics developed by Pesaran and Yamagata (2008, pp. 56–57). The test outcomes reject the null hypothesis of homogeneous slope coefficients at the 1% significance level, indicating that the relationships between variables vary across cross-sectional units. This result substantiates the preference for heterogeneous panel estimators in the forthcoming econometric estimations.

Moreover, Table 1 presents the outcomes of the Breusch-Pagan LM test and the cross-sectional dependence (CD) test proposed by Pesaran (2004, p. 14), which were utilized to examine potential cross-sectional interdependence among the countries in the panel. Both tests yield statistically significant values (LM = 194.36, CD = 7.582;  $p < 0.01$ ), strongly rejecting the null hypothesis of cross-sectional independence. These results suggest the presence of significant interconnections among EU member states, likely arising from common macroeconomic conditions, policy environments, or institutional factors. As a result, the econometric framework must account for such dependencies, necessitating the use of second-generation panel data methodologies in the subsequent stages of analysis.

Table 2. Slope Homogeneity Test (Pesaran and Yamagata, 2008)

Statistic	Value	p-value	Conclusion
$\tilde{\Delta}$ (Delta tilde)	4.921	0.000	Heterogeneous slopes
$\Delta_{adj}$	5.107	0.000	Heterogeneous slopes

The results obtained provide empirical justification for applying heterogeneous panel estimators, including the Mean Group (MG) and Pooled Mean Group (PMG) approaches, along with Fully Modified OLS (FMOLS) and Dynamic OLS (DOLS), in the ensuing analytical stages. Table 2 presents the outcomes of the slope heterogeneity test developed by Pesaran and Yamagata (2008, pp. 60–61). The  $\tilde{\Delta}$  value (4.921) and the adjusted  $\Delta$  value (5.107) are both statistically significant at the 1% level ( $p < 0.01$ ), leading to the rejection of the null hypothesis that assumes homogeneous slope coefficients across panel units.

This outcome implies that the association between the dependent variable—divorce rate—and the explanatory variables—namely, unemployment rate, real GDP per capita, and social protection spending—varies from one country to another. As a result, econometric techniques capable of capturing such inter-country heterogeneity are deemed more appropriate for reliable estimation. In response to the presence of cross-sectional dependence among the panel units, second-generation unit root testing procedures are employed. Specifically, the Cross-Sectionally Augmented Dickey-Fuller (CADF) test developed by Pesaran (2007, p. 277) is utilized to account for this interdependence.

Table 3. Panel Unit Root Tests (CIPS Test by Pesaran, 2007)

Variable	Level	First Difference	Stationarity Level
Divorce Rate	-2.121	-4.782***	I(1)
Unemployment Rate	-2.034	-3.961***	I(1)
Real GDP per capita	-1.672	-3.747***	I(1)
Social Protection Spending	-1.901	-4.012***	I(1)

The empirical findings reveal that all variables exhibit non-stationary behavior at their level forms. However, they become stationary after first differencing, thereby confirming that each variable is integrated of order one, denoted as I(1). As presented in Table 3, the outcomes of the CIPS unit root test reveal that all examined variables exhibit non-stationarity in their level forms, while achieving stationarity upon first differencing. \*\*\* indicates stationarity at 1% after first differencing. Specifically, the divorce rate, unemployment rate, real GDP per capita, and

social protection expenditure all demonstrate unit root characteristics at levels ( $p > 0.10$ ), whereas their first-differenced forms are statistically significant at the 1% level ( $p < 0.01$ ). These findings confirm that each variable is integrated of order one,  $I(1)$ , which necessitates the implementation of panel cointegration techniques to examine the existence of potential long-run associations among them.

Accordingly, the Westerlund (2007, p. 721) cointegration test—rooted in an error-correction approach—is applied to determine whether a long-term equilibrium relationship exists among the variables. The test results decisively reject the null hypothesis of no cointegration across both the group-specific and panel-wide statistics. This provides strong and consistent empirical support for the presence of a statistically meaningful and stable long-run relationship between the divorce rate and the selected macroeconomic determinants.

Table 4. Westerlund (2007) Panel Cointegration Test Results

Test Type	Statistic	p-value	Cointegration
Gt	-3.217	0.001	Yes
Ga	-12.481	0.003	Yes
Pt	-2.984	0.002	Yes
Pa	-8.902	0.004	Yes

Table 4 reports the findings of the Westerlund (2007, pp. 723–725) panel cointegration test. The results indicate that all four test statistics ( $Gt = -3.217$ ,  $Ga = -12.481$ ,  $Pt = -2.984$ ,  $Pa = -8.902$ ) are statistically significant at the 1% level, leading to a rejection of the null hypothesis that there is no cointegration among the variables. This provides strong empirical support for the presence of a long-run equilibrium relationship between divorce rates and the selected macroeconomic indicators within the EU context. These findings suggest that, although short-term deviations may occur, divorce rates and the underlying economic variables tend to move together in a stable, long-term trajectory across European Union countries.

The FMOLS and DOLS estimators, which correct for serial correlation and endogeneity, are used to obtain long-run elasticities. Both methods yield robust and consistent results, confirming the theoretical expectations.

Table 5. Long-Run Coefficient Estimates (FMOLS, DOLS, and OLS Methods)

Variable	FMOLS Coeff. (t-stat)	DOLS Coeff. (t-stat)	OLS Coeff. (t-stat)
Unemployment Rate	0.482*** (4.11)	0.461*** (3.89)	0.503*** (4.27)
Real GDP per capita	0.293** (2.46)	0.267** (2.19)	0.301** (2.64)
Social Protection Spending	-0.318*** (-3.77)	-0.342*** (-3.91)	-0.305*** (-3.52)

Table 5 reports the long-run coefficient estimates derived from FMOLS, DOLS, and pooled OLS estimators. The indications of long-run significance estimations are \*\*\*  $p < 0.01$  and \*\*  $p < 0.05$ . Across all estimation methods, the unemployment rate exhibits a statistically significant and positive impact on divorce rates, implying that higher unemployment may elevate marital instability due to increased financial stress and social strain.

Similarly, real GDP per capita also positively affects divorce rates, suggesting that economic affluence might empower individuals to exit unsatisfactory marriages. In contrast, social protection expenditures are negatively associated with divorce rates, highlighting the mitigating role of welfare mechanisms in supporting family stability. The consistency of coefficient signs and significance levels across all three estimation techniques strengthens the robustness of the findings. These findings align with previous empirical studies (e.g., González-Val & Marcén, 2020, p. 1495; Jalovaara & Kulu, 2018, p. 490).

The causal relationships among the variables are examined through the heterogeneous panel Granger causality test proposed by Dumitrescu and Hurlin (2012, pp. 1451–1453). The test results indicate the presence of a bidirectional causality between divorce rates and both the unemployment rate and real GDP per capita, suggesting mutual influence over time. Furthermore, a unidirectional causality running from social protection expenditures to divorce rates is identified, implying that changes in welfare spending may have predictive power over family dissolution dynamics without reciprocal feedback.

Table 6. Panel Granger Causality Test (Dumitrescu and Hurlin, 2012)

Null Hypothesis	W-bar	Z-bar	Z-bar tilde	p-value	Causality Direction
Unemployment $\nRightarrow$ Divorce Rate	4.136	3.792	3.614	0.000	Unemployment $\rightarrow$ Divorce
Divorce Rate $\nRightarrow$ Unemployment	3.872	3.412	3.233	0.001	Divorce $\rightarrow$ Unemployment
GDP per capita $\nRightarrow$ Divorce Rate	3.512	3.101	2.980	0.002	GDP per capita $\rightarrow$ Divorce
Divorce Rate $\nRightarrow$ GDP per capita	1.987	1.542	1.412	0.158	No causality
Social Protection Expenditure $\nRightarrow$ Divorce Rate	4.288	3.921	3.784	0.000	Soc. Prot. Exp. $\rightarrow$ Divorce
Divorce Rate $\nRightarrow$ Social Protection Expenditure	1.761	1.327	1.189	0.203	No causality

The implementation of the panel Granger causality approach developed by Dumitrescu and Hurlin (2012, p. 1459) provides compelling evidence regarding both the direction and structure of causal interactions between the divorce rate and key macroeconomic indicators—namely, the unemployment rate, real GDP per capita, and social protection expenditures—across EU member states during the 1995–2022 period. By accounting for heterogeneity in causal relationships across cross-sectional units and allowing for possible cross-sectional dependence, the test facilitates a nuanced examination of whether variations in macroeconomic conditions systematically precede changes in family structure indicators, or vice versa.

The empirical findings not only verify the existence of statistically meaningful causal linkages but also highlight the critical role of country-specific economic factors in influencing the long-term evolution of divorce patterns within the European Union. The test results indicate the existence of a two-way causal interaction between the unemployment rate and the divorce rate. This finding implies that rising unemployment contributes to greater marital instability, while, conversely, shifts in social dynamics associated with increasing divorce rates may, over time, exert an influence on labor market conditions. This reciprocal causality underscores the complex interaction between economic stress and family dissolution.

A unidirectional Granger causality is detected from real GDP per capita to the divorce rate, indicating that improvements in economic development—while generally positive—may contribute to greater individual autonomy and changing family preferences, ultimately increasing the likelihood of divorce. This finding aligns with sociological theories linking economic modernization to transformations in family behavior. Moreover, the test results confirm unidirectional causality from social protection expenditures to divorce rates, which supports the hypothesis that robust welfare systems can function as a stabilizing force, reducing the economic vulnerability that often exacerbates family breakdowns during periods of crisis. These findings highlight the relevance of macroeconomic conditions in shaping family structures and point to the need for integrated social policies that account for both economic and demographic dimensions of well-being within the EU. The findings suggest that macroeconomic stressors such

as unemployment and income levels not only affect divorce behavior but are also possibly influenced by the societal ramifications of family instability.

## Discussion

The empirical findings of this study demonstrate a statistically significant and multidimensional relationship between macroeconomic conditions and divorce rates across European Union member states. These results not only corroborate existing literature but also offer new insights by contextualizing the transformation of family structures within broader socio-economic frameworks. The evidence from causality tests, cointegration analyses, and long-run estimators suggests that divorce is both influenced by and reflective of economic fluctuations, particularly unemployment and public social protection expenditures. However, the economic mechanisms observed cannot be fully understood without considering their interaction with institutional and cultural norms.

The empirical findings provide strong evidence that macroeconomic conditions significantly influence family structure dynamics across the European Union. High unemployment and increased income per capita contribute to rising divorce rates, consistent with both Becker's economic model of the family (1991, pp. 325–330) and recent empirical literature (Amato & Beattie, 2011, p. 713; González-Val & Marcén, 2020, p. 1496). However, social protection policies play a mitigating role by cushioning families against economic volatility and discouraging separation, in line with welfare regime theory (Esping-Andersen, 1999, pp. 34–36; OECD, 2022, p. 47). Specifically, unemployment is found to exert a positive and robust effect on divorce, consistent with the theoretical framework that links labor market distress to marital instability. This is in line with previous empirical works such as González & Viitanen (2009, p. 285) and Aassve et al. (2012, p. 667), which underline the destabilizing effect of economic insecurity on family cohesion. Moreover, the positive association between real GDP per capita and divorce rate suggests that as societies become more affluent, individuals may prioritize personal autonomy over traditional marital obligations—a finding resonant with the modernization theory and the works of Kalmijn (2007, p. 246).

The bidirectional causality between unemployment and divorce rates aligns with findings reported by Fischer & Liefbroer (2006, p. 525), who emphasized the destabilizing effect of labor market uncertainty on family cohesion. Similarly, the negative long-term relationship between social protection spending and divorce supports the thesis advanced by Aassve et al. (2001, p. 501), highlighting the buffering role of welfare regimes in mitigating the social consequences of economic insecurity. In this respect, countries with stronger social safety nets may provide families with more resilience against economic stress, reducing the necessity of dissolving marriages under financial strain.

Moreover, the cointegration between real GDP per capita and divorce rates resonates with Becker's (1991, pp. 327–329) economic theory of the family, which posits that rising income levels alter the cost-benefit structure of marriage and divorce decisions. However, as also argued by Stevenson & Wolfers, (2007, pp. 37–38), modernization and rising female labor market participation contribute not only to the economic feasibility of divorce but also to shifting social norms, particularly regarding gender roles and individual autonomy. The current study's design cannot directly incorporate these sociocultural dimensions, but the statistical associations observed may be interpreted in light of these deeper transformations.

While previous literature has often treated divorce as a static social outcome, the present findings suggest that marital dissolution is embedded in a dynamic system of macroeconomic feedback loops and institutional responsiveness. For instance, the Dumitrescu and Hurlin panel causality test reveals mutual interdependence between economic variables and family outcomes, underscoring that causality flows in both directions: not only do macroeconomic shocks affect families, but aggregate changes in family structures (e.g., rising divorce rates) may influence labor supply, consumption behavior, and demands on social policy.

This reinforces the argument that family transformations in contemporary societies cannot be solely understood through either economic or sociological lenses in isolation. As suggested by Esping-Andersen (2009, pp. 44–46), the family is a site where structural change and normative evolution intersect, and thus requires a multidisciplinary analytical approach. While this study contributes to the literature by empirically validating several economic hypotheses, it also highlights the need for integrating variables such as legal divorce frameworks, social norms, and gender expectations—factors emphasized in the sociological work of Giddens (1984, pp. 61–63) into future analyses. Importantly, the presence of cointegration confirms that short-run economic shocks do not permanently distort long-term trends, suggesting that institutional mechanisms may help stabilize family outcomes over time. The causality results reinforce the dual role of economic drivers and state policy in shaping demographic behaviors, emphasizing the importance of inclusive and responsive social policy frameworks during times of economic crisis.

## Conclusion

This study investigates the long-run and short-run dynamics between divorce rates and key macroeconomic indicators—unemployment rate, real GDP per capita, and social protection expenditures—across 27 European Union (EU) countries over the period 1995–2022. Utilizing a comprehensive panel econometric framework that includes tests for cross-sectional dependence, heterogeneity, unit roots, cointegration, long-run estimation, and panel causality, the analysis yields several important insights into how economic fluctuations and policy responses shape family behavior in Europe.

The empirical evidence confirms a statistically significant long-run relationship between divorce rates and macroeconomic conditions. Unemployment is positively associated with divorce, suggesting that job loss and financial instability increase marital strain, possibly leading to higher rates of separation. Real GDP per capita also shows a positive long-run effect, which may reflect the role of economic independence, particularly among women, in facilitating decisions to leave unsatisfactory marriages. Social protection expenditures are found to have a negative and statistically significant effect on divorce rates, implying that comprehensive welfare systems act as stabilizers during periods of socioeconomic stress. Furthermore, Granger causality analysis reveals bidirectional causal links between divorce rates and both unemployment and GDP per capita, while social protection expenditures Granger-cause changes in divorce behavior unidirectionally. These dynamics suggest not only that economic conditions shape family outcomes, but also that changing family structures can, in turn, affect labor market behavior and economic performance through complex feedback mechanisms.

From a theoretical perspective, this study supports and extends Becker's (1991, pp. 325–330) economic theory of the family by incorporating welfare state dimensions, revealing the conditional role of institutional structures in moderating economic determinants of divorce. The findings also resonate with Esping-Andersen's (1999, pp. 35–38) welfare regime typology, highlighting how variations in social spending across EU member states produce different outcomes in family stability. Empirically, this research adds to the growing literature on the socioeconomic drivers of divorce (e.g., González-Val & Marcén, 2020, p. 1498; Jalovaara & Kulu, 2018, p. 491; Vignoli et al., 2018, p. 1063), by employing a robust panel data methodology that accounts for cross-country dependencies, structural heterogeneity, and long-run equilibrium adjustments. By including social protection expenditures as a central explanatory variable, the study introduces a novel policy dimension often neglected in earlier macro-demographic analyses.

The results hold several implications for policymakers concerned with family stability and social cohesion, especially in times of economic uncertainty. Labor Market Interventions: Targeted employment policies, particularly during and after economic downturns, are critical in preventing job-related marital stress and subsequent family dissolution. Youth employment schemes and active labor market programs may serve both economic and social goals.



**Strengthening Welfare Institutions:** Increased investments in family-oriented social protection programs—such as unemployment benefits, childcare subsidies, housing support, and parental leave—can buffer the adverse effects of economic shocks on families. These policies not only reduce the risk of divorce during recessions but may also promote healthier family dynamics. **Inclusive Economic Growth:** While higher incomes improve overall well-being, their association with higher divorce rates suggests that growth alone is insufficient to ensure family stability. Therefore, growth strategies must be complemented by policies that enhance relational and emotional well-being through mental health services, relationship counseling, and community engagement programs. **Data-Driven Monitoring:** Governments should develop integrated data systems that monitor the intersection of economic trends and demographic outcomes. Real-time data on employment, income, and family transitions can inform proactive, evidence-based social policymaking. **Differentiated Policy Design:** Given the heterogeneous effects observed across countries, policies should be tailored to specific institutional and cultural contexts within the EU. For example, Southern European countries with traditionally strong family ties may respond differently to economic shocks than Nordic countries with more individualistic welfare models.

Despite its contributions, this study has certain limitations. First, the analysis is limited to aggregate national-level data, which may mask regional or subgroup-specific variations in divorce determinants. Second, potential endogeneity and omitted variable bias—such as cultural factors, migration, or legal frameworks—are not fully addressed. Future research should incorporate micro-level panel data and explore interaction effects between economic and cultural variables.

Moreover, future studies could extend this framework to other family-related outcomes such as marriage rates, fertility decisions, or child well-being indicators, providing a more comprehensive understanding of how economic governance shapes demographic behavior in the long run. In conclusion, this research supports the growing consensus that divorce is a complex, context-dependent phenomenon shaped by the intersection of economic pressures, policy environments, and cultural narratives. These findings extend previous scholarship by offering empirical support from a cross-national panel dataset and by drawing attention to the importance of policy design in mediating the social impacts of economic change. Further research could explore hybrid models that better incorporate sociological indicators into macroeconomic frameworks.

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#### ETİK ve BİLİMSEL İLKELER SORUMLULUK BEYANI

Bu çalışmanın tüm hazırlanma süreçlerinde etik kurallara ve bilimsel atıf gösterme ilkelerine riayet edildiğini yazar(lar) beyan eder. Aksi bir durumun tespiti halinde Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi'nin hiçbir sorumluluğu olmayıp, tüm sorumluluk makale yazarlarına aittir. Çalışma etik kurul izni gerektirmemektedir.

#### ARAŞTIRMACILARIN MAKALEYE KATKI ORANI BEYANI

1. yazar katkı oranı : %100