




# The role of income and gender unemployment in divorce rate among the OECD countries

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## Abstract

Economic stability is one of the most important factors to consider when examining marriage sustainability or divorce. Consequently, the current study examined the influence of income and gender unemployment on divorce in a panel study of the Organization for Economic Cooperation and Development (OECD) countries over the period 1995–2016. Empirical results show that gross domestic product per capita as a measure of income level has a negative and significant impact on the divorce rate only in the long run. In addition, findings indicated that an increase in the female unemployment level would lead to a decrease in the divorce rate, while increase in male unemployment will lead to an increase in the divorce rate in the long run. Based on the results, we infer that for individuals to sustain their romantic relationships, income sustainability is highly essential. The implication of our findings is that economic stability measured by the income level of an individual is highly essential in achieving marital stability in a romantic relationship. Hence, the study offers useful policy directions for households, governments, and other stakeholders, especially in the OECD countries.

## 1 | INTRODUCTION

Divorce in romantic relationships may be associated with a number of economic factors such as unemployment, family monthly income, monthly expenditure, financial management, and sustainability among others. For instance, inconsistent monthly income of stakeholders in a family or inadequate sustainable income is a likely cause of tension in a romantic relationship. The result of such undesirable development in the family is a potential cause of marital breakup or divorce. However, Romo (2015) argues that individuals who are married or cohabiting may be categorized as being in romantic relationships. This study therefore conceptualizes married couples as romantic partners. Bracher and Santow (1998, 2001) observed that economic factors are important variables to be considered before an individual gets involved in a relationship or marriage. This is because, for partners to sustain their relationship, there has to be a minimal level of financial satisfaction (Zhang, Cheng, Wei, & Gong, 2018). Over a period of time, the socioeconomic dynamics of marriage and divorce have been associated with other factors that include demographics, and business cycles, among other factors (González-Val & Marcén, 2017; Kravdal, 1999).

Given the above motivation, this panel study considers 33 Organization for Economic Cooperation and Development (OECD) countries (note that Chile is excluded due to data unavailability) for underpinning the dynamics of divorce. In this study, the responses of divorce rate from sustainable income vis-à-vis gross domestic product (GDP) per capita, marriage, female unemployment, and male unemployment are further investigated in a multivariate model. A dynamic autoregressive distributed lag (ARDL) is employed in the study. Although previous studies have extensively investigated the determinants of divorce especially within the framework of marriage and unemployment (González-Val & Marcén, 2017, 2018), the current study is novel for notable reasons. First, this study provides an in-depth analysis, through a concise panel estimate that further reveals how divorce rate is determined among the OECD countries. Hence, employing a panel approach for divorce for the case of the OECD presents this study as the first in the literature to the best of authors' knowledge. The second reason is that the current study uniquely considers the impact of male and female unemployment on divorce in the OECD. The recent study of Thielemans and Mortelmans (2018) only considered the female divorcee labor force participation rate. Hence, the novelty is geared from the consideration of a disaggregate unemployment across gender and across OECD nations. Lastly, by incorporating a gender-based unemployment classification and proxy for sustainable income (a threshold for poverty), the study presents an insight into the relationship between marriage, divorce, and the sustainability development goals 2030 (SDGs, 2019).

The other part of the study is outlined as follows. Section 2 presents an overview of the nexus between divorce, marriage, economic growth, and unemployment. Section 3 covers the data and empirical methods employed. The empirical findings and discussion are reported in Section 4. In Section 5, the concluding remarks and policy implication of the study are provided.

## 2 | LITERATURE REVIEW: A SYNOPSIS

Schneider and Hastings (2015) observed that the period of the economic recession in the United States negatively impacted many families, and was thus responsible for significant marital failures. This is because a significant number of families are unable to meet basic needs that will

sustain their families. Edin and Reed (2005) further explain that marriage stability has become commonly associated with high economic standards. However, in the case where economic expectations are not realized or inadequate, conflict may occur, thereby leading to divorce. Cancian and Meyer (2014) argued that lean economic resources have been affirmed to negatively impact the quality of life. Consequently, the study inferred that single parents often face difficulty in providing basic needs such as education for their children, thus this phenomenon not only affects the family but society in general. In addition, poor living standards and economic conditions have been described as a significant factor that negatively affects marriages and marriage rate. On the contrary, Hill (2015) found out that marriages that started during tough economic situations are more likely to be sustained in comparison with those that suddenly find themselves in a bad economic condition. Should the assumption be found to be correct, Hill (2015) largely associated the reason to the foundation upon which the marriage is instituted.

Furthermore, existing studies that explored the impact of economic factors on marriage found that economic stability plays a significant role in the sustainability of a marriage (Baghestani & Malcolm, 2014; González-Val & Marcén, 2018). Jalovaara (2003) affirms that the higher the income of the husband compared to the wife, the less likely the risk of divorce in such a marriage. As such, Jalovaara (2003) further opined that the husband could now assume the leading role in the family and take care of the basic financial needs to sustain the family while the wife plays a supporting role. This further brings about stability in the marriage. Hankins and Hoekstra (2011) explain further that the quality of relationship between couples improves when there is a sudden positive shock in their income. As such, many marriages tend to experience significant positivity when the family income improves. Herbst (2011) argues that an increase in the income tax of an individual has quite a significant disadvantage on the success of a marriage, thus increasing the divorce rate. Consequently, the study further indicated that individuals also avoid marriage due to increase in income tax. Burgess, Propper, and Aassve (2003) point out that high income further increases the likelihood of a stable marriage while low income increases divorce rate among the young Americans. Charles and Stephens (2004) argue that spousal job loss is a major factor that exacerbates divorce in marriages. This is because the economic stability of a family is negatively impacted when there is a job loss, thus bringing about frustration and tension in the family.

Moreover, Jalovaara (2003) further asserts that women who are employed along with their husbands expectedly have more stable marriages than those who are solely dependent on their husbands. The study further implied that the relationships between two employed partners are at lower risk of divorce than when the partners are unemployed. However, unemployment is reported to have become one of the major factors that elicit frequent arguments and disagreements in marriages (Wiemers, 2014). This is because the family responsibilities may become unbearable for one of the spouses, thereby leading to serious marital chaos and eventually a divorce. In addition, González-Val and Marcén (2017) further expressed that the unemployment rate in marriage inflames emotional, financial, and psychological stress, thus leading to divorce in most cases. They further explain that there exists a strong relationship between unemployment and divorce in marriages in the United States. While stating the importance of education in marriage, Jalovaara (2003) maintains that couples who had low educational background were at a higher risk of divorce when compared with those who had high educational background. Heard (2011) claims that marriage stability in the United States has increased especially when the spouses possess higher level of education. However, education has continued to create or be a source of anxiety in marriages especially with those who have lower educational background. As such, marriage has

continually been viewed as an activity of the educated or elite in the society. Several studies have further investigated divorce in the context of business cycle (González-Val & Marcén, 2018), unemployment (Amato & Beattie, 2011; Tumin & Qian, 2017), and among other socio-economic determinants.

### 3 | DATA AND METHOD

This study employs annual panel data for the OECD countries from 1995 to 2016. In the study, 33 OECD member-states (excluding three other member states) were considered due to data limitation for the variables under investigation. Given the variable description in Table 1, the descriptive statistics of the series is subsequently presented in Table 2.

#### 3.1 | Estimation method

Before now, there are empirical studies that considered the nexus of unemployment, marriage, or divorce (Baghestani & Malcolm, 2014; Lester, 1996; Ressler & Waters, 2000; Stevenson & Wolfers, 2007). By employing similar model from the above studies, the current study incorporates the gender categories of employment in the model such that divorces are presented as

**TABLE 1** Description of variables

Variable name	Unit	Source
Gross domestic product per capita (GDP)	U.S. dollars	World development indicator
Unemployment in female (funem)	Number of people	World development indicator
Unemployment in male (munem)	Number of people	World development indicator
Marriage rate (mrate)	Frequency	OECD
Divorce rate (drate)	Number of people	OECD

Abbreviation: OECD, Organization for Economic Cooperation and Development.

**TABLE 2** Descriptive statistics of the variables

Variable	Mean	Median	Max.	Min.	SD	Skewness	Kurtosis
Divorce	2.126	2.200	5.200	0.411	0.727	0.050	3.334
Marriage	5.205	5.010	15.100	2.900	1.317	2.388	14.915
GDP	42,095.83	31,997.00	303,151.2	3,150.494	42,570.27	2.782	13.119
Funem	8.740	7.040	31.410	1.588	3.366	1.450	6.144
Munem	7.673	6.537	24.517	1.588	4.167	4.123	4.460

*Note:* Number of observations: 717. The GDP, funem, and munem are gross domestic product per capita, female unemployment rate, and male unemployment rate, respectively. Also, Max., Min., and SD are the respective maximum, minimum, and the standard deviation of the series.

$$\text{divorce} = f(\text{GDP}, \text{marriage}, \text{funem}, \text{munem}). \quad (1)$$

Hence, the long-run relationship of the above expression is determined via a linear logarithmic model in a simple form as follows:

$$\text{divorce} = \alpha_0 + \alpha_1 \text{GDP} + \alpha_2 \text{marriage} + \alpha_3 \text{funem} + \alpha_4 \text{munem} + \varepsilon_{it}. \quad (2)$$

### 3.2 | The dynamic ARDL

The estimation method utilizes the advantage of the pooled mean group (PMG) of an ARDL model, that is, its ability to model mixed order of integration series that is experienced in the panel unit root estimations shown in Table 1. As opposed to the generalized method of moment, the PMG estimation adopts the cointegration form of the ordinary ARDL model as proposed by Pesaran, Shin, and Smith (1999). It is adopted here such that the panel estimation presents the lag length  $q$  (which is 1 for the estimated Equation 3) as selected by the Akaike information criteria for the regressors and dependent variables and presented as

$$\Delta y_{i,t} = \phi_i \text{EC}_{i,t} + \sum_{j=0}^{q-1} \beta_{i-j,t} \Delta X_{i,t-j} + \sum_{j=1}^{p-1} \lambda_{i,j} \Delta y_{i,t-j} + \varepsilon_{i,t}, \quad (3)$$

where  $\text{EC}_{i,t} = y_{i,t-1} - X_{i,t} \theta$  is the error correction,  $\phi$  is the adjustment coefficients, and  $\theta$  is the long-run coefficients such that  $X = f(\text{GDP}, \text{marriage}, \text{funem}, \text{munem})$  for model. And  $y$  is the dependent variable, divorce. The estimation output of the model specifications ARDL (1, 1, 1, 1, 1) is shown in Table 3.

In addition, the Granger causality test by Dumitrescu and Hurlin (DH) (2012) is employed to analyze the predictive relationship among the variables. Importantly, the likelihood of the historical information of female and male unemployment rates in predicting the future occurrence of divorce is revealed. Because of brevity and limited space concern, the step-by-step procedure of the DH (Dumitrescu & Hurlin, 2012) test is not presented in this context. However, the result of the estimation is contained in Table 4.

## 4 | RESULTS AND EMPIRICAL DISCUSSION

In this section, the empirical results and discussion of the findings are presented. The result shown in Table 3a is the Pedroni long-run cointegration relationship among variables. Based on the result, we found that there is existence of a long-run cointegration equilibrium relationship among the variables under observation<sup>1</sup> at ( $p < .01$ ) and ( $p < .05$ ) significance level, respectively. The relationship between the estimated variables is further observed visually as indicated in Figures A1–A4 of the Appendix.

Furthermore, Table 3b presents the short- and long-run coefficients that were obtained from the ARDL model estimations. From the results, it shows that GDP per capita as a measure of economic growth has a negative and significant impact on divorce rate only in the long run. This implies that a percent increase in the level of growth will lead to 6.72% decrease in divorce

**TABLE 3** Cointegration estimations

<b>(a) Pedroni residual panel cointegration</b>						
<b>Panel</b>		<b>Weighted panel</b>			<b>Grouped</b>	
V-statistic	-1.149 (0.875)	V-statistic	-2.746 (0.997)	Rho-statistic	-4.507 (1.000)	
Rho-statistic	2.874 (0.998)	Rho-statistic	2.332 (0.990)	PP-statistic	-3.196* (0.001)	
PP-statistic	-2.212** (0.014)	PP-statistic	-3.546* (0.000)	Rho-statistic	-6.415* (0.000)	
ADF-statistic	-3.132* (0.001)	ADF-statistic	-5.269* (0.000)			
<b>(b) ARDL estimates</b>						
<b>Dynamic ARDL (1, 1, 1, 1, 1)</b>						
<b>Long-run estimates</b>	<b>Coefficient</b>	<b>p Value</b>	<b>ECT (-1)</b>	<b>Short-run estimate</b>	<b>Coefficient</b>	<b>p Value</b>
GDP	-6.721*	.000	-0.321*	d(GDP)	2.930	0.228
Marriage	-0.005	-.633	(0.000)	d(marriage)	-0.007	0.758
Funem	-0.070*	.000		d(funem)	0.013	0.399
Munem	0.080*	.000		d(munem)	-0.016	0.322

Note: The lag selection by Schwarz information criteria due to the number (small) of observations. The GDP, funem, and munem are gross domestic product per capita, female unemployment rate, and male unemployment rate respectively. Abbreviation: ADF, augmented dickey-fuller; ARDL, autoregressive distributed lag; ECT, error correction term; PP, phillip perron.

\*Statistical significance level at 1%; \*\*\*Statistical significance level at 10%.

**TABLE 4** Dumitrescu and Hurlin (2012) test Granger causality

<b>Null hypothesis</b>		<b>W-stat</b>	<b>p Value</b>	<b>Causality</b>	<b>Remark</b>
Divorce → marrate	(1)	2.434	.793	No	
Marrate → divorce	(2)	3.092***	.098	Yes	Unidirectional
Divorce → GDP	(3)	2.409	.835	No	
GDP → divorce	(4)	4.308*	2.E-05	Yes	Unidirectional
Divorce → Funem	(5)	2.434	.793	No	
Funem → divorce	(6)	3.092***	.096	Yes	Unidirectional
Divorce → Munem	(7)	2.083	.423		
Munem → divorce	(8)	3.071**	.041	Yes	Unidirectional
Marrate → GDP	(9)	3.453*	.016	Yes	
GDP → marrate	(10)	4.117*	.001	Yes	Bidirectional
Funem → GDP	(11)	3.286*	.037	Yes	
GDP → funem	(12)	5.777*	1.E-13	Yes	Bidirectional
Munem → GDP	(13)	3.268**	.041	Yes	
GDP → munem	(14)	6.834*	.000	Yes	Bidirectional

Note: Also, the GDP, funem, and munem are Gross Domestic Product per capita, labor force, female unemployment rate, and male unemployment rate, respectively.

\*p < .01, \*\*p < .05; \*\*\*p < .10.

rate in the long run at ( $p < .01$ ) significance level. This is an indication that economic growth, especially within the OECD countries, discourages the rate at which people divorce in a romantic relationship. Expectedly, the increase in the level of economic growth indicates an increase in the level of productivity. Thus, the study infers that increase in productivity per head of a nation would slow down the divorce rate, because increase in productivity means increase in income per head for partner in a romantic relationship. Hence, the situation leads to self-reliance among partners thereby reducing dependency between partners which could trigger divorce.

In addition, results also show that female unemployment has a negative and significant impact on divorce rate in the long run. The results that are reported in Table 3b show that a percent increase in female unemployment level will lead to 7% decrease in divorce rate in the long run. On the other hand, a percent increase in male unemployment will lead to 8% increase in divorce rate in the long run at ( $p < .01$ ) significance level. These results indicate that the divorce rate is higher among the male unemployed than their female counterpart. When a female is unemployed, she tends to be more submissive and tolerant with her spouse, thereby leading to lower rate of divorce. However, the reverse seems to be the case when there is high unemployment rate among the male counterpart in a romantic relationship. Results show that the divorce rate is higher when there is high unemployment rate among the men. This is true considering that high unemployment leads to the inability of a male partner to meet certain responsibilities or provide for his immediate family. Expectedly, such situation easily provokes issues in romantic relationship between the partners, thus potentially leading to divorce in the long run when the minor concerns in the family are unresolved. Lastly, as reported in Table 3b, the result shows that the rate at which partners in a romantic relationship get married has no significant impact on the divorce rate in the long run.

Furthermore, the adjustment coefficient ( $ECT_{t-1}$ ) as reported in Table 3b shows the short-term speed of adjustment of divorce to its long-term steady-state path following a shock. As reported in Table 3b, the adjustment coefficient is negative ( $-0.321$ ) and significant at ( $p < .01$ ) level. From the speed of adjustment estimated coefficient, we infer that deviation from the long-term divorce rate is adjusted by 32.1% annually. This result also provides statistical evidence in support of a stable long-term relationship among divorce rate, income level (economic growth), marriage rate, female and male unemployment rates. Thus, we conclude that economic growth, marriage rate, female unemployment rate, and male unemployment do not significantly influence divorce rate in the short run. However, these factors are observed to cause a significant increase/decrease in the divorce rate in the long run especially within the OECD countries.

In Table 4, the DH (Dumitrescu & Hurlin, 2012) causality testing result is presented. DH is an empirical technique built to test potential predictive relationship that exists between two or more variables. The reported result in Table 4 row 1 shows that divorce rate does not have predictive power over marriage rate. However, marriage rate weakly predicts the divorce rate among partners in a romantic relationship at ( $p < .10$ ) significance level. This finding signifies a one-way (unidirectional) predictive relationship from marriage rate to divorce rate. Thus, the statistical evidence concludes that the rate at which individuals get married is a useful predictor of the rate of divorce.

In addition, the results in Table 4, Rows 3, 5, and 7, show that the divorce rate does not have predictive power over the level of economic growth, female unemployment level, and

male unemployment level, respectively. However, the reported results in Table 4, Rows 4, 6, and 8, show that the level of economic growth, female unemployment level, and male unemployment level all have predictive power over the rate of divorce within the OECD countries over the sampled period among partners in a romantic relationship at ( $p < .01$ ), ( $p < .10$ ), ( $p < .05$ ) significance level, respectively. This finding signifies a one-way (unidirectional) predictive relationship from economic growth to divorce rate, female unemployment rate to divorce rate, and male unemployment rate to divorce rate, respectively. Thus, the overall impression is that an increase and/or decrease in the level of economic growth, female unemployment rate, and male unemployment rate influences the rate of divorce among partners in a romantic relationship.

Lastly, the indicated results in Table 4, Rows 9–14, show that marriage rate, female unemployment rate, and male unemployment rate Granger cause economic growth and vice versa at ( $p < .01$ ) and ( $p < .05$ ) significance level, respectively. This finding signifies a two-way (bidirectional) predictive relationship between economic growth and marriage rate, female unemployment rate and economic growth, and between male unemployment rate to economic growth, respectively. Based on these results, this study infers that increase and/or decrease in the level of female unemployment rate, male unemployment rate, and marriage rate influences the level of economic growth.

## 5 | CONCLUSIONS

This study has demonstrated how gender-based income influences divorce in romantic relationships. We used an annual panel data for OECD countries from 1995 to 2016. Findings indicate that for individuals to sustain their romantic relationship income sustainability is highly essential. Ultimately, our study affirms that economic stability is highly essential in achieving stability in a romantic relationship and more specifically in a marriage (Kravdal, 1999; Thielemans & Mortelmans, 2018).

The findings in the study suggest that when there is an increase in economic growth, the rate of divorce will be low. This infers that economic growth will afford families better opportunities of the necessities of life such as food, cloth, and shelter. In a larger perspective, growth in the economy will allow the government to afford citizens essential amenities, which will have a direct impact on families. High economic growth will also afford individuals better job opportunities that will further strengthen the marriage, thereby reducing divorce rate. As affirmed by our study, a reduction in divorce rates is largely dependent on family sustainability, which in turn is dependent on economic growth.

In addition, female unemployment was found not to contribute to an increase in divorce, rather the higher the unemployment rate among males in a relationship, the higher the divorce rate. This may be due to the fact of the roles men play in the sustainability of the family. For instance, the self-esteem of the husband will most likely be affected; likewise, the woman may psychologically feel she is assuming the roles that do not belong to her if it is otherwise. As such, the probability of a divorce is higher when there is male unemployment in a relationship.

Interestingly, we recognize that the marriage rate does not affect divorce rate. As such, high marriage rate will not necessarily translate to high divorce rate. Also, a high divorce rate does not necessarily result in high marriage or male and female unemployment rates.



However, male and female unemployment as well as marriage may affect economic growth. This may be because high divorce results to instability in the society. Also, when their employment rate is low, the production and productivity capacity will be affected thereby affecting economic growth.

Moreover, while the study affirms a procyclical nature of marriage by also presenting insight into the relationship between marriage, divorce, and the SDGs (2019) 2030, policy implications for governments of the OECD countries and stakeholders are presented. In order to complement its drive toward attaining the SDGs by the year 2030, the governments of the OECD are encouraged to implement socioeconomic policies that are potent enough to sustain its population, income growth, and among others (Alola, 2019; Alola, Bekun, & Sarkodie, 2019; Alola, Yalçiner, & Alola, 2019). For instance, the aging population of most European countries should be a concern to the government, so also the delay in marriage and divorce rate dilemmas. Some of the member countries like Spain and Portugal are currently contending with an aging population. As such, wider deliberations and an effective framework that incorporates unemployment classification and other socioeconomic factors should be considered in these countries' approaches.

Lastly, in the future study, time series (individual emphases) analyses of the countries could be considered. This is necessary for possible specific policy consideration for each of the countries considering their heterogeneity.

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## ENDNOTE

<sup>1</sup> All the variables are stationary at first difference. Unit root results will be made available upon request.

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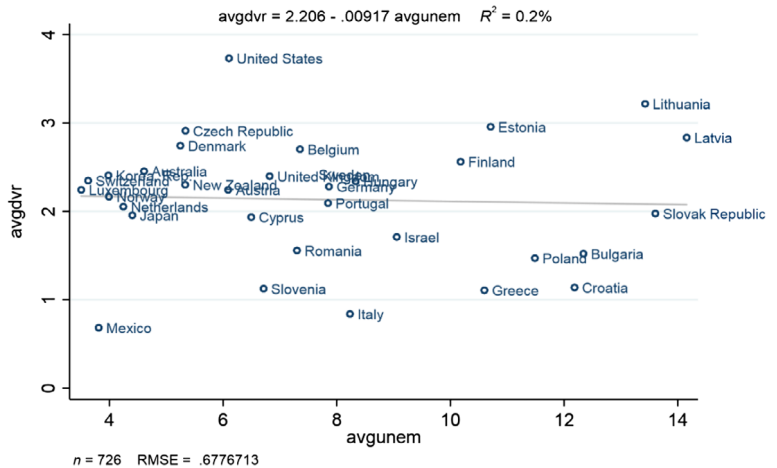
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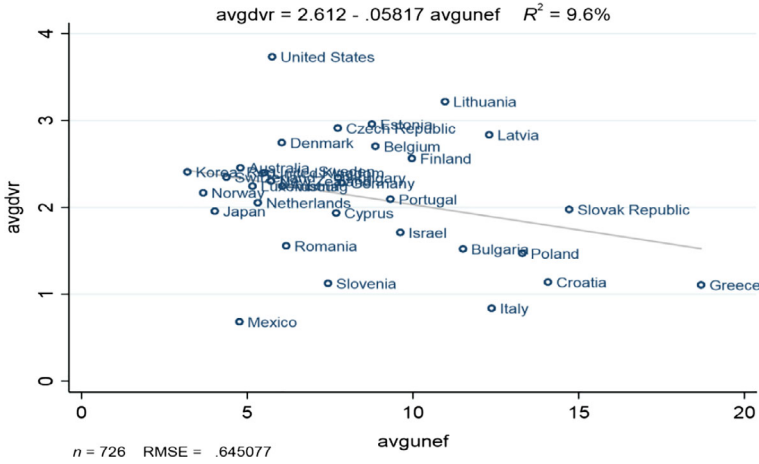
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## APPENDIX A.

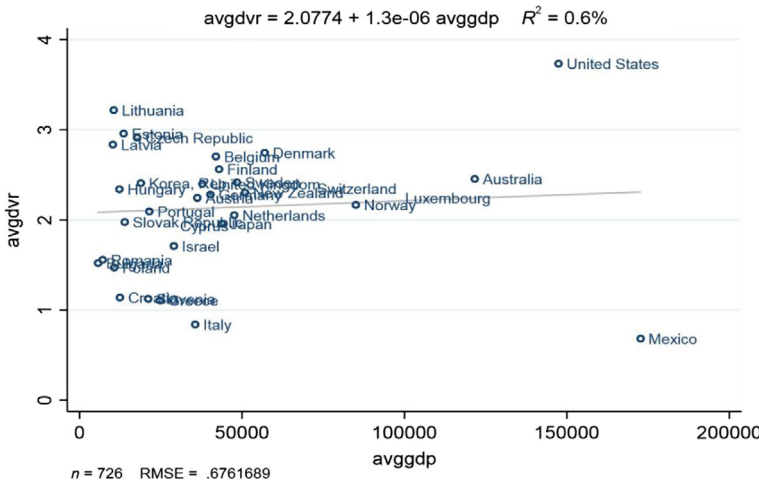
**FIGURE A1**

A graphical illustration of the relationship between average divorce rates (avgdvr) and average male unemployment (avgunem) for the examined countries

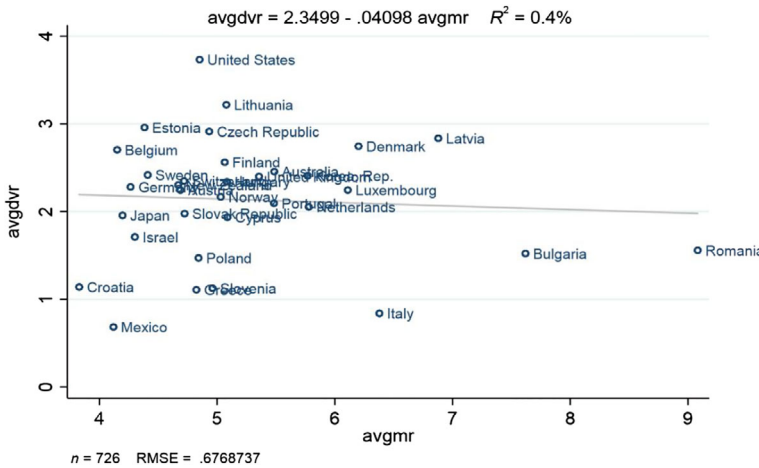




**FIGURE A2**  
A graphical illustration of the relationship between average divorce rates (avgdvr) and average female unemployment (avgunem) for the examined countries



**FIGURE A3**  
A graphical illustration of the relationship between average divorce rates (avgdvr) and average income growth (avggdp) for the examined countries



**FIGURE A4**  
A graphical illustration of the relationship between average divorce rates (avgdvr) and average marriage rate (avgmr) for the examined countries