

The Effects of Female Economic Independence on Divorce Rates: Empirical Evidence from the OECD Member Countries

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Abstract:

This study attempts to shed new light on the instability of marriage union with emphasis on the economic or opportunity costs borne by female labor force in terms of the potential for female economic independence. Using a cross-sectional time series data from the 36 OECD member countries over 25 years, we investigate variations in divorce rate primarily through changes in the labor force characteristics such as the share of female labor force, female employment opportunities, and the human capital potential of female labor force. Our fixed effects estimation results show that the amount of education acquired by female labor force is positively correlated with divorce rates while female unemployment rate and the gender gap between male and female in employment opportunities are negatively correlated with divorce rates.

Publication History: Received: 21 January 2019 | Revised: 08 March 2019 | Accepted: 12 March 2019

Keywords:

Fixed effects model, divorce rate, labor force, unemployment rate, opportunity cost.

JEL Codes:

C31, J12, J21, J24.

1. INTRODUCTION AND LITERATURE REVIEW

Throughout history and civilization marriage has been acknowledged as a dedicated voluntary union of two individuals. Recent years, however, have witnessed some instability or variations in the trend of marriage union as the conventional form of a civil union has dissimilated over time across different cultures and regions. Although a country or region with a different cultural foundation views marriage through its unique lenses, the dissolution of marriage union (divorce) and cohabitation have been increasingly perceived as a norm. Many aspects of marriage have been closely investigated by family scholars. Their studies have highlighted the prevalence and incidence of divorce, the dissolution of marriage. Family scholars have sought to explain variations in the amount of marriages and the inconsistency of divorces – an increase, decrease, or leveling off in divorce rates.

The study of the dissolution of marriage union has largely evolved along two primary margins – the intergenerational transmission of divorce and the incidence of divorce. First, several studies examined if there was a trend or empirical evidence by marriage cohort in the intergenerational transmission of divorce. Since the seminal empirical study by

Landis (1955), a number of empirical investigations have attempted to confirm the absence or presence of correlation between parent discord in marriage union and offspring dissolution of marriage (McLanahan and Bumpass, 1988; Bumpass et al., 1991; Amato, 1996; Kiernan and Cherlin, 1999; Amato and DeBoer, 2001; Teachman, 2002; D’Onofrio et al., 2007; Dronkers and Harkonen, 2008; Li and Wu, 2008; Diekmann and Schmidheiny, 2013; Amato and Patterson, 2017). Three outstanding observations emerge from the literature of the intergenerational transmission of divorce. First, the majority of the studies are regional or country-specific, especially the United States. Although a few studies of the intergenerational transmission of divorce were conducted for some European countries, there have been no empirical reports on the issue from other parts of the world (Amato and Patterson, 2017). Second, the empirical findings reported in the literature are mixed. For instance, using the 1982 National Survey of Family Growth (NSFG) which gathers information on family life, marriage and divorce, pregnancy, and so on (<https://www.cdc.gov/nchs/nsfg/index.htm>), McLanahan and Bumpass (1988) found that divorce risks had hardly changed for all sample marriage cohorts contracted after 1970, suggesting no presence of the transmission of union instability.

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In a more recent study, Teachman (2002) examined data from the 1995 National Survey of Family Growth (NSFG) and investigated if offspring divorce was influenced by their parent's history. The study found no statistically meaningful evidence of the intergenerational transmission of divorce. In a similar study, Li and Wu (2008) incorporated a time dimension (the duration of exposures to the risk of divorce) into their investigation of the intergenerational transmission of divorce. Using the data from the 1987-1988 National Survey of Families and Households (NSFH) which provides a considerable amount of life-history information such as the respondent's histories of marriage, cohabitation, and education among others (<https://www.ssc.wisc.edu/nsfh>), they employed a Cox proportional hazard model to estimate the impact of the disruptions of parental union on offspring divorce risks. They found that small changes observed in the offspring divorce risks for the sample time period are better explained by the duration of exposures to the risk of divorce than parental divorces. These observations suggest no trend in the intergenerational transmission of divorce. On the other hand, some empirical findings have been made in support of a trend in the intergenerational transmission of divorce. For example, an early study by Wolfinger (1999) used the data from data from the 1973-1996 NORC (National Opinion Research Center) General Social Survey (GSS) which monitors changes in both social characteristics and attitudes in the United States (<http://gss.norc.org/about-the-GSS>). In the study, Wolfinger argued that the rate of divorce transmission declined by almost 50% between 1973 and 1996 and that the empirical finding remained robust even when various personal and family background differences were statistically controlled for. Another study in support of a trend in the intergenerational transmission of divorce is Amato and Patterson (2017). Using the data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) which provides the information on how social environments and behaviors in adolescence are linked to health and achievement outcomes in young adulthood (<https://www.cpc.unc.edu/projects/addhealth>), they argued that there was a positive correlation between parental union disruptions and offspring divorces. Lastly, a third noteworthy observation emerging in the literature of the intergenerational transmission of divorce is that empirical findings seem prone to not a small degree. The aforementioned surveys have collected quite different correlates of divorce – not only varying socioeconomic and demographic characteristics of the respondents, but also different types of measure for a given variable such as binary and count variables. This observation provides further grounds for more future efforts to minimize the same source bias and/or adequate data adjustments.

On the other hand, the other major segment of the literature has been centered around empirical explorations of the factors affecting a married couple's odds of divorce. For example, American divorce rates had been on the rise until it peaked in the 1980s, but has declined since (Rotz, 2016). Some prominent factors reported in the literature for marriage union disruptions include economic or financial hardships, the rise of

cohabitation as alternate way to enter into adulthood, changes in the demographics and socioeconomic roles of women, social progression towards new social norms (such as declining social stigma of divorce), and changes in the rationale of marriage to name a few. For instance, regarding a correlation between economic hardship and divorce, Cohen (2014) examined individual-level observations to examine the effects of unemployment and foreclosures on divorce over the 2008-2011 period in the United States. He argued that a downward spike in the divorce rate since 2008 was due to strengthened family bonds or an increased burden of divorce costs to be borne during the lean times. However, the same study reported a positive effect on the divorce rates of state foreclosures. In a study related to a financial aspect of marriage union, Killewald (2016) attempted to understand the issue of divorce risk through a gendered viewing glass. Using the 1968-2013 data from the Panel Study of Income Dynamics (PSID) which is the longest running longitudinal household survey in the world (<https://psidonline.isr.umich.edu/>), she found that a wife's economic independence in the event of divorce is not associated with the risk of divorce. Instead, husbands' lack of employment was found to lead to an increase in the risk of divorce.

Some studies in the literature of divorce focused on an evolutionary perspective of marriage union. For example, Lundberg and Pollak (2015) argue that marriage has progressed to a societal role and that the class divergence in marriage and parenthood would be better understood in terms of childrearing as a joint investment made by a married couple. In view of marriage as a joint investment in children, they emphasized that an increase in the returns to human capital over the past 50 years resulted in an increase in the expected gains to investing in children, which in turn led to a decrease in divorce rates especially for more-educated, wealthier parents. In another study which examined variances in marriage instability across different age groups, Brown and Lin (2012) examined why the divorce rate would be likely to climb for adults aged 50 and older. Using the data from the 1990 U.S. National Vital Statistics Report (NVSr, <https://www.cdc.gov/nchs/products/nvsr.htm>) and the 2010 American Community Survey (ACS, <https://www.census.gov/programs-surveys/acs/>), they attempted to explain a near double increase in the divorce rate among adults aged 50 and older between 1990 and 2010. They argued that a couple's marital biography – marriage order and marital duration – is positively associated with the risk of divorce in 2010 along with other factors related to demographic characteristics and economic resources. Regarding the rise of cohabitation as an alternate way to enter adulthood, Kennedy and Ruggles (2014) examined why divorce rates leveled off or even declined among the young especially when legal and social barriers to divorce declined along with increased opportunities for women's economic independence (Ruggles, 1997). They attributed a decline in divorce rates among women under age 25 to increasing selectivity of marriage, which in turn led to the rise of cohabitation.

The purpose of this study is to shed new light on the instability of marriage union with emphasis on the economic or opportunity costs female labor force incurs, especially in terms of the potential for female economic independence. Departing from the bulk of the existing studies that incorporate various socioeconomic and demographic factors as well as marital factors into the analysis, this study attempts to explain variations in divorce rate primarily through changes in the labor force characteristics such as the share of female labor force, female employment opportunities, and the human capital potential of female labor force. This approach certainly exposes our study to a number of pros and cons. For instance, the dissolution of marriage union has been seldom investigated in a cross-country manner because detailed and specific marital information at the individual level is often only available through a country or region-specific longitudinal survey data. Many studies commonly examined the effects on divorce rate of the amount of education married or divorced people received but hardly considered some aspects of the labor market across countries and time which affect the likelihood of economic independence of female members of the labor force. For the purpose, we study some cross-national labor market indicators from the OECD (Organization for Economic Cooperation and Development) Family Database (<http://www.oecd.org/els/family/database.htm>). An obvious downside of using cross-national observations is that our analysis comes at the expense of detailed examination of different components of marital status at the individual level. In order to be inclusive of all OECD member countries for each observed aspect of the labor market characteristics, we use a truncated sample of the 36 OECD member countries over 25 years (1990-2014). In addition, a fixed effects model is used to accommodate unobserved time-invariant characteristics of the sample countries.

The rest of this study is organized as follows. In Section 2, we discuss the data source and control variables that are presumed to affect the likelihood of the female members of the labor force. Section 3 elaborates on our empirical specifications and introduces the empirical results, followed by the concluding remarks in Section 4.

2. DATA AND EMPIRICAL STRATEGY

The sample data on the 36 OECD member countries from 1990 to 2014 are gathered from the two international databases – the World Development Indicators (<http://datatopics.worldbank.org/world-development-indicators/>) and the OECD Family Database. All cross-national economic and labor market indicators are from the World Development Indicators: Gross Domestic Product per capita at Purchasing Power Parity, female unemployment rate, female labor force at the tertiary education level, and female labor force at the secondary education level.¹ The cross-country observations on divorce rate, gender gap in the

employment-to-population rate, and marriage rate are from the OECD Family Database.

Among the explanatory variables, Gross Domestic Product per capita (GDPPC) at Purchasing Power Parity measured in constant 2011 international dollars is considered. The variable GDPPC is labeled as a measure of the standard of living and is presumed to reflect the level of general economic wellbeing. We assume that the impact of changes in the general economic wellbeing on divorce rate is indeterminate because economic hardship can certainly affect marriage union in more than one way, depending on the income level of a married couple. For instance, an economic downturn and its attendant financial straits may either strengthen or weaken a marriage. Despite its presumed ambiguous impact on marriage union, the variable GDPPC is considered an indispensable factor for this study because a change in the standard of living is largely believed to be accompanied by subtle changes in social norms. We expect some hard-to-measure changes in societal trends, especially people's attitudes toward marriage or divorce in the context of this study, are accounted for by the variable.

The female unemployment rate, denoted by URF, is controlled for as a measure of the potential for female economic independence. Although the variable URF includes the female members of the labor force who have never been married, the variable is presumed to reflect the potential for economic independence which females may capitalize on in case of the dissolution of marriage union. The estimated coefficient of the variable is expected to have a negative sign. In a similar context, we include the female share of the labor force at the two levels of education – secondary and tertiary education. It is presumed that unstable marriage is more likely to dissolve as educated women can afford economic independence through enhanced employment opportunities. Put differently, economic or opportunity costs borne by females are higher when they have acquired more education. Following the International Standard Classification of Education (ISCED), we consider two variables – the female share of the labor force at the level of secondary education (denoted by FLFSE) and the female share of the labor force at the level of tertiary education (denoted by FLFTE). The estimated coefficient of each variable is expected to be positive.

In an attempt to investigate the link between female employment opportunity and the likelihood of divorce female labor in comparison with male employment opportunity, we include the variable GENDERGAP which is defined as male-less-female in the employment-to-population rate. The variable is expected to be negatively correlated with the dependent variable divorce rate (denoted by DR) in that the greater is the gender gap, the smaller is the likelihood of female economic independence relative to male. In addition, our study controls for the variable marriage rate, denoted by MARRATE, to see how variations or trends in marriage rate are associated with divorce rates. The variable MARRATE is expected to have a negative coefficient. Table 1 summarizes all dependent and independent variables controlled for our empirical specifications.

¹ Since the duration of each level of education varies across countries, we use the 2011 International Standard Classification of Education (ISCED). The secondary and tertiary levels of education refer to ISCED 2-4 and ISCED 5-8, respectively. For details, refer to <http://uis.unesco.org/en/topic/international-standard-classification-education-isced>.

Table 1. The description of the variables

Variable	Descriptions
DR	Divorce rate expressed as divorces per 1,000 population during a given year
GDPPC	Gross Domestic Product per capita at Purchasing Power Parity (constant 2011 international dollars)
URF	Female unemployment rate
FLFPE	Female share of labor force at the level of the primary education
FLFSE	Female share of labor force at the level of the secondary education
FLFTE	Female share of labor force at the level of the tertiary education
FLFSTE	Female share of labor force at the level of the secondary education or above (=FLFSE+FLFTE)
FLFPSE	Female share of labor force at the level of the secondary education or below (=FLFPE+FLFSE)
GENDERGAP	Male-less-female in the employment-to-population rate
MARRATE	Marriages per 1,000 population during a given year

Sources: The 2019 World Development Indicators and the 2019 OECD Family Database.

3. MODEL SPECIFICATION AND ESTIMATION RESULTS

A fixed effects model is fitted on the longitudinal data discussed in the previous section. The use of a fixed effects model is based on the following assumptions. First, it is presumed that each sample country has its own individual characteristics. In other words, some characteristics within a sample country are time invariant but may affect the dependent variable (divorce rate). Such time-invariant country-specific characteristics may include deeply ingrained social norms of a country. The 36 OECD member countries represent Asia, Europe, Central America and North America. And the OECD member countries in Asia and Europe further exhibit hard-to-measure variations in cultural value as well as socioeconomic diversity. In the literature of cross-sectional time series, such country-specific time-invariant factors are controlled for by fitting a fixed effects model.² Thus, our fixed effects model is fitted as follows:

$$y_{it} = X\beta + \alpha_i + \mu_{it}$$

where

y_{it} = the dependent variable (divorce rate) of a sample country i at year t ,

X = a vector of the explanatory variables (x_{it}),

α_i = the unknown intercept for each sample country ($i=1 \dots 36$),

μ_{it} = the error term.

Table 2 reports the fixed effects regression results of three different models. In each model, standard errors are reported in the parenthesis along with the statistical significance of each estimated coefficient. First, in Model (1), Gross Domestic Product per capita (GDPPC), female unemployment rate (URF), female share of labor force at the level of the secondary education (FLFSE), female share of labor force at the level of the tertiary education (FLFTE), and male-less-female in the employment-to-population rate (GENDERGAP), and marriage rate (MARRATE) are controlled for. All but one estimated coefficients are statistically significant at least at the 5% level. The estimated coefficient of the variable GDPPC is significant at the 5% level with a negative sign, indicating that reduced economic hardship per person leads to a decrease in divorce rate. However, the estimated coefficient is nearly zero with little economic significance. The estimated coefficient of the variable URF is negative and significant at 1% level. As hypothesized earlier, limited likelihood of female economic independence (due to an increase in female unemployment rate) is predicted to reduce divorce rate. Both the estimated coefficients of the variables FLFSE (female share of labor force with the secondary education) and FLFTE (female share of the labor force with the tertiary education) are positive, suggesting that an increased share of more educated female in the labor force leads to an increase in divorce rate. Although the estimated coefficient of the variable FLFTE is not statistically significant, the empirical findings are consistent with our presumption that economic or opportunity costs borne by females are higher when they have acquired more education, leading to a higher divorce rate. The estimated coefficient of the variable GENDERGAP is negative and statistically significant at the 1% level. This finding is in line with, our theoretical reasoning that changes in employment opportunities skewed towards male labor force may suppress female employment opportunities and reduce the potential for female economic independence, resulting in a decrease in divorce rate. lastly, the variable MARRATE is estimated to be negatively correlated with the dependent variable divorce rate.

In Model (2), we combined the two variables, FLFSE and FLFTE, to see a combined effect of the two variables on the dependent variable. Note that Model (2) regression yields all estimates with the predicted signs that are statistically significant at least at the 5% level. In contrast with Model (1), the estimated coefficient of the variable FLFSTE (female share of labor force with the secondary education or above) is positive and statistically significant.

Finally, in Model (3), we attempt to test the robustness of the link between the level of education of the female share of the labor force and divorce rate by controlling for the female share of the labor force at the level of primary education. The regression yields all estimates with predicted signs. In contrast with Model (1) and Model (2), the estimated coefficient of the

² Another important assumption is that country-specific time-invariant factors are not correlated with other characteristics of an individual country. If an unobserved variable does not change over time, then variations in the dependent variable must be attributed to other time-varying factors other than the fixed characteristics (Stock and Watson, 2003).

variable FLPSE (female share of labor force with the secondary education or below) is negative as predicted, indicating that a limited potential for female economic independence due to limited educational attainment is negatively correlated with a change in divorce rate. However, the estimated coefficient is not statistically significant.

Table 2. The Fixed Effects Regression Results.

Dependent variable: Divorce rate	Model (1)	Model (2)	Model (3)
GDP per capita (GDPPC)	-8.26e-06*** (2.86e-06)	-9.66e-06*** (2.61e-06)	-8.18e-06*** (2.72e-06)
Female unemployment rate (URF)	-0.0239*** (0.0052)	-0.0238*** (0.0052)	-0.0245*** (0.0052)
Female labor force with secondary education (FLFSE)	0.0064** (0.0029)		
Female labor force with tertiary education (FLFTE)	0.0027 (0.0036)		
Female labor force with secondary education or above (FLFSTE=FLFSE+FLFTE)		0.0054** (0.0027)	
Female labor force with secondary education or below (FLFPSE=FLFPE+FLFSE)			-0.0011 (0.0026)
GENDERGAP	-0.0285*** (0.0059)	-0.0278*** (0.0059)	-0.0302*** (0.0058)
Marriage rate (MARRATE)	-0.0707*** (0.0264)	-0.0726*** (0.0263)	-0.0826*** (0.0259)
Overall R ²	0.3068	0.3028	0.2880
F-statistic	F(35, 579)=47.62	F(35, 579)=47.62	F(35, 580)=48.60
Number of obs.	621	621	621
Number of groups	36	36	36

Note:*, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

4. CONCLUSION

Departing from many prior studies in the literature on marriage instability which focused on hereditary or time-varying socioeconomic and demographic characteristics as well as marital status, this study examined the link between divorce rate and labor market characteristics that potentially affect the degree of female economic independence. We hypothesized that female unemployment rate and the gender gap between

male and female in employment opportunities would be negatively correlated with divorce rate because limited employment opportunities for women would decrease the likelihood of female economic independence through a decrease in the opportunity costs borne by unemployed female labor force. In addition, it was hypothesized that the amount of education attained by female labor force would be positively correlated with divorce rate as it is presumed that an enhanced human capital stock of female labor force increases the likelihood of female economic independence through an increase in the opportunity costs borne by unemployed female labor force. Our main empirical findings are statistically significant and consistent with our hypothesis.

However, this study leaves many important economic and statistical issues unresolved. First, marriage instability, especially the dissolution of marriage union, is a multi-dimensional socio-economic-demographic issue. As some aspects of the issue are related to hereditary or path-dependent (meaning that history matters), the bulk of the empirical studies by family scholars have used survey data gathered for a specific country or region and, as a result, a longitudinal study has been rare. Nonetheless, investigating a link between divorce rate and the likelihood of female economic independence is only a small part of the whole scope of the issue and is by no means complete. We hope renewed attention is brought to the issue of marriage instability and strongly urge that more organized efforts are made to develop a global format to collect survey data.

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