

Business Cycles and Divorce: Evidence from Microdata*

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We use individual-level data to show that divorce is pro-cyclical on average, a finding robust to the inclusion of a wide range of controls. Pro-cyclical divorce is concentrated among women who married young and/or do not have a college degree.

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1. Introduction

Researchers have speculated for decades that divorce rates might decline in times of economic recession (Ogburn and Thomas, 1922). Three recent papers use variation in state-level unemployment rates and aggregate state-level divorce rate data from the United States Vital Statistics Series and conclude that divorce is pro-cyclical (Amato and Beattie, 2011, Hellerstein and Morrill, 2011, and Schaller, 2012 forthcoming).⁴ The key limitation of using Vital Statistics data is that they have little to no information disaggregated on the basis of important demographic characteristics. In this paper, we use individual-level data from retrospective marital histories in the Survey of Income and Program Participation (SIPP), where we can add controls for demographic characteristics and disaggregate the data along several observable dimensions. We first show that divorce is pro-cyclical in the SIPP data and that this finding is robust to the inclusion of family-level demographic characteristics. We then show that the pro-cyclicality of divorce is concentrated among couples where the wife does not have a college degree and/or who married at ages 16-19. These are women whose economic circumstances may be most affected by the business cycle (Hoynes, et al., 2012).

2. Empirical Results

We estimate linear probability regressions of the probability that an individual couple i , living in state s , divorces in year t , on state and year fixed effects (γ_s, μ_t), the state unemployment rate in year t ($urate_{st}$), and marriage-specific and individual-specific covariates (X_{ist}):

$$(1) \Pr(Divorce_{ist} = 1) = \gamma_s + \mu_t + \alpha * urate_{st} + \beta * X_{ist} + \varepsilon_{ist}.^5$$

⁴ Arkes and Shen (2010) use individual-level data from the NLSY and find no evidence of pro-cyclical divorce. They use data from only one birth cohort and different model specifications, so it is not clear how their results compare with ours.

⁵ Ruhm (2000), and several subsequent articles, use a similar empirical framework to study the effects of business cycles on mortality and other demographic outcomes.

Table 1 presents the estimated coefficient α using a sample of marriage-years from pooled data from female respondents in the 1993-2008 panels of the SIPP, Wave II, Marital History Topical Modules.⁶ Table 1, Column (1) reports estimates of a version of Equation 1 that constrains β to be zero. There is a negative and statistically significant relationship between the unemployment rate and the probability of a couple divorcing, with an estimated coefficient of -0.0361 percentage points—that is, a pro-cyclical effect.

To determine the robustness of this main effect to the addition of demographic characteristics, the specification presented in Table 1, Column (2) adds dummy variables for the parity of the marriage, the woman's age at the time of marriage, her race and ethnicity, and whether she has a college degree. The estimated coefficient on the unemployment rate is -0.0342, only slightly smaller than in Column (1). To put this into context, if the unemployment rate rose by one percentage point (say, from its mean at 6 percent to 7 percent) there would be 0.34 fewer divorces per 1,000 married women.⁷ Since the mean divorce rate in the sample is 18.0 divorces per 1,000 married women, this represents a 1.9 percent reduction. This is a small, but potentially an economically meaningful effect.⁸ In Table 1, Column (3) we include a state-by-year linear time trend to the model (as in Hellerstein and Morrill, 2011). This leads to similar

⁶ See the online appendix for details on the data construction:

http://www4.ncsu.edu/~msmorri/HMZ_BusinessCyclesDivorce_OnlineAppendix.pdf.

We limit our sample to female respondents due to concerns over the quality of retrospective marital histories for men, as discussed in detail in the data appendix and in Martin (2006). This data limitation also means that our empirical work can only control for and disaggregate by demographic characteristics of women and not their husbands.

⁷ This effect is about one and a half times as large as that using Vital Statistics data (Hellerstein and Morrill, 2011). Here, in keeping with previous work on divorce using the SIPP, we restrict the sample to marriage-year observations in the first 20 years of the marriage. This excludes long-lasting marriages. This largely explains the difference in the results; the online appendix reports results removing the restrictions.

⁸ The online appendix reports the other coefficient estimates for Column (2).

qualitative results, but the coefficient estimate on the unemployment rate is smaller and is statistically significant only at the 10 percent level.⁹

In Column (4) we consider whether the pro-cyclicality of the probability of divorce is simply a (spurious) reflection of the effect of business cycles on the composition of marriages by including in the regression fixed effects for the year of marriage. This has a negligible impact on the estimated coefficient on the unemployment rate. Finally, in Table 1, Column (5), we include dummy variables for the duration of the marriage and show that doing so does not substantially alter the estimated coefficient on the contemporaneous unemployment rate.

Next, we explore heterogeneity across wives' demographic groups in the sensitivity of the probability of divorce to the unemployment rate. Using as the baseline the specification from Table 1, Column (2), we estimate a series of regressions that include interactions between the unemployment rate and sets of demographic characteristics. Table 2 reports the coefficient estimates and standard errors on the interaction terms.

First, we consider heterogeneity by the race/ethnicity of the wife. The coefficient on main effect of the unemployment rate represents the cyclicity of divorce for white women. It is -0.0351, very similar to the full sample estimate (whites make up the vast majority of the full sample). While the point estimates on some of the interaction terms are large relative to the main effect, they are imprecisely estimated. So, only for the small sample of "other race" women is there evidence of a different cyclical relationship than that of white women. In Column (2) we include interactions with the parity of the marriage. The coefficient estimate on the unemployment rate, which estimates the cyclicity of divorce for women in their first marriages, is -0.0519. This is quite a bit larger than for the full sample, and, indeed, for women in their second and third marriages, there is no evidence of cyclicity of divorce.

⁹ The estimated coefficient on the unemployment rate in Column (2) is not statistically significantly different than that in Column (3), and we do not consider further specifications with state-specific time trends.

Next we consider whether the wife is a college graduate. The estimated coefficient on the main effect of the unemployment rate (-0.0559) captures pro-cyclicality for less-educated women. This is larger in absolute value than the effect averaged over all education groups, and there is no evidence of pro-cyclical divorce for college-educated women. In Column (4) we explore whether divorce is differentially sensitive to business cycles for women who marry when they are young by including interactions with a series of age dummy variables. The results show that divorce is essentially a-cyclical for women whose marriages began after the age of 24, but is pro-cyclical for those who marry at younger ages, especially for those who marry as teenagers. In Table 2, Column (5), we include dummy variables for the duration of the marriage (as in the last column of Table 1) and interactions between the duration controls and the unemployment rate. Divorce is generally pro-cyclical for all but marriages in the first or second year.

One final note is necessary on the interpretation of the estimated coefficients presented in Table 2. Education, age at first marriage, and marriage parity are highly correlated (as is racial/ethnic group). While a fully interacted model becomes unwieldy to present and difficult to interpret, the qualitative results on the cyclicity of divorce that we report in each column of Table 2 are also true in a fully interacted model (not shown).

3. Discussion and Conclusions

Recent work using aggregate divorce rates from the Vital Statistics data finds that divorce is pro-cyclical. In this paper, we confirm the finding of pro-cyclical divorce using individual-level data from retrospective marital histories in the SIPP. Our main result indicates that a one percentage point rise in the unemployment rate is associated with a 0.03 percentage point decline in the average couple's probability of divorcing in a given year, a roughly 1.9 percent drop. The estimates are robust to including additional covariates such as the woman's education level, race/ethnicity, age at marriage, and marriage parity. The results also are robust to the inclusion of controls for economic conditions at the time of marriage and marriage

duration, and thus are not being spuriously driven by lagged differences in the quality of marriages across the business cycle.

When disaggregating across wives' demographic groups, the most important finding is that pro-cyclical divorce is concentrated among women with less than a college education and women who marry when young. This may seem counterintuitive at first, since these women may be most likely to experience negative household economic shocks in recessions that could increase marital instability (see Charles and Stephens, 2004). But divorce is costly, and good economic times may relax liquidity constraints for these women, making divorce more feasible financially. Alternatively, as discussed in Hellerstein and Morrill (2011), booms may lead some women (or couples) to lower their perceptions of the quality of their marriages, leading to more divorces. More research is necessary to tease out the mechanisms for pro-cyclical divorce.

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Table 1: Baseline Individual-Level Results

	Fixed Effects	+ Demo. Controls	+ Time Trend	Marriage Year FE	Duration Controls
	(1)	(2)	(3)	(4)	(5)
Unemployment Rate	-0.0361* (0.0145)	-0.0342* (0.0141)	-0.0237+ (0.0133)	-0.0338* (0.0138)	-0.0359* (0.0141)
State and Year FE	X	X	X	X	X
Demographic Controls		X	X	X	X
Duration Controls					X
Marriage Year FE				X	

Note: For information on the sample, see the online appendix. The sample size is 666,695. Demographic controls include wife's marriage parity, age at marriage, race and ethnicity, and educational attainment. Standard errors are in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table 2: Heterogeneity by Demographic Characteristics

	Race	Marriage Order	Education	Age at Marriage	Duration
	(1)	(2)	(3)	(4)	(5)
Unemployment Rate (UR)	-0.0351*	-0.0519**	-0.0559**	0.0024	-0.0895**
	(0.0144)	(0.0160)	(0.0148)	(0.0242)	(0.0296)
UR x Non-Hispanic Black	-0.0277				
	(0.0439)				
UR x Hispanic	0.0017				
	(0.0561)				
UR x Other Race	0.0880*				
	(0.0338)				
UR x 2 nd Marriage		0.0820*			
		(0.0330)			
UR x 3 rd Marriage		0.0968*			
		(0.0396)			
UR x 4 th and Higher		-0.0757			
		(0.1319)			
UR x College Degree			0.0943**		
			(0.0199)		
UR x Age 16-19 at Marriage				-0.0943**	
				(0.0283)	
UR x Age 20-24 at Marriage				-0.0339	
				(0.0290)	
UR x Age 35-44 at Marriage				-0.0110	
				(0.0361)	
UR x Age 45+ at Marriage				0.0103	
				(0.0420)	
UR x 1 st or 2 nd Year of Marriage					0.1388**
					(0.0419)
UR x 3 rd or 4 th Year					0.0625+
					(0.0372)
UR x 5 th to 7 th Year					0.0299
					(0.0261)
UR x 11 th + Year					0.0533
					(0.0322)

Notes: Standard errors are in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Estimated coefficients on the unemployment rate and interaction terms are presented here. See Online Appendix Table B.2 for the sum of the main effect and interaction terms.