

## **Booms, Busts, and Divorce**

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There has recently been wide interest in, and many anecdotal accounts of, the consequences of economic recession on marital stability. Discussions in the popular press have drawn from a variety of sources including surveys of divorce lawyers,<sup>1</sup> op-ed articles by social scientists,<sup>2</sup> and interviews of individuals.<sup>3</sup> In fact, researchers dating back to at least the 1920's have speculated that divorce rates might decline in times of economic recession (Ogburn and Thomas, 1922). Given the long history of interest in the subject, there is surprisingly little empirical evidence supporting—or refuting—this assertion. In contrast, there is a large literature demonstrating that individual family-level economic shocks, such as the loss of a job, increase the probability of divorce.

Whether divorce is pro-cyclical or counter-cyclical is ambiguous theoretically. We therefore conduct an empirical examination of the relationship between macroeconomic conditions and divorce. We combine data on annual state-level unemployment rates with vital statistics data on divorce rates by state across the United States over the period 1976-1998. We assess the impact of local macroeconomic conditions on state-level divorce rates, controlling for national and state-specific trends and for state-specific time-invariant determinants of divorce rates. We find robust evidence that, at least for the period studied, the unemployment rate is

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<sup>1</sup> See, for example, American Academy of Matrimonial Lawyers (2008).

<sup>2</sup> See, for example, Wolfers (2009) and Cherlin (2009).

<sup>3</sup> For example, see Johnson (2008).

negatively and statistically significantly related to the divorce rate. In other words, the divorce rate is pro-cyclical, consistent with the recent anecdotal accounts.

We note at the outset that the huge secular changes in divorce over the last 50 years (see, e.g., Stevenson and Wolfers, 2007 and Cherlin, 1981) dwarf the effects of the business cycle on divorce. Nonetheless, in our view, the magnitude we report is qualitatively significant. We estimate that a one percentage point fall in the unemployment rate during 1976-1998 was associated with an increase the divorce rate of 0.055 divorces per one thousand people. This is roughly equivalent to a one percentage point drop in the unemployment rate yielding a one percent rise in the divorce rate.

## I. Background

There is a long history of research speculating that divorce rates decline in times of macroeconomic decline (e.g., Ogburn and Thomas, 1922).<sup>4</sup> However, there is surprisingly little empirical evidence on whether such a link does exist, let alone its magnitude if it does.<sup>5</sup> In contrast to the relatively sparse literature on the link between business cycles and marital instability, Becker's (1981) work on the economics of the family has been used as the theoretical basis for a substantial amount of empirical evidence showing that adverse family-level economic shocks (such as the job loss of a husband) increase the probability of divorce.<sup>6</sup>

Whether marital dissolution rates should vary with the business cycle (either pro-cyclically or counter-cyclically) is ambiguous theoretically. Divorce is a costly endeavor. If

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<sup>4</sup> Stevenson and Wolfers (2007) and White (1990) provide excellent reviews of this literature in Economics and Sociology.

<sup>5</sup> South (1985) and Fischer and Liefbroer (2006) are among the notable exceptions. South finds that divorce rates covary positively with the unemployment rate, arguing against what he describes as the predominate theory. Fischer and Liefbroer use data from the Netherlands and find a slight negative relationship between consumer confidence and marital dissolution rates, also implying that dissolution is slightly counter-cyclical.

<sup>6</sup> The most notable work demonstrating the link between individual job loss and marital instability includes Willis and Weiss (1997) and Charles and Stephens (2004).

couples are liquidity constrained, they may be less likely to divorce during economic downturns because they simply cannot afford to do so. This would explain anecdotal evidence suggesting that falling housing prices force some couples to postpone or forgo divorcing, as highlighted in some recent press accounts of the current recession.<sup>7</sup> On the other hand, prior work, as mentioned above, has shown that individual job loss increases the risk of divorce, which would not occur if only liquidity constraints are at work in determining the timing or frequency of divorce.

While liquidity constraints may be a powerful and intuitive explanation for the (pro-) cyclical nature of divorce, even in a fully rational world without liquidity constraints, marital dissolution rates may covary with business cycles. First, a macroeconomic shock can simultaneously lower (or raise) the present discounted value of a marriage—relative to the value of the option outside of marriage—to all couples by the same amount. As long as there is heterogeneity in the pre-existing value of the marriage, there will be some couples who find that an economic shock causes the value of marriage to become so low that these couples choose to dissolve the marriage. Alternatively, an economic boom may temporarily increase labor market opportunities for women, leading potentially to increases in women's valuations of alternatives outside of marriage, and hence to greater marital dissolution rates.

The second way in which business cycles may change the value of marital matches is through a shock not to the mean value of marital matches, but to the dispersion of match quality across couples in the population. For example, if economic booms lead to increased labor market participation of women, there may be cases where a spouse revises his or her valuation of options outside of marriage by meeting a potential new spouse on the job (as in McKinnish,

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<sup>7</sup> See Leland (2008).

2004).<sup>8</sup> Similarly, as in Brien, Lillard, and Stern (2006), in a world of imperfect information where underlying match quality is unobserved, if economic booms increase the dispersion of the observed signal of match quality, then idiosyncratic labor market shocks may lead to increased learning by spouses of true match quality during these times. If this is true, then dissolution rates should increase when dispersion increases, i.e., during economic booms.

In sum, it is the value of staying in the marriage during various points in the business cycle relative to the value of the outside option of dissolution at those times that will be the defining factor in determining marital stability over the business cycle, and whether and how business cycles matter in the real world is ultimately an empirical question.

## **II. Data and Empirical Results**

To conduct an examination of the impact of macroeconomic conditions on marital stability, we collected annual data on state unemployment rates to use as our measure of local macroeconomic conditions. The series, which began in 1976, is collected by the Bureau of Labor Statistics.<sup>9</sup> The state-level annual divorce rates data we use are from the vital statistics data series produced by the National Center for Health Statistics, as updated through 1998 by Justin Wolfers.<sup>10</sup> Therefore, combining these, the period of our analysis is restricted to 1976-1998.<sup>11</sup> The divorce rate is calculated as the number of divorces per 1000 people, with a mean of 4.82 over this time period.

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<sup>8</sup> South and Lloyd (1995) document that more appealing spousal alternatives in a local marriage market are associated with higher divorce rates.

<sup>9</sup> This data series can be accessed at: <http://www.bls.gov/lau/rdsncp16.htm> (accessed November 8, 2009)

<sup>10</sup> These data are provided by Justin Wolfers at:  
<http://bpp.wharton.upenn.edu/jwolfers/data/DivorceDataAppendix.pdf> (accessed May 21, 2009).

<sup>11</sup> Note that the Vital Statistics data are not available for all states in all years.

Because national trends can mask significant heterogeneity across states and are driven by large secular changes in cultural attitudes toward divorce and the legislative environment, we turn to regression analysis where we analyze the relationship between state-level divorce rates and state-level variation in macroeconomic conditions, controlling for national changes in divorce rates and differences across states.<sup>12</sup> Controlling for the national trends is particularly important given the large secular changes in divorce rates over time. Similarly, states have their own policies and cultures that dictate the terms (and costs) of obtaining a divorce.<sup>13</sup> In Table 1 we show estimates of the coefficient  $\beta_1$  from weighted least squares regressions that are all variants of a regression specification of the form:

$$(1) \quad DivRate_{st} = \beta_1 * urate_{st} + \beta_2 * STATE_s + \beta_3 * YEAR_t + \gamma * STATE_s * t + \epsilon_{st}$$

Here  $DivRate_{st}$  is the divorce rate in state  $s$  in year  $t$ ,  $urate_{st}$  is the unemployment rate in state  $s$  in year  $t$ ,  $STATE$  is a vector of state fixed effects,  $YEAR$  is a vector of year fixed effects, and  $STATE*t$  are state-specific linear time trends. All regressions are weighted by state-by-year population estimates from the Bureau of Labor Statistics Local Area Unemployment Statistics program.<sup>14</sup> The standard errors of the coefficient estimates are clustered by state.

<Insert Table 1 here>

The first column of Table 1 includes only the unemployment rate in the regression, without accounting for state or year trends (that is, it constrains  $\beta_2$ , and the vectors  $\beta_3$  and  $\gamma$  all to be equal to zero). Because both the unemployment and divorce rate are falling over much of

<sup>12</sup> For a detailed discussion of trends in marriage and divorce rates over the early part of our sample, see Glick and Lin (1986). Ruggles (1997) discusses divorce and separation trends over a longer time period, from 1880 – 1990.

<sup>13</sup> For a discussion of the effects of unilateral divorce laws see Friedberg (1998), Wolfers (2006), and references therein. Our empirical results are insensitive to the inclusion of controls for unilateral divorce law changes.

<sup>14</sup> Note the population estimates are of adults age 16 and older.

this time period, it is not surprising that the estimated coefficient on unemployment is positive. Since the secular decline in both rates confounds the measurement of the response of the divorce rate to cyclical fluctuations in the unemployment rate, in column 2 we include both state and year fixed effects. Including these fixed effects in the regression causes the estimated impact of the unemployment rate on divorce to flip signs. The large and statistically significant negative coefficient in column 2 implies that a one percentage point rise in a state's unemployment rate is associated with a decline of 0.055 points in the divorce rate. This translates into just over a one percent decrease in the divorce rate over this time period for every one percentage point increase in the unemployment rate, given that the mean divorce rate over the time period of this sample is 4.8 divorces per 1000 people. Nowadays, divorce rates are lower; according to the most recently available Vital Statistics data, the divorce rate in 2008 was 3.5 divorces per 1000 people.<sup>15</sup> The results in column 2, if still applicable today, suggests that the effect of the current recession (at least to date), with a rise in the unemployment rate from 4.9 percent in December 2007 to 10.2 percent in October 2009, has been a reduction in the divorce rate of about 8.3 percent.

The main results are reported in the third column of Table 1, which includes estimates of equation 1 without constraining any coefficients. Including the state-specific linear year trends controls for differences across states in *trends* in divorce rates, not just levels. Including these trends does not change the estimated coefficient on the unemployment rate, but there is a slight reduction in the standard error.

Because the timing of divorce is not always perfectly coincident with the contemporaneous unemployment rate, column 4 of Table 1 presents results using a three year moving average of the unemployment rate around the year of the divorce rate. The coefficient is

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<sup>15</sup> [http://www.cdc.gov/nchs/data/nvsr/nvsr57/nvsr57\\_19.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr57/nvsr57_19.pdf), accessed November 8, 2009.

again negative and statistically significant, and actually a little larger (in absolute value) than in previous columns.

The fifth column of Table 1 explores whether the effect of the unemployment rate is linear, where increases in the unemployment rate would have the same incremental effect on divorce regardless of the level of unemployment, by including a quadratic term in the unemployment rate. The coefficient on the quadratic term is small and insignificant, and the main effect remains qualitatively similar. In results not shown, we also find that the effect of the unemployment rate on the divorce rate is nearly identical when looking at above versus below median unemployment rates.

In the final column of Table 1, we restrict the sample to the years 1976-1990, where the divorce rate is more consistently reported each year by all states.<sup>16</sup> While the results are robust to dropping the data from the 1990's, we see that the main effect is slightly smaller. In addition, we examined a host of other specifications in results not shown (but available upon request). We find that the unemployment rate has a similar impact in all four Census regions, although the effect in the West is slightly smaller. In addition, we find no difference in the relationship between the unemployment rate and the divorce rate in small versus large states or when we disaggregate states by whether or not a large fraction of their population is Catholic.<sup>17</sup>

#### **IV. Discussion and Conclusion**

We provide empirical evidence that supports the recent conjectures and anecdotal stories that the divorce rate is procyclical. Our results imply that a one percentage point increase in the

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<sup>16</sup> The Vital Statistics are missing some years of data for Indiana (1988), Louisiana (1976, 1981, 1984-1990), and New Mexico (1981, 1982, 1986, 1987). In contrast, in the data from 1991-1998 there are many more notable absences, including California which is missing in all of those years.

<sup>17</sup> All results available upon request. The religiosity data were downloaded from the Association of Religion Data Archives.

unemployment rate over our sample period was associated with a one percent decline in the divorce rate. This result is robust across various empirical specifications. Perhaps the most interesting aspect of this basic finding is its contrast with the evidence from individual households. Charles and Stephens (2004) find that when a family suffers a job loss, it either increases the probability of divorce (if the job loss is a lay-off) or does not affect the probability (in the case of disability or plant closing). If we were to aggregate all of the individual household shocks into the full set of job losses that accompany a recession, we would find that divorce is either counter-cyclical or a-cyclical. Clearly then, our findings suggest that the mechanisms by which macroeconomic downturns affect marital stability is quite different than that of shocks to individual households. Disentangling and understanding these mechanisms should be an important topic for future research.

**Table 1: Macroeconomic Conditions and State-Level Divorce Rates**

Dependent Variable: State-Level Divorce Rate 1976 - 1998, Mean 4.82.

	No Fixed Effects (1)	State and Year FE (2)	State-Specific Trend (3)	Moving Average (4)	Non-linearity (5)	Years 1976-1990 (6)
Unemployment Rate	0.073 (.039)*	-0.055 (.022)*	-0.055 (.014)**		-0.065 (.028)*	-0.046** (.015)
Unemployment Rate <sup>2</sup>					0.0001 (.001)	
Average State Unemployment Rate (t-1, t, t+1)					-0.065 (.016)**	
State and Year Fixed Effects	X	X	X	X		
State-Specific Year Trend		X	X	X		
R <sup>2</sup>	0.011	0.919	0.972	0.977	0.972	0.979
N	1122	1122	1122	996	1122	751

Notes: All specifications are weighted by state population. \*\* significant at 1%, \* significant at 5%.

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