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Marriage, Divorce, and Interstate Risk Sharing*

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Abstract

In this paper, we study the importance of marriage for interstate risk sharing in the US. We find that US federal states in which married couples account for a higher share of the population are less exposed to state-specific output shocks. Thus, in addition to improving the allocation of risk at the individual level, marriage also has implications for risk sharing at the more aggregated state level. Quantitatively, the impact of marriage on interstate risk sharing varies over divorce regimes.

Keywords: Risk sharing; marriage; divorce; family law

JEL classification: *E*21; *G*21; *J*12; *K*36

I. Introduction

Modern economies provide several formal and informal mechanisms through which the exposure to risks at the individual, regional, and country level can be reduced (see Cochrane, 1991, for a detailed discussion). Financial markets, for instance, allow insurance against risks by holding diversified portfolios. States introduce fiscal tax and transfer programs to provide risk sharing. Labor contracts can also implicitly contain insurance elements (Azariadis, 1975). Thus, risk sharing might, in principle, occur through various formal and informal channels.

Family economics emphasizes the idea that marriage provides risk sharing for a couple (Weiss, 1993). More specifically, voluntary transfers between spouses help to smooth out fluctuations in individual income streams.

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Using micro data, a large body of empirical studies shows that risk sharing indeed occurs within marriages (e.g., Rosenzweig and Wolpin, 1985; Rosenzweig, 1988; Rosenzweig and Stark, 1989; Rosenzweig and Wolpin, 1994).

In this paper, we argue that marriages also improve the sharing of risks at more aggregated levels. Consider, for instance, an adverse, region-specific shock (i.e., a shock that hits the population of a certain region equally). The consumption risks associated with such a shock cannot be diversified within the region, but only across regions. This type of inter-region risk sharing might occur, for instance, via borrowing from a bank. So, essentially risk is to some degree shared with a bank in the region. The bank then diversifies these risks across regions. In fact, Demyanyk *et al.* (2007) show that interstate personal income insurance in the US occurs to a non-negligible extent indirectly through banks. Because there is convincing evidence that being married improves the ability to obtain bank credit (Ladd, 1982; Elliehausen and Lawrence, 1990; Munnell *et al.*, 1996), marriage should foster this type of risk sharing.[1] That is, marriage can not only help to pool individual risks, but can also reduce the exposure to region-specific shocks. It follows that marriages can give rise to additional welfare gains beyond those associated with the pooling of individual risks.

The purpose of this paper is to explore empirically the influence of trends in marriage and divorce on risk sharing across US federal states. Thus, we combine two important strands of economic literature studying risk sharing. The first strand quantifies the amount of risk sharing across regions. The second strand emphasizes risk-sharing implications of marriage at an individual level. The main contribution of our paper is to successfully bring together these two strands of literature that have so far remained largely separate. In fact, this is the first study to provide empirical evidence that a more efficient allocation of risk at the individual level also has implications for the allocation of risk at the more aggregated level. Moreover, our findings add to each strand in further substantive dimensions.

Based on the framework proposed by Asdrubali *et al.* (1996), we find that states with higher shares of married population in the total adult state population are indeed less exposed to state-specific output shocks. This result is consistent with our main hypothesis that marriages improve the allocation of risk not only at the individual level, but also at the state level. In addition, by showing that the risk-sharing benefits associated with marriages add up and can be detected in aggregated state-level data, our

[1] Banks might prefer married applicants because they share all sorts of risk with their spouse; consequently, the default risk should be lower compared to their single counterparts. In this sense, marital status is an effective screening device that can be observed at low cost.

paper complements the existing research on the role of marriage for risk sharing employing micro data.

The effect of marriages on the availability of bank credit, and thus on interstate risk sharing, might be influenced by the degree to which risks are shared within marriages. It is often conjectured that a high risk of divorce is associated with a low level of (financial) cooperation during marriage (Anderberg, 2007). The likelihood of divorce should decrease as the cost of divorce and the match quality of couples increases. In order to observe an exogenous variation in the divorce propensity, we exploit differences in the timing of the move from mutual consent to unilateral divorce laws across US states (see Clark, 1999). This reform affected the incentive to invest in marriage-specific capital (Stevenson, 2007) and the selection into marriage (Rasul, 2006; Matouschek and Rasul, 2008) (i.e., the match quality of the average couple). Our results show that the positive effect of marriages on risk sharing is lower in states allowing unilateral divorce, which supports the idea that risk sharing under incomplete contracts increases in the cost of default (Ligon *et al.*, 2002).

In addition, our results indicate that the effect of marriage on interstate risk sharing differs across periods of economic downturns and upturns. We find some evidence suggesting that marriages improve risk sharing when it is most needed, namely during downturns. More specifically, the higher the share of marriages, the lower the exposure to state-specific risk during periods when the growth rate of gross state product is below average.

The remainder of the paper is structured as follows. In Section II we discuss our main hypothesis that marriages increase both intrastate as well as interstate risk sharing. In Section III we outline the empirical implementation, while in Section IV we describe our data. In Section V we present our main estimation results, in Section VI we explore the effect of the move from mutual consent to unilateral divorce legislation, and in Section VII we analyze risk sharing over the business cycle. Finally, in Section VIII we conclude the paper.

II. Marriage and Risk Sharing within and across States

In this section, we motivate our hypothesis that marriages might be related to the degree to which consumption risks can be pooled across states.

Becker (1973, 1974) introduced the idea that marriage is a partnership for the purpose of joint production and joint consumption. The economic gains from marriage are given by specialization, economies of scale, sharing of non-rival goods and, the concern of our research, risk sharing. For concreteness, consider a married couple in which each spouse receives an income each period and their incomes are not perfectly correlated.

If individual incomes fluctuate over time, the spouses can smooth their consumption by engaging in risk sharing through voluntary transfers.

This type of risk sharing has been emphasized as particularly relevant in developing economies, where the access to financial markets is limited and formal insurance arrangements are essentially absent. However, as emphasized by Hess (2004) and Chami and Hess (2005), the risk-sharing implications of marriages can also explain a non-negligible fraction of the marriage and divorce trends in the US. Thus, even in the US, where financial markets are highly developed, risk sharing provided through marriage plays a role. In fact, the institution of marriage might even be superior to conventional insurance markets. Because marriage involves a certain level of trust and information, it might alleviate problems of moral hazard, adverse selection, and deception (Kotlikoff and Spivak, 1981), which are typically associated with insurance markets. Moreover, by providing insurance within marriage, transaction costs might be lower than those associated with formal insurance and financial markets.

Thus, marriages might lead to improved risk sharing among couples, and therefore they might help to pool individual risks. In this paper, we go one step further and we analyze whether marriages also help to pool state-specific risks (i.e., risks that can only be diversified across states but not within states). We argue that marriages might improve interstate risk sharing by increasing the access to bank credit. While agents can share risks with residents of other states directly by exchanging claims on their outputs, they might also share these risks indirectly via banks.[2] This type of indirect sharing via an intermediary appears to be particularly relevant, as the direct participation of households in financial markets is limited even in the US (e.g., Korniotis and Kumar, 2007).

So, at the intrastate level, banks share risks with the residents of a state, and at the interstate level, banks then diversify these risks across states. This diversification is done either via out-of-state borrowing and lending or via the cross-ownership of banks across states. Demyanyk *et al.* (2007) show that banks play a substantial role for the diversification of income risk across US states. Hoffmann and Shcherbakova (2007) provide similar results for consumption risk sharing.

However, the availability of bank credit is an important prerequisite for this type of risk sharing to work, and a substantial body of literature argues that informational frictions could lead to situations where the access to credit is limited. Thus, agents are likely to face constraints on the market for bank loans, which limits the extent of risk sharing within as well as across states. Korniotis and Kumar (2007) find that states with greater constraints are more exposed to idiosyncratic risk. Moreover, several

[2] Boot (2000) provides a general discussion of banks in the context of risk sharing.

studies find that banks discriminate on the basis of marital status (Ladd, 1982; Elliehausen and Lawrence, 1990; Munnell *et al.*, 1996).[3] It is plausible that these constraints are less binding for married couples, as family incomes might be less volatile because of intra-family risk sharing. Put differently, expected future family income streams are more predictable than individual income streams. So essentially, marriage can serve as a substitute for collateral. Thus, credit constraints might be less binding for married couples, because they can more easily borrow against their expected future incomes. In Table 1 we provide empirical evidence using a cleaned dataset from Munnell *et al.* (1996), provided by Hunter and Walker (1996), on loan applications collected by the Federal Reserve Bank of Boston. Our probit analysis shows that – controlling for many other factors such as income, wealth, and credit ratings – being married increases the probability of loan approval by 4.5 percentage points.

Accordingly, we expect that the access to bank credit is more widely spread in states where a higher share of the population is married. Therefore, we expect a higher degree of risk sharing between residents and banks within a given state. Also, because banks, in turn, are able to diversify a larger fraction of the state-specific risk across states, we also expect to see less exposure to state-specific shocks in states that are characterized by relatively more married couples.

Of course, risk-sharing arrangements are, in principle, not confined to married couples. They can certainly apply to any human partnership. For instance, cohabiting couples can also coordinate their activities and share consumption risks. However, empirical evidence shows that cohabiting couples are much less likely than married couples to pool financial resources, are more likely to postulate that each partner is responsible for supporting himself or herself financially, and are less likely to agree on the future of their relationship (Blumstein and Schwartz, 1983; Waite, 1995). This uncertainty clearly reduces both investment in the relationship and the ability to pool risks. Moreover, from a legal perspective, cohabitation has some but not all of the characteristics of marriage. In particular, married spouses in general face legal restrictions on their relationship that force them to cooperate. Therefore, it is reasonable that banks prefer a married creditor compared to a cohabitating counterpart.

Note also that if the threat-point of divorce hangs in the air and if transfers cannot be fully legally enforced, the efficient level of transfers is endangered. Therefore, in reality, the risk of divorce can prevent couples

[3] This discrimination occurs despite the fact that the Equal Credit Opportunity Act was amended in 1976 to ensure that all consumers are given an equal chance to obtain credit. In particular, it is unlawful for any creditor to discriminate against any applicant on the basis of race, religion, national origin, sex, marital status, or age (provided the applicant has the capacity to contract).

Table 1. *Probit estimation of mortgage acceptance*

	MFX[b]	S.E.
Married	0.045***	(0.017)
White	0.102***	(0.024)
Male	−0.006	(0.017)
Education	0.001	(0.016)
Number of dependents	−0.007	(0.006)
Self-employed	−0.053**	(0.024)
Unemployed	−0.005	(0.003)
Co-signer of application	0.016	(0.035)
HRAT	0.001	(0.001)
OBRAT	−0.004***	(0.001)
MHIST	0.077	(0.084)
PUB	−0.185***	(0.040)
CHIST	0.120***	(0.024)
MULTI	−0.047*	(0.027)
LNPR	−0.156***	(0.038)
THK	−0.004	(0.020)
LOC	−0.032**	(0.014)
No. of observations	1,961	
Log-likelihood intercept only	−732.742	
Log-likelihood full model	−592.575	
McFadden's pseudo R^2	0.191	

Notes: Data used are from Hunter and Walker (1996). The dependent variable is equal to 1 if mortgage was accepted, and 0 otherwise. HRAT is the ratio of monthly housing expenses to monthly income. OBRAT is the ratio of total monthly obligations to monthly income. MHIST is equal to 1 if two or fewer mortgage payments are recorded as late, and 0 otherwise. PUB is equal to 1 if there are public record defaults, and 0 otherwise. CHIST is equal to 1 if there is no history of delinquent credits (defined as one or more accounts 60 days or more past due), and 0 otherwise. MULTI is equal to 1 if an applicant is purchasing a house for two to four people, and 0 otherwise. LNPR is the loan-to-price ratio. THK is equal to 1 if there are more than two credit reports in the file, and 0 otherwise. LOC is equal to 1 if tract vacancy is less than the MSA median, and 0 otherwise. Estimated using probit model. In the MFX column, the marginal effect is the change in the probability of mortgage acceptance caused by an infinitesimal change of each independent continuous variable, or the discrete change in the probability for a changing binary variable with all the other variables fixed at their means. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

from (full) risk sharing. Consequently, the amount of risk sharing within marriage and across states depends on the likelihood of divorce. In order to explore the effect of divorce propensity on interstate risk sharing, we exploit exogenous variation in divorce legislation in Section VI.

III. Empirical Implementation

Our empirical analysis is based on the approach advocated by Asdrubali *et al.* (1996) to quantify risk sharing among US federal states. Intuitively, this approach reflects the idea that if idiosyncratic risks are perfectly insured, then the growth rates of state consumption and state output should be uncorrelated. More specifically, under complete markets, the necessary conditions for an efficient allocation of risk imply that the intertemporal

rates of substitution have to be equalized across the agents in the regions. If we additionally assume that preferences can be represented by constant relative risk aversion utility functions, we obtain that consumption growth rates have to equalize across regions: $\Delta \log c_{it} = \Delta \log c_{jt}$, for the $i, j = 1, \ldots, N$ states, where c_{it} denotes real per capita consumption in state i at time t and Δ is the first difference operator. As this condition holds for any two states, it must also hold with respect to US per capita consumption denoted by c_t: $\Delta \log c_{it} = \Delta \log c_t$.

Hence, state-specific consumption growth is determined only by aggregate US consumption growth and not by idiosyncratic risk factors, such as state output, y_{it}. Intuitively, the impact of fluctuations in state output is completely diversified away under complete markets. However, if complete insurance is not feasible, then state output might influence state consumption to some extent. To obtain a proxy for state-specific output fluctuations, we follow Asdrubali *et al.* (1996) and we subtract the growth rate of aggregate US output growth: $\tilde{y}_{it} = \Delta \log y_{it} - \Delta \log y_t$, where y_t is the population weighted average of y_{it}. This transformation eliminates movements in output growth that are common to all states, and therefore it cannot be diversified across states.

Empirical estimates of the extent of risk sharing are obtained by running a panel regression of idiosyncratic consumption growth on idiosyncratic output growth:

$$\tilde{c}_{it} = \alpha_i + \beta \tilde{y}_{it} + \epsilon_{it}. \tag{1}$$

Here, α_i denotes state-specific effects and ϵ_{it} is the error term.[4]

If $\beta = 0$, the allocation corresponds to what we obtain under complete markets, and consumption growth does not respond to state-specific output growth. That is, any influences of idiosyncratic movements in output are completely diversified away and we have perfect risk sharing. In contrast, $\beta = 1$ indicates no risk sharing at all, as consumption growth perfectly tracks income growth. In this case, agents are not able to smooth consumption at the state level and we observe a complete lack of risk sharing. Asdrubali *et al.* (1996) show that, in addition to these two extreme cases, $0 < \beta < 1$ also provides a quantitative measure of the extent of risk sharing. More specifically, they show that β can be interpreted as the fraction of total risk that is not shared across states.

In our empirical analysis, we specify β in equation (1) as

$$\beta = \beta_0 + \beta_1 x_{it}. \tag{2}$$

[4] Equations similar to equation (1) have been estimated by Cochrane (1991) and Mace (1991) with micro data, and by Lewis (1996), among others, with international data.

Depending on the precise specification, the interaction variable, x_{it}, will be a measure of the share of the married population in the total adult state population. In further specifications, we allow x_{it} to have a varying impact across different regimes (e.g., differing banking-sector regulation and divorce-law regimes). The coefficient β_0 gives the average exposure to state-specific output shocks. So, essentially we augment equation (1) by adding interaction terms that capture the influence of $\tilde{y}_{it}$ on $\tilde{c}_{it}$ via x_{it}. Thus, our baseline specification is

$$\tilde{c}_{it} = \alpha_i + \beta_0 \tilde{y}_{it} + \beta_1 x_{it} \tilde{y}_{it} + \gamma' \mathbf{Z_{it}} + \epsilon_{it}, \tag{3}$$

where $\mathbf{Z_{it}}$ is a vector of additional control variables.[5] Although we are primarily interested in the influence of x_{it} on the degree of risk sharing as measured by β_1, we allow x_{it} to have a direct influence on $\tilde{c}_{it}$ by including x_{it} in $\mathbf{Z_{it}}$ to avoid potential mis-specifications. The literature has documented quite different marriage patterns across black and white citizens (Bennett *et al.*, 1989; Brien, 1997; Stevenson and Wolfers, 2007a). Therefore, we include population control variables in addition to x_{it} in $\mathbf{Z_{it}}$. In particular, we control for the share of the total population of sex s and of race r, where r is white, black, and other. Finally, $\mathbf{Z_{it}}$ also contains year fixed-effects and state-specific time trends.

We subtract the overall mean from all variables as this transformation simplifies the interpretation of coefficients when interaction terms are included. Our method of estimation is ordinary least-squares. Throughout the paper, we calculate robust standard errors, allowing for clustering by states and heteroskedasticity of unknown form.

Note that we assume that marriage is exogenous. Clearly, this need not be the case as a variety of economic factors might influence the decision to marry. Chami and Hess (2005), for instance, argue that there is a causal effect of idiosyncratic risk on the incidence of marriage (i.e., marriages are more prevalent in states that are exposed to higher idiosyncratic risk). What does such a causal relationship imply for our analysis? At first glance, such a relationship might appear to give rise to reverse causality and it could potentially bias our estimates. However, the dependent variable in our regressions is idiosyncratic consumption and not the measure of risk sharing. We follow Asdrubali *et al.* (1996) and we calculate the extent of risk sharing using the marginal effect $\beta_0 + \beta_1 x_{it}$. In other words, we do not estimate a simultaneous-equations model of risk sharing and the number of marriages. Therefore, our estimation procedure is not subject to simultaneity. Moreover, the analysis of switches in banking-sector regulation

[5] As a robustness analysis, we also estimated equation (3) controlling for permanent differences in state output by subtracting the time average of y_{it} from $\tilde{y}_{it}$. Our results only change marginally because of this modification.

and divorce regime (see below) supports our causal interpretation of the effect of marriage on risk sharing across states.

IV. Data

For our analysis, we use panel data from 1969 to 1990 for all states (excluding Nevada)[6] and the District of Columbia. We proxy y_{it} by the gross state product (GSP). Because consumption data are not available at the state level, we use state retail sales scaled by the ratio of total private consumption to total US retail sales to proxy for state consumption, c_{it}, as is standard in the risk-sharing literature (e.g., Asdrubali *et al.*, 1996). Both y_{it} and c_{it} are in per capita terms, and these are deflated by the index for personal consumption expenditure. US aggregate output and consumption are calculated as the population weighted averages, $c_t = \sum_{i=1}^{50} w_i c_{it}$ and $y_t = \sum_{i=1}^{50} w_i y_{it}$, where w_i is the population of state i as a proportion of the total US population.

In our analysis, we employ three different measures for the incidence of marriage, M_{it}^k, where M_{it}^k is either the share of married females in the adult population ($k = f$), the share of married males in the adult population ($k = m$), or an average of both ($k = a$). Data on the married adult population are not readily available, except for the years in which the decennial US census has been conducted.[7] We overcome this problem by bringing together data from the decennial US Census from 1960 to 1990, information on the flow into marriage and out of marriage, and the age distribution at the state level.[8] For each state, we take the number of married women in 1960, we add the absolute number of marriages, and we subtract the absolute number of divorces in the years 1961 to 1969. Then we compare the resulting number with the actual number of married women in 1970. In most of the cases, the difference between our auxiliary number and the actual number of married women is positive (i.e., the deaths and out-migration of married women outweigh the in-migration of married

[6] We disregard Nevada from our analysis as its marriage market seems to be very different compared to the other states. Considering the whole time period, we see that the average marriage rate of Nevada is about 14 times higher than the average of all other states. Its divorce rate is more than triple the average over the rest of the US.

[7] In principle, the Current Population Survey can be used to construct a proxy of the share of married adult population on a state level. However, 32 states are grouped together between 1968 and 1972, and 38 states cannot be separately identified between 1973 and 1976. In these years, up to five states share the same code.

[8] We have hand-entered the absolute number of marriages and divorces from the annual editions of the Vital Statistics for all the states from 1969 to 1990. The data on the age distribution of the state population are from the Reading Survey of Epidemiology and End Results provided by the National Bureau of Economic Research. This is also the source for the sex–race distribution.

Fig. 1. Marriage and divorce rate, US 1969–1990

women). In 12.7 percent of the cases, we observe a negative difference, which means that we observe net in-migration of married women. Then we assume that the sum of deaths and migration of married women is constant between 1961 and 1969, and we distribute the difference over the years 1961–1969 equally. An equivalent procedure is applied for the 1970s to 1990s and also to obtain a proxy for the number of married men.

The number of married males within a state does not exactly equal the number of married females. This can be explained by different principal residences of spouses, for instance, because of weekly commuting. However, this difference turns out to be rather small. In our sample, the difference between the number of married males and married females is, on average, about 0.18 percent of the total adult population. To obtain the share of married females/males in the total adult state population, we divide the number of married females/males by the total population 15 years of age and older. Note that, typically, the share of married females is defined as the number of married females divided by the number of adult females. In our estimation analysis, we purposely use the total population as scale base, to avoid the results being driven by the variation in the denominator.

Over our sample period, the American family has undergone some changes. Marriage rates have been falling over the last 30 years. Divorce rates have risen sharply since the mid-1960s, peaking in the early 1980s, and they have been declining since then (see Figure 1). This reduction

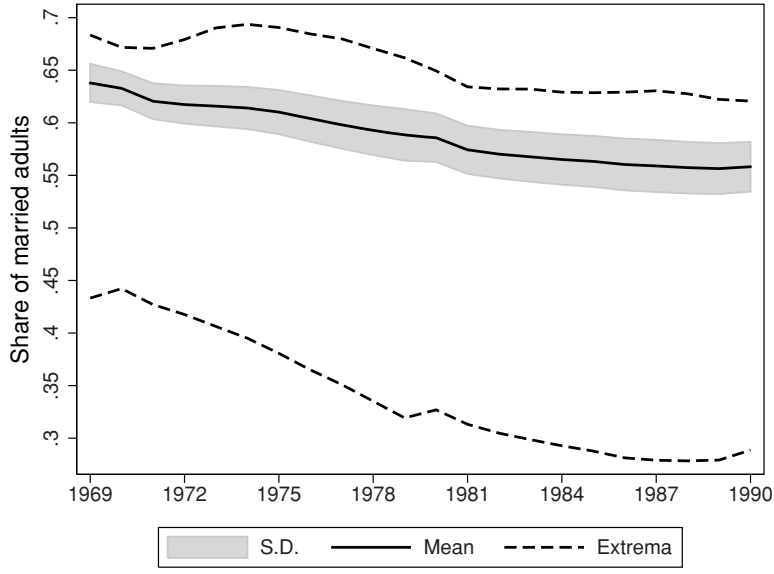

Fig. 2. Share of married adult population, US 1969–1990

can be partly explained by the decline in the incidence of marriage but is also a result of greater marital stability of younger cohorts (Stevenson and Wolfers, 2007a,b). As a result of these developments of flows in and out of marriage, we observe a decline in the stock of married people. In 1969, about 64 percent of the adult US population was married; by 1990, this number had fallen to 56 percent. Figure 2 highlights the substantial variation across states.

V. Estimation Results

Our main hypothesis is that married couples are able to share a larger fraction of their idiosyncratic risk. As argued above, via a readier access to credit, marriages might enhance risk sharing not just within states, but also across states. To investigate the role of marriages, we allow β to depend on the share of the married adult population, M_{it}^k:

$$\beta = \beta_0 + \beta_1^k M_{it}^k. \tag{4}$$

Here, M_{it}^k is either the share of married females, males, or an average of both.

Table 2 shows the estimation results. The first line shows the point estimates of β_0, which is the average exposure to idiosyncratic risk. The baseline specification indicates that, on average, states are able to

Table 2. *Risk sharing and marriages*

Specification		(I) $k = a$	(II) $k = f$	(III) $k = m$
$\tilde{y}$	0.115***	0.114***	0.110***	0.119***
	(0.036)	(0.039)	(0.040)	(0.037)
$\tilde{y} \cdot M^k$		−0.029**	−0.026**	−0.032***
		(0.011)	(0.012)	(0.011)
M^k		−0.210	−0.271	−0.153
		(0.476)	(0.475)	(0.477)
Share of white females	−0.045*	−0.048*	−0.048*	−0.048*
	(0.026)	(0.028)	(0.027)	(0.028)
Share of black males	−0.003	−0.007	−0.006	−0.008
	(0.052)	(0.050)	(0.050)	(0.051)
Share of black females	−0.036	−0.037	−0.038	−0.035
	(0.033)	(0.034)	(0.034)	(0.034)
Share of other males	−0.101	−0.106*	−0.106*	−0.106*
	(0.062)	(0.062)	(0.061)	(0.062)
Share of other females	−0.028	−0.025	−0.026	−0.025
	(0.042)	(0.041)	(0.041)	(0.041)
Constant	2.291*	2.477*	2.463*	2.477*
	(1.345)	(1.417)	(1.393)	(1.441)
No. of observations	1,100	1,100	1,100	1,100
R^2	0.118	0.121	0.121	0.121

Notes: The dependent variable is a proxy for state consumption (state retail sales scaled by the ratio of total private consumption to total US retail sales). Each specification controls for year fixed-effects, state fixed-effects, and state-specific time trends. Estimated using ordinary least-squares. Robust standard errors (allowing for clustering by states and heteroskedasticity of unknown form) in parentheses below. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

smooth approximately 88.5 percent of fluctuations in state output. This result is roughly in line, albeit slightly higher, with what Asdrubali *et al.* (1996) report. The remaining columns show the estimation results when we allow β to depend on the share of married individuals. If marriages generally improve the interstate allocation of risk, we expect consumption growth to respond less to output growth in states with higher shares of married individuals: $\beta_1^k < 0$. From Columns (I) to (III) we can see that, regardless of what measure is used for the share of the married population, we obtain a negative and highly significant estimate for β_1^k. Therefore, our results suggest that a higher share of married population indeed reduces the exposure to idiosyncratic state output. Considering specification (I), we observe that an increase in the share of married population by 1 percentage point (sample mean is equal to 29.38 percent) is associated with an increase in risk sharing by 2.9 percentage points. This quantitatively important effect is statistically significant at the 1.2 percent level. Specification (II) employs the share of married females (sample mean is equal to 29.28 percent). An increase in the share of married females by 1 percentage point is associated with an increase in risk sharing by

2.6 percentage points. Finally, specification (III) shows that an equivalent increase in the share of married males (sample mean is equal to 29.47 percent) increases risk sharing by 3.3 percentage points.

We conduct several robustness checks.[9] To test the sensitivity of our results to the sample chosen, we skip single states in turn. This reveals that the omission of particular states does not influence our results. We also omit single years in turn, and we find that particular years do not unduly affect our results. Finally, we estimate errors-in-variables regressions (Kmenta, 1997) as we measure the share of the married population with additive noise. The results obtained by this alternative method are very similar to our previously reported results.

Note that we have not included explanatory variables capturing the role of banks in equation (3), despite the fact that our theoretical motivation is heavily based on the idea that banks play a pivotal role for interstate risk sharing. The reason is that bank data at the state level are simply not available. However, as discussed in Section II, the literature finds that the deregulation of the US banking industry has fostered interstate risk sharing. Therefore, we now explicitly analyze if and how the effect of marriage on risk sharing is related to the deregulation of the banking sector. Following Demyanyk *et al.* (2007) we use a dummy variable $BD_{it} = 1$ if state i permits the entry of out-of-state bank holding companies in year t, and $BD_{it} = 0$ otherwise.[10] We focus on the removal of restrictions on interstate banking as the deregulation of banking activities across state borders appears to be the most relevant aspect for our purposes.[11]

To study the role of marriages in regulated and deregulated regimes, we re-estimate the specification and we parametrize β as

$$\beta = \beta_0 + \beta_1 BD_{it} M_{it}^k + \beta_2 (1 - BD_{it}) M_{it}^k. \tag{5}$$

We include BD_{it} and $(1 - DB_{it})$ as additional variables in $\mathbf{Z_{it}}$. We see from Columns (I)–(III) in Table 3 that marriage increases risk sharing because the interaction terms $\tilde{y} \cdot M^k$ enter negatively in both regimes for $k = a, f, m$. However, the magnitudes of the estimated effects turn out to be somewhat larger in deregulated states and, more importantly, the effect of marriage on risk sharing is only significant in deregulated states. Thus, marriages foster risk sharing to a larger extent in states that have removed restrictions on interstate banking. This result is consistent with the interpretation that the readier access of married individuals to bank credit, together with more diversified banks, resulted in a lower exposure to state-specific shocks.

[9] Detailed estimation output is available upon request.
[10] Data on banking deregulation is tabulated in Demyanyk *et al.* (2007).
[11] Although Demyanyk *et al.* (2007) find that intrastate deregulation also contributed to income risk sharing, they conclude that interstate deregulation had the strongest effect.

Table 3. *Risk sharing, marriages, and banking deregulation*

Specification	(I) $k = a$	(II) $k = f$	(III) $k = m$	(IV) $k = a$	(V) $k = f$	(VI) $k = m$
$\tilde{y}$	0.116***	0.112***	0.120***	0.103	0.097	0.106
	(0.040)	(0.041)	(0.040)	(0.301)	(0.296)	(0.306)
$\tilde{y} \cdot M^k \cdot BD$	−0.031**	−0.028**	−0.032**	−0.032**	−0.027*	−0.036**
	(0.013)	(0.012)	(0.013)	(0.014)	(0.014)	(0.016)
$\tilde{y} \cdot M^k \cdot (1 - BD)$	−0.024	−0.021	−0.028	−0.013	−0.010	−0.017
	(0.021)	(0.017)	(0.026)	(0.039)	(0.035)	(0.042)
M^k	−0.184	−0.241	−0.130	−0.394	−0.466	−0.324
	(0.480)	(0.480)	(0.478)	(0.497)	(0.504)	(0.489)
BD	2.459*	2.448*	2.458	2.953*	2.921*	2.970*
	(1.454)	(1.424)	(1.480)	(1.614)	(1.577)	(1.647)
$(1 - BD)$	2.464*	2.453*	2.462	2.958*	2.926*	2.975*
	(1.452)	(1.423)	(1.479)	(1.614)	(1.577)	(1.646)
$\tilde{y} \cdot$ year fixed-effects	No	No	No	Yes	Yes	Yes
Observations	1,100	1,100	1,100	1,100	1,100	1,100
R^2	0.122	0.122	0.122	0.166	0.165	0.166

Notes: The dependent variable is a proxy for state consumption (state retail sales scaled by the ratio of total private consumption to total US retail sales). Each specification controls for year fixed-effects, state fixed-effects, state-specific time trends, and for the share of the total population of sex s and of race r, where r is white, black, and other. Estimated using ordinary least-squares. Robust standard errors (allowing for clustering by states and heteroskedasticity of unknown form) in parentheses below. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Next, we augment the parametrization of β in equation (5) with year fixed-effects:

$$\beta = \beta_0 + \beta_1 BD_{it} M_{it}^k + \beta_2 (1 - BD_{it}) M_{it}^k + \theta_t.$$

This is a very flexible way to control for other unobserved changes in risk sharing over time. We see from Columns (IV)–(VI) of Table 3 that adding year fixed-effects leaves our results largely unchanged.

Although the results presented in Table 3 suggest that marriages, together with the deregulation of the banking sector, improved interstate risk sharing, we could argue that it is ultimately the deregulation that improves risk sharing and also leads to a higher incidence of marriages. For instance, if deregulation fosters economic growth (see Jayaratne and Strahan, 1996), in addition to its effect on risk sharing, and if higher growth, in turn, leads to more marriages, then our regression would assign a significant role to marriages, although the improvement in risk sharing is ultimately a result of the removal of banking restrictions. Alternatively, Cetorelli and Strahan (2006) show that the deregulation of the banking sector has increased the number of small firms in operation. Also, Demyanyk (2008) finds that the deregulation of the banking sector has increased the growth of self-employment income. If self-employment or ownership of small firms cause a higher incidence of marriages, because self-employment represents an

asset on the marriage market, then the estimates reported in Table 3 might falsely indicate that the improved risk sharing is a result of the higher incidence of marriage.[12]

In short, if the deregulation of the banking sector leads to a higher incidence of marriages, then our causal interpretation of the effect of marriages on risk sharing can be questioned. Therefore, we check this relationship in a first step with simple estimation analyses. We find that the share of marriages is not significantly related to banking-sector deregulation.[13] In a second, more elaborate, step, we partial out any potential effect of deregulation on marriages within our main estimation framework. We regress our measures of the share of the married population on the variable capturing the banking-sector deregulation: $M_{it}^k = \delta_0 + \delta_1 DB_{it} + u_{it}^k$. This regression assigns the entire common variation in M_{it}^k and DB_{it} to DB_{it}. The estimated residual $\hat{u}_{it}^k$, which is by construction orthogonal to DB_{it}, contains the variation in M_{it}^k that cannot be attributed to DB_{it}. We therefore interpret $\hat{u}_{it}$ as a "cleaned" proxy for the incidence of marriage (i.e., the variation in marriage that is unrelated to banking-sector deregulation). Thus, by replacing M_{it}^k with $\hat{u}_{it}^k$ in equation (3) we take into account that deregulation might potentially have had an impact on marriage rates.

Table 4 shows that our results remain broadly unchanged when we use $\hat{u}_{it}^k$ to proxy for the incidence of marriage. Columns (I)–(III) indicate that the effect of marriage on risk sharing remains significant at the 5 percent level. Moreover, the point estimates are of similar orders of magnitudes as in Table 2. Columns (IV)–(VI) show that adding year fixed-effects also yields similar results. However, in Column (V), the interaction term $\tilde{y} \cdot \hat{u}^f$ is not significant at standard levels. Here, the estimated coefficients remain essentially unchanged, but adding the year fixed-effects as additional regressors increases standard errors and thus reduces the significance of the estimated coefficients. Overall, we conclude that marriage has an independent effect on risk sharing, which is complementary to the influence of banking-sector deregulation.

Finally, we analzye whether our main result that marriages improve risk sharing might be driven by fiscal policy. It appears conceivable that

[12] To assess the second supposition, we use data from the March Current Population Survey from 1969 to 1990 to check whether being self-employed increases the probability of being married. Based on linear probability models for each year (where we control for individual's age, race, educational attainment, and place of residence), we find that being self-employed has no statistically significant effect on the likelihood of being married. The estimated coefficients are all quantitatively small (the average is equal to -0.001) and statistically insignificant. Detailed estimation output is available upon request.

[13] We regress each measure of the share of the married population M_{it}^k on BD_{it}, where we control for year fixed-effects, state fixed-effects, and state-specific time trends. The estimated coefficient on banking deregulation is in each case smaller than 0.001, and the corresponding p-values are larger than 0.420. Detailed estimation output is available upon request.

Table 4. *Risk sharing and "cleaned" marriages*

Specification	(I) $k = a$	(II) $k = f$	(III) $k = m$	(IV) $k = a$	(V) $k = f$	(VI) $k = m$
$\tilde{y}$	0.108^{***}	0.104^{**}	0.113^{***}	0.021	0.012	0.028
	(0.040)	(0.043)	(0.038)	(0.289)	(0.283)	(0.296)
$\tilde{y} \cdot \hat{u}^k$	-0.025^{**}	-0.022^{*}	-0.028^{**}	-0.027^{*}	−0.022	-0.031^{**}
	(0.011)	(0.013)	(0.011)	(0.015)	(0.019)	(0.015)
$\hat{u}^k$	0.094	0.083	0.105	0.042	0.032	0.051
	(0.271)	(0.268)	(0.275)	(0.273)	(0.270)	(0.276)
Constant	2.321	2.328	2.309	2.782	2.781	2.779
	(2.117)	(2.096)	(2.136)	(2.355)	(2.333)	(2.373)
$\tilde{y} \cdot$ year fixed-effects	No	No	No	Yes	Yes	Yes
Observations	1,100	1,100	1,100	1,100	1,100	1,100
R^2	0.120	0.119	0.120	0.164	0.163	0.164

Notes: The dependent variable is a proxy for state consumption (state retail sales scaled by the ratio of total private consumption to total US retail sales). Each specification controls for year fixed-effects, state fixed-effects, state-specific time trends, and for the share of the total population of sex s and of race r, where r is white, black, and other. Estimated using ordinary least-squares. Jackknife standard errors in parentheses below. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

marriages proxy for other channels through which risks are shared and which are not explicitly controlled for in our analysis. Fiscal policy appears to be particularly relevant in this respect. The federal tax and transfer system in the US has been shown to be an important channel for risk sharing (Mélitz and Zumer, 2002). Moreover, there is some evidence that risk sharing via the federal budget is asymmetric across states (Sala-i-Martin and Sachs, 1991). If states that benefit most from risk sharing through the fiscal tax and transfer system are also characterized by a high incidence of marriage, then we can simply pick up the effect of net fiscal transfers and falsely attribute the lower exposure to state-specific risk to the higher incidence of marriages.

To meet this concern, we now test if the incidence of marriage is indeed positively correlated with the degree to which risks are shared via net fiscal transfers. The correlation between idiosyncratic state output, $\tilde{y}_{it}$, and idiosyncratic state disposable income, $\widetilde{di}_{it}$, is a simple indicator for the extent to which states manage to share risks via the federal tax and transfer system.[14] A low correlation implies that net fiscal transfers help to decouple disposable income from state output and thus help to isolate disposable income from fluctuations in $\tilde{y}_{it}$. In other words, the lower the correlation, the more risks are shared via the tax and transfer system.

To see if this correlation is indeed lower in states with a high incidence of marriage, we first calculate the correlation coefficients

[14] We calculate idiosyncratic state disposable income, $\widetilde{di}_{it}$ analogously to $\tilde{y}_{it}$ and $\tilde{c}_{it}$. See Asdrubali *et al.* (1996) for details.

$\rho_i = corr(\tilde{y}_{it}, \widetilde{di}_{it})$. Second, we see if and how ρ_i correlates with $\bar{M}_i^k$, where $\bar{M}_i^k = (1/T)\sum_{t=1}^{T} M_{it}^k$ is the average of M_{it}^k, over time and $k = a, f, m$. We obtain $corr(\rho_i, \bar{M}_i^a) = 0.13$, $corr(\rho_i, \bar{M}_i^f) = 0.13$, and $corr(\rho_i, \bar{M}_i^m) = 0.12$. Thus, we observe a higher incidence of marriage in states where fluctations in $\tilde{y}_{it}$ are smoothed less via net transfers. Therefore, we conclude that the positive effect of marriage on risk sharing, which we find in our analysis, does not mirror net fiscal transfers.

In short, our analysis suggests that a higher share of married population increases interstate risk sharing and that our main results are rather robust. In the remainder of the paper, we study this phenomenon in greater detail. In particular, in Section VI we consider different divorce-law regimes, and in Section VII we inspect the effect over the business cycle.

VI. Impact of Divorce Legislation

The effect of marriages on the availability of bank loans, and thus on the extent of risk sharing across states, depends on the degree of risk sharing within marriages. In reality, the threat-point of divorce and the fact that intra-marriage transfers cannot be fully legally enforced, might prevent couples from (full) risk sharing. Hence, we generally expect higher levels of risk sharing if the likelihood of divorce is low. Consequently, we also expect a larger effect of marriages on interstate risk sharing if relationships are stable. In order to observe a variation in the likelihood of divorce, we exploit quasi-natural experiments provided by the reforms of divorce law. More specifically, we consider the move from mutual consent divorce to unilateral divorce. This reform has reduced the cost of divorce and altered marital stability. Our identification strategy exploits variation occurring from the different timing of divorce-law reforms across US states.

Between 1968 and 1977 the majority of states moved from a divorce-law regime that was dominated by mutual consent to so-called unilateral divorce law.[15] Under mutual consent, both spouses had to agree in order to dissolve a marriage legally. Under unilateral divorce, either spouse can file for divorce without their partner's consent. First, Becker *et al.* (1977) argued that by switching from mutual consent to unilateral divorce, the right to divorce (or to remarry) is simply transferred from the spouse who wants to remain married to the partner desiring a divorce. If spouses can bargain efficiently, the Coase theorem applies and the divorce-law reform should only affect the distribution of welfare; however, it should have no effect on the incidence of marriage and divorce. However, there is convincing empirical evidence that divorce does not fit into the paradigm of costless

[15] The coding for unilateral divorce law follows Wolfers (2006).

bargaining[16] and that the move from mutual consent to unilateral divorce laws has affected the incidence of marriage and divorce.

For our purposes, the introduction of unilateral divorce had two important effects (see Matouschek and Rasul, 2008). First, divorce has become more easily obtainable. That is, the move from mutual consent to unilateral divorce has decreased the cost of divorce. As in any setting of risk sharing under incomplete contracts, risk sharing decreases when default is less expensive. Hence, this incentive effect decreases risk sharing within marriage. Consequently, to the extent that less risk sharing within families translates into a more restricted access to bank loans, the incentive effect might also give rise to lower risk sharing at the interstate level.

Second, the change in the cost of divorce might affect the selection into marriage (i.e., it might have changed the composition of the stock of married people), thereby giving rise to a potential selection effect. Whether this selection effect increases or decreases the match quality of the average couple is theoretically ambiguous. If the primary purpose of marriage is to serve as a signaling device or to realize exogenous benefits, then a reduction in the costs of divorce should lower the match quality of the average couple. In contrast, when marriage serves as a commitment device, a decrease in divorce cost should increase the average match quality (Matouschek and Rasul, 2008). Empirical evidence suggests that the move to unilateral divorce law increased the match quality of the average couple (Rasul, 2004, 2006; Mechoulan, 2006; Matouschek and Rasul, 2008). The theoretical work by Anderberg (2007) shows that the level of risk sharing is increasing in the match quality of couples.[17] Accordingly, the selection effect should lead to more risk sharing within families and therefore also across states.

Thus, these two effects work in opposite directions. Whether the negative incentive effect or the positive selection effect dominates is, therefore, an empirical question. It seems plausible, however, that the adverse incentive effect and the resulting lower extent of intra-family risk sharing under unilateral divorce are more apparent to banks. Therefore, they should value a marriage under mutual consent divorce higher compared to a marriage under unilateral divorce. Hence, we expect that states are less exposed to state-specific fluctuations in output under mutual consent legislation.

[16] Most likely, there are transaction costs arising from liquidity constraints and private information. Moreover, in many cases other transaction costs, such as legally imposed restrictions and lawyers' fees, have to be expected (Halla, 2007).

[17] In his model, the match quality drives both the risk-sharing decision and the divorce decision.

Table 5. *Risk sharing, marriages, and unilateral divorce law*

Specification	(I) $k = a$	(II) $k = f$	(III) $k = m$
$\tilde{y}$	0.089	0.089	0.092
	(0.296)	(0.296)	(0.297)
$\tilde{y} \cdot M^k \cdot U$	−0.025	−0.013	−0.039
	(0.028)	(0.025)	(0.029)
$\tilde{y} \cdot M^k \cdot (1 - U)$	−0.028*	−0.027*	−0.029**
	(0.014)	(0.015)	(0.014)
M^k	−0.451	−0.527	−0.377
	(0.496)	(0.503)	(0.490)
U	3.004*	2.941*	3.054*
	(1.606)	(1.565)	(1.642)
$(1 - U)$	3.012*	2.949*	3.061*
	(1.606)	(1.565)	(1.642)
$\tilde{y}$ · year fixed-effects	Yes	Yes	Yes
No. of observations	1,100	1,100	1,100
R^2	0.166	0.166	0.166

Notes: The dependent variable is a proxy for state consumption (state retail sales scaled by the ratio of total private consumption to total US retail sales). Each specification controls for year fixed-effects, state fixed-effects, state-specific time trends, and for the share of the total population of sex s and of race r, where r is white, black, and other. Estimated using ordinary least-squares. Robust standard errors (allowing for clustering by states and heteroskedasticity of unknown form) in parentheses below. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

To test the role of unilateral divorce law on interstate risk sharing, we estimate equation (1) and we parametrize β as

$$\beta = \beta_0 + \beta_1 U_{it} M_{it}^k + \beta_2 (1 - U_{it}) M_{it}^k + \theta_t, \tag{6}$$

where $U_{it} = 1$ if state i allows unilateral divorce at time t, and $U_{it} = 0$ otherwise. In our sample, 49.8 percent of state-year observations have unilateral divorce laws.

Table 5 summarizes the results. Under a regime with mutual consent divorce law, an increase in the share of married population is associated with a statistically significant increase in risk sharing of about 2.8 percentage points according to Columns (I)–(III). However, for the regime with unilateral divorce, we do not find any statistically significant reduction of the exposure of consumption growth to idiosyncratic output growth. We interpret this result as an indication that the introduction of unilateral divorce has decreased the risk-sharing enhancing effect of marriage. This is consistent with the view that the adverse incentive effect of unilateral divorce dominates the positive selection effect at the micro level.

This finding is also consistent with micro-econometric analyses. A number of papers document that unilateral divorce law has decreased risk sharing at the individual level. Stevenson (2007) finds evidence that unilateral divorce legislation reduced the investment in various types of

marriage-specific capital, such as household specialization, children, and spouse's education. Similarly, based on data from the National Health Interview Survey, Soloveichik (2007) shows that unilateral divorce has dramatically decreased risk sharing within marriage with respect to health shocks. Our results show that this reduction in risk sharing can also be found at a more aggregated level and that it reduces risk sharing between states.

VII. Role of Marriages over the Business Cycle

After adverse shocks to state output, households might need to borrow to smooth their consumption. However, if households are subject to credit constraints, borrowing might not be feasible and, therefore, they might not be able to smooth the impact of the shock. Thus, credit might not be available when it is needed most, and consequently households are particularly exposed to adverse shocks. Because we argue that marriages help to loosen credit constraints, marriages might be particularly relevant for risk sharing during economic downturns.

To test this hypothesis, we define a dummy variable $SC_{it} = 1$ if the growth rate of real GSP in state i is above average, and $SC_{it} = 0$ otherwise. Put differently, we interpret periods of below average growth as downturns, where agents would have to borrow in order to sustain a certain level of consumption. We let β depend on M_{it}^k and SC_{it}:

$$\beta = \beta_0 + \beta_1 SC_{it} M_{it}^k + \beta_2 (1 - SC_{it}) M_{it}^k. \tag{7}$$

This specification allows the share of the married population to have a different impact on risk sharing in periods of economic upturns and downturns. If we include the richest specification of $\mathbf{Z_{it}}$ as well as year fixed-effects in the parametrization of β in addition to M_{it}^k and SC_{it}, we obtain insignificant, albeit negative, estimates for the interaction terms involving M_{it}^k throughout. However, Table 6 shows that once we drop the year fixed-effects from the parametrization of β and the state-specific time trends from $\mathbf{Z_{it}}$, the impact of marriage on risk sharing turns out to be statistically and quantitatively more important in periods of economic downturns. An increase in the share of married population by 1 percentage point reduces the exposure to state-specific output by 4.9 percentage points during an economic downturn.

In summary, these results suggest that marriages improve risk sharing when it is most needed, namely during economic downturns. However, as this result is (in contrast to the previously reported findings) sensitive to the specification of control variables, it has to be interpreted with caution.

Table 6. *Risk sharing, marriages, and the state cycle*

Specification	(I) $k = a$	(II) $k = f$	(III) $k = m$
$\tilde{y}$	0.086	0.085	0.088
	(0.053)	(0.053)	(0.053)
$\tilde{y} \cdot M^k \cdot SC$	−0.012	−0.013	−0.010
	(0.027)	(0.027)	(0.027)
$\tilde{y} \cdot M^k \cdot (1 - SC)$	−0.049**	−0.041*	−0.057**
	(0.024)	(0.021)	(0.028)
M^k	−0.154	−0.258	−0.058
	(0.299)	(0.314)	(0.289)
SC	0.008	0.011	0.005
	(0.010)	(0.011)	(0.010)
$(1 - SC)$	0.003	0.007	0.001
	(0.010)	(0.010)	(0.010)
$\tilde{y}$ · year fixed-effects	No	No	No
No. of observations	1,100	1,100	1,100
R^2	0.073	0.073	0.073

Notes: The dependent variable is a proxy for state consumption (state retail sales scaled by the ratio of total private consumption to total US retail sales). Each specification controls for year fixed-effects, state fixed-effects, and for the share of the total population of sex s and of race r, where r is white, black, and other. Estimated using ordinary least-squares. Robust standard errors (allowing for clustering by states and heteroskedasticity of unknown form) in parentheses below. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

VIII. Conclusion

In this paper, we explore the extent to which marriages influence inter-region risk sharing. We find that those US states where the married population represents a higher fraction of the total population manage to share a larger fraction of their idiosyncratic risks. We draw two broad conclusions from our results. First, even in the US, where highly developed financial markets should be capable of providing substantial risk sharing, informal insurance mechanisms, such as marriages, still play a role. Second, we find that marriages not only improve risk sharing at the individual level and within states, but also result in a higher degree of risk sharing across states. That is, marriages also help to smooth the impact of state-specific shocks, which cannot be smoothed within states.

We find that the design of divorce legislation plays a crucial role. Divorce law not only determines the cost of divorce but also influences many aspects of married life. It sets the parameters for inter-temporal contracting, and it affects the incentive to invest in marriage-specific capital. This has a bearing on risk-sharing behavior within marriage, which can also be identified at a more aggregated state level. The impact of marriage on interstate risk sharing has decreased because of the adoption of unilateral divorce law.

We also find some evidence indicating that the impact of marriage on risk sharing is quantitatively more important in periods of economic downturns. Finally, marriages have fostered risk sharing to a greater extent after the deregulation of the US banking sector. All the presented empirical evidence, on both the micro and macro levels, is consistent with our interpretation that marriage fosters risk sharing by increasing access to bank credit.

Our results contribute to the discussion of the merits of a high marriage rate. The public and policy-makers alike seem to worry about the decline in marriage. In the US, a large number of policies have been designed to increase the incidence of marriage and to stabilize existing marriages.[18] The compelling public interest in keeping the marriage rate high might simply be a result of preferences (e.g., ethical and religious beliefs), but it could also mirror the empirical evidence highlighting the beneficial effects of marriage.[19] Our paper provides evidence for additional welfare benefits associated with marriage, namely a lower exposure to state-specific risk.

Although the focus of our paper is on the risk-sharing implications of marriages, the insight that risk sharing interacts at the individual and more aggregated levels appears to be rather general. Identifying additional channels through which this interaction might occur seems to be an interesting direction for future research. Finally, we hope to stimulate further research exploring the relationship between family formation, family dissolution, and macroeconomic issues.

References

Alm, J., Dickert-Conlin, S., and Whittington, L. A. (1999), Policy Watch: The Marriage Penalty, *Journal of Economic Perspectives 13*, 193–204.

Anderberg, D. (2007), Marriage, Divorce and Reciprocity-Based Cooperation, *Scandinavian Journal of Economics 109*, 25–47.

Asdrubali, P., Sørensen, B. E., and Yosha, O. (1996), Channels of Interstate Risk Sharing: The United States 1963–1990, *Quarterly Journal of Economics 111*, 1081–1110.

Azariadis, C. (1975), Implicit Contracts and Underemployment Equilibria, *Journal of Political Economy 83*, 1183–1202.

Baker, M., Hanna, E., and Kantarevic, J. (2004), The Married Widow: Marriage Penalties Matter!, *Journal of the European Economic Association 2*, 634–664.

Becker, G. S. (1973), A Theory of Marriage: Part I, *Journal of Political Economy 81*, 813–846.

[18] These policies comprise large media campaigns, the re-introduction of covenant marriages (Brinig, 1999), and the removal of marriage penalties in tax codes (Alm *et al.*, 1999), pension systems (Baker *et al.*, 2004), and Medicaid programs (Yelowitz, 1998).

[19] An extensive body of empirical literature, summarized by Waite and Gallagher (2000), has documented a strong correlation between being married and better health, longer life, higher wages, greater wealth, and better child outcomes.

Becker, G. S. (1974), A Theory of Marriage: Part II, *Journal of Political Economy 82*, S11–S26.
Becker, G. S., Landes, E. M., and Michael, R. T. (1977), An Economic Analysis of Marital Instability, *Journal of Political Economy 85*, 1141–1187.
Bennett, N. G., Bloom, D. E., and Craig, P. H. (1989), The Divergence of Black and White Marriage Patterns, *American Journal of Sociology 95*, 692–722.
Blumstein, P., and Schwartz, P. (1983), *American Couples: Money, Work, Sex*, William Morrow, New York.
Boot, A. W. A. (2000), Relationship Banking: What Do We Know?, *Journal of Financial Intermediation 9*, 7–25.
Brien, M. J. (1997), Racial Differences in Marriage and the Role of Marriage Markets, *Journal of Human Resources 32*, 741–778.
Brinig, M. F. (1999), Economics, Law, and Covenant Marriage, *Gender Issues 16*, 4–33.
Cetorelli, N., and Strahan, P. E. (2006), Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local US Markets, *Journal of Finance 61*, 437–461.
Chami, R., and Hess, G. (2005), For Better or For Worse? State-Level Marital Formation and Risk Sharing, *Review of Economics of the Household 3*, 367–385.
Clark, S. (1999), Law, Property, and Marital Dissolution, *Economic Journal 109*, 41–54.
Cochrane, J. H. (1991), A Simple Test of Consumption Insurance, *Journal of Political Economy 99*, 957–976.
Demyanyk, Y. (2008), US Banking Deregulation and Self-Employment: A Differential Impact on Those in Need, *Journal of Economics and Business 60*, 165–178.
Demyanyk, Y., Ostergaard, C., and Sørensen, B. E. (2007), US Banking Deregulation, Small Businesses, and Interstate Insurance of Personal Income, *Journal of Finance 62*, 2763–2801.
Elliehausen, G. E, and Lawrence, E. C. (1990), Discrimination in Consumer Lending, *Review of Economics and Statistics 72*, 156–160.
Halla, M. (2007), Divorce and the Excess Burden of Lawyers, IZA Discussion Paper 2962, Institute for the Study of Labor (IZA), Bonn.
Hess, G. D. (2004), Marriage and Consumption Insurance: What's Love Got to Do with It?, *Journal of Political Economy 112*, 290–318.
Hoffmann, M., and Shcherbakova, I. (2007), Consumption Risk Sharing over the Business Cycle: The Role of Small Firm's Access to Credit Markets, unpublished manuscript, University of Zurich.
Hunter, W. C., and Walker, M. (1996), The Cultural Affinity Hypothesis and Mortgage Lending Decisions, *Journal of Real Estate Finance and Economics 13*, 57–70.
Jayaratne, J., and Strahan, P. E. (1996), The Finance-Growth Nexus: Evidence from Bank Branch Deregulation, *Quarterly Journal of Economics 111*, 639–670.
Kmenta, J. (1997), *Elements of Econometrics*, 2nd edn, University of Michigan Press, Ann Arbor, MI.
Korniotis, G. M., and Kumar, A. (2007), Investor Sophistication and Interstate Risk Sharing Using Financial Assets, unpublished manuscript, University of Texas at Austin.
Kotlikoff, L. J., and Spivak, A. (1981), The Family as an Incomplete Annuities Market, *Journal of Political Economy 89*, 372–391.
Ladd, H. F. (1982), Equal Credit Opportunity: Women and Mortgage Credit, *American Economic Review 72*, 166–170.
Lewis, K. K. (1996), What Can Explain the Apparent Lack of International Consumption Risk Sharing, *Journal of Political Economy 104*, 267–297.
Ligon, E., Thomas, J. P., and Worrall, T. (2002), Informal Insurance Arrangements with Limited Commitment: Theory and Evidence from Village Economies, *Review of Economic Studies 69*, 209–244.

Mace, B. J. (1991), Full Insurance in the Presence of Aggregate Uncertainty, *Journal of Political Economy 99*, 928–956.
Matouschek, N., and Rasul, I. (2008), The Economics of the Marriage Contract: Theories and Evidence, *Journal of Law and Economics 51*, 59–110.
Mechoulan, S. (2006), Divorce Laws and the Structure of the American Family, *Journal of Legal Studies 35*, 143–174.
Mélitz, J., and Zumer, F. (2002), Regional Redistribution and Stabilization by the Center in Canada, France, the UK and the US: A Reassessment and New Tests, *Journal of Public Economics 86*, 263–286.
Munnell, A. H., Tootell, G. M. B., Browne, L. E., and McEneaney, J. (1996), Mortgage Lending in Boston: Interpreting HMDA Data, *American Economic Review 86*, 25–53.
Rasul, I. (2004), The Impact of Divorce Laws on Marriage, unpublished manuscript, University of Chicago.
Rasul, I. (2006), Marriage Markets and Divorce Laws, *Journal of Law, Economics and Organization 22*, 30–69.
Rosenzweig, M. R. (1988), Risk, Implicit Contracts and the Family in Rural Areas of Low-Income Countries, *Economic Journal 98*, 1148–1170.
Rosenzweig, M. R., and Stark, O. (1989), Consumption Smoothing, Migration, and Marriage: Evidence from Rural India, *Journal of Political Economy 97*, 905–926.
Rosenzweig, M. R., and Wolpin, K. I. (1985), Specific Experience, Household Structure and Intergenerational Transfers: Farm Family Land and Labor Arrangements in Developing Countries, *Quarterly Journal of Economics 100*, 961–987.
Rosenzweig, M. R., and Wolpin, K. I. (1994), Parental and Public Transfers to Young Women and their Children, *American Economic Review 84*, 1195–1212.
Sala-i-Martin, X., and Sachs, J. (1991), Fiscal Federalism and Optimum Currency Areas: Evidence for Europe from the United States, in M. B. Canzoneri, V. Grilli, and P. R. Masson (eds.), *Establishing a Central Bank: Issues in Europe and Lessons from the United States*, Cambridge University Press, Cambridge.
Soloveichik, R. H. (2007), In Sickness or in Health? Divorce Law and Health-Care Usage, unpublished manuscript, University of Chicago.
Stevenson, B. (2007), The Impact of Divorce Laws on Marriage-Specific Capital, *Journal of Labor Economics 25*, 75–94.
Stevenson, B., and Wolfers, J. (2007a), Marriage and Divorce: Changes and their Driving Forces, *Journal of Economic Perspectives 21*, 27–52.
Stevenson, B., and Wolfers, J. (2007b), Trends in Marital Stability, unpublished manuscript, University of Pennsylvania.
Waite, L. J. (1995), Does Marriage Matter?, *Demography 32*, 483–507.
Waite, L. J., and Gallagher, M. (2000), *The Case for Marriage: Why Married People Are Happier, Healthier, and Better off Financially*, Broadway, New York.
Weiss, Y. (1993), The Formation and Dissolution of Families: Why Marry? Who Marries Whom? and What Happens upon Marriage and Divorce, in M. R. Rosenweig and O. Stark (eds.), *Handbook of Population and Family Economics*, Vol. 1A, Elsevier, Amsterdam.
Wolfers, J. (2006), Did Uniliteral Divorce Laws Raise Divorce Rates? A Reconciliation and New Results, *American Economic Review 96*, 1802–1820.
Yelowitz, A. S. (1998), Will Extending Medicaid to Two-Parent Families Encourage Marriage?, *Journal of Human Resources 33*, 833–865.