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Falling Out of Love: Non-Economic Shocks and Their Effect on Partnership Dissolution

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Abstract

Whether non-economic factors such as marital happiness and well-being influence the probability of divorce? What if we also consider other factors such as the length of marriage and separation in the long term? I quantitatively measure the economic and non-economic factors that might influence divorce using British Household Panel Study. According to the results of my baseline model, only match qualities matter in predicting the probability of separation. My results also provide some key insights for extensions of this baseline model. The economic and non-economic factors are best at predicting separation that happens within a 3-years time range. And wives' match qualities have similar effects with the husbands' when looking at separation hazards in the long run. After controlling for marriage duration, negative match quality received by the husbands will significantly increase divorce hazards, while the reverse is true for wives. Contrary to previous findings, none of the economic factors are significant in my models.

1. Introduction

Many underlying streams might lead to divorce. Some of the reasons are money-related, while some of them are not. Researchers find out that most couples divorce because of growing apart, communication failure, infidelity, and boredom (Gigy and Kelly, 1993; Hawkins et al., 2012). Over the 208 interviews conducted by Amato and Previti (2003), only 2% of the respondents reported that they divorce as a result of financial problems, such as not having enough money, while the most common cause was infidelity. In 2004, the Generation & Gender Survey asked individuals in 21 western countries about their attitudes towards breaking up with their current partner. Over 60% of the participants said that their decision to break up would not at all depend on their financial situation.

Scholars from different fields of interest have different focuses on the determinants of divorce. Economists have long anchored their interests on those money-related reasons, for instance, unemployment, earnings shocks, as well as income inequality within households. Sociologists and psychologists are more attracted to other causes such as happiness and social norms. This paper tries to figure out whether non-economic factors such as marital happiness

and well-being fit into the story line in economic models of divorce, and how other characteristics such as the length of marriage and inequality help address these issues.

1.1. Economic models of divorce

Economists have long focused on the dynamics of divorce. The theory of marital dissolution is primarily based on the theory of marriage and assortative matching (Becker, 1974). In the paper by Becker et al. (1977), divorce is expected to happen when the combined wealth when dissolved exceeds their combined single wealth. In other words, couples decide to divorce when they think they would be better off alone. Weiss and Willis (1997) formalize Becker's theory by proposing a dynamic framework for divorce. In their study, the gains from marriage at a certain period of life are defined recursively and are determined by a series of exogenous variables: the couple's personality traits, the accumulation of marital capital, and the match quality. The couple will choose to separate when the value of outside options is larger than their gains from marriage. Among all determinants of divorce, match quality cannot be quantitatively measured as other characteristics. Given the settings in the model, the paper emphasizes the effect of unexpected changes in personal traits on divorce. Empirical results in later sections demonstrate that an unanticipated increase in the husband's predicted income will reduce the risk of divorce. In contrast, an unanticipated increase in the wife's predicted income will in increase the risk of divorce. Browning et al. (2014) further extend this model to more general cases under transferable utility and the Becker-Coase theory.

Resting on the theoretical backgrounds, studies on the determinants of marital dissolution mainly look at the subjective factors, especially wealth-related reasons of divorce. Researchers use data from the U.S. and other European countries to study how changes in economic circumstances influence marital instability (White and Rogers, 2000; Boheim and Ermisch, 2001; Jalovaara, 2003; Hess, 2004). Results are similar to the conclusions of Weiss and Willis (1997). When categorizing unexpected economic changes to a greater extent, Charles and Stephens (2004) find out that earning shocks resulting from job displacement will raise divorce hazards. The same is not true when earning shocks are caused by disability. Findings by Doiron and Mendolia (2011) and Eliason (2012) suggest that husband's and wife's job losses affect the risks of divorce differently. Husband's unexpected job displacement will impose more significant risks on marital stability. Recently, some researchers investigate the effect of income inequality within the household on divorce hazards. Marriages become significantly unstable when wives outearn their husbands (Bertrand et al., 2015; Schwartz and Gonalons-Pons, 2016), or even when they are promoted to higher positions at jobs (Folke and Rickne, 2020).

Another set of literature has been focused on the effect of housing prices on divorce, while conclusions vary. Rainer and Smith (2010) discover that marital hazard is significantly enhanced after negative house price shocks using data from the U.K. Farnham et al. (2016) and Klein (2017) have similar findings with CPS and PSID data. However, utilizing the Iranian dataset, Gholipour and Farzanegan (2015) exhibit opposite outcomes that increasing housing

prices encourage marital dissolution.

Studies that explore the relationship between non-pecuniary factors and divorce are relatively scarce. In previous studies mentioned above, authors usually treat the match quality as determined by personal characteristics (Weiss and Willis, 1997), or as time-invariant using fixed-effect models (Charles and Stephens, 2004) inspired by the former case. Few works try to link spouses' subjective well-being with the probability of divorce. Guven et al. (2012) explore the effect of happiness differences on marital instability. Using data from the UK, Germany, and Australia, their results reveal a clear asymmetry that couples are more likely to separate if women are less happy than their husbands. Chiappori et al. (2018) innovate the literature by proposing a model that takes match quality shocks into account using a Russian dataset. The probability of divorce is estimated using three-stage least squares, including economic shocks and non-economic ones. Their results correspond with what the previous literature has shown and provide some novel perspectives. Higher match quality, of course, reduces the divorce hazard. Economic and non-economic shocks enter into interpreting divorce hazards.

1.2. Divorce from other perspectives

Other explorations concerning the determinants of divorce are mainly twofold. Some researchers concentrate on the role of mental well-being, or happiness, while other researchers address the role of social norms.

Happiness and its relation to divorce is a topic widely discussed over the past few decades. In modern ages, marriage is more based on love, companionship, and commitments between spouses. Therefore, the attenuation of emotional attachments becomes the center of modern divorce (Coontz, 2007). Many researchers explore the relationship between spousal happiness and women's increased employment rates. Women's employment creates a departure from the traditional family role that men tend to be the bread-winner. The phenomenon does not necessarily destabilize marriage but will undoubtedly increase the probability of disruption of already unhappy marriages (Schoen et al., 2002). Rogers and DeBoer (2001) got similar conclusions that increased women's income will lower the risk of divorce, since they directly promote women's marital happiness.

The divorce and separation hazards are also tremendously influenced by gender norms. According to a cross-country comparison research, Gonalons-Pons and Gangl (2021) demonstrate that couples are more likely to separate in response to male's unemployment in those places where patriarch gender norms are more prevalent. To reinforce previous conclusions, sexism is also negatively correlated to female unemployment (Charles et al., 2009). It also increases the marriage gap of skilled women (Bertrand et al., 2016).

Given the results from previous works, how economic and non-economic shocks jointly affect the probability of partnership dissolution? Are the effects of economic shocks still prevalent after controlling for non-economic factors such as happiness level? Are Chiappori et al.

(2018)'s conclusions still holds if including marriage duration variables? Will a strong shock increase separation hazard immediately? Or is the effect more evident after several years? These are all questions that my paper tries to answer.

The paper is structured in the following way. Section 2 discusses the dataset and summary statistics. Section 3 presents the three-stage estimation model. Section 4 presents the outcomes estimated from basic regression models. Section 5 talks about issues related to robustness checks. Section 6 concludes.

2. Data

I employ is 13 waves of the British Household Panel Study (BHPS) in this study, namely from 1996 to 2008. Since 1996, questionnaires in BHPS contain a set of questions that ask about the respondent's 7 point scale satisfaction levels from various aspects of life. Related topics include satisfaction towards job (total pay, job security, actual work content, working hours), health, household income, accommodation, partner, social life, and the individual's life overall. Among the waves, Wave 11 carried out in 2001 missed the satisfaction data, so I drop the whole wave from the total panel data set. In all, we have ten waves of data that can be used to examine the determinants of separation hazard.

After dropping observations with missing values in key variables [1], I have 44,488 observations of 4481 married couples over the ten waves. Of these couples, 4.80% ended up separated, and 38 of them get divorced. Among all these couples, over 60% of them have observations for over three waves, and approximately 40% of them have over five rounds of data. Those most of the works mentioned in the previous introduction section discuss divorce. Considering I have relatively few divorce observations during the window, I will use separation here as the indicator.

The summary statistics by gender are presented in Table 1, where the last column on the right is the mean difference with t-statistic significance level of these two groups. Women report significantly lower life satisfaction levels than men, while their satisfaction with their partners is significantly higher than men. I also divide the overall sample by whether the couple reports separation in the following wave. The summary statistics of these two subgroups are demonstrated in Table 2. As we can see, separated couples are approximately 5-years-old younger than those who remain married. Married couples also earn significantly more than separated ones. Also, married couples are generally happier than couples that are about to separate. They report significantly higher satisfaction levels about overall life, partner, and their own health status. Contrary to traditional thinking, in our data, separated couples have significantly more children than married couples.

[1] I also drop those couples that one of the spouses is over 65 years old and those who have an annual income of less than 100 pounds for the Mincer earnings model.

3. Model

The model used in this paper is basically motivated by Chiappori et al. (2018). I modify the model in order to better accommodate the characteristics of BHPS sample. Furthermore, two robustness checks are implemented.

3.1. Income Equations

$$W_{jti} = \gamma_j X_{jti} + \pi_{jt} + u_{ji} + \omega_{jti} \tag{1}$$

Here in this equation, $j = m, f$ stands for the gender of the individual, the rest stands for couple i at time t. The outcome variable is the individual's income at time t. X_{jti} is a vector of wage determinants. u_{ji} captures the gender-specific time-invariant labor market situations, while π_{jt} is a fixed effect of macroeconomic shocks. The residuals, ω_{jti}, is our main interest here. It implies the time-variant wage shocks of the individual.

3.2. Match Quality Equations

One of the most important issues in this paper is to measure non-economics shocks quantitatively. Even though BHPS asks about respondent's marital satisfaction, as we can see in descriptive statistics, the average level of satisfaction towards the current partner is 6.30. Approximately 60 percent of respondents reported that they are completely satisfied with their partner, and about 85 percent of them reported a satisfaction level that is greater or equal to 6. Therefore, the partnership satisfaction itself might not provide enough distinction and insight for match quality.

Fortunately, the happiness literature offers a solution. There are many aspects of life that can affect people's subjective well-being, for instance, marriage, health status, economic situation, and on. Self-reported happiness is one of the most widely-used measurements of subject well-being in the economics literature. It is often assessed with other personal characteristics and also used as an important factor to predict future outcomes (Kahneman and Krueger, 2006). Therefore, we might obtain a measurement of marriage quality using subjective well-being, after controlling for satisfaction levels on other aspects of life.

Here we suppose the overall well-being of the respondent contains factors of job, economic situations, health, and marital quality.

$$\begin{aligned} satlife_{fti} &= \delta_{11} satlife_{mti} + \alpha_1 sat_{fti} + \delta_{12} W_{fti} + \delta_{13} W_{mti} + \delta_{14} age_{fti} + \tau_{ft} + d_{fi} + \theta_{fti} \\ satlife_{mti} &= \delta_{21} satlife_{fti} + \alpha_2 sat_{mti} + \delta_{22} W_{mti} + \delta_{23} W_{fti} + \delta_{24} age_{mti} + \tau_{mt} + d_{mi} + \theta_{mti} \end{aligned} \tag{2}$$

$satlife_{jti}$ stands for the individuals overall satisfaction towards life. sat_{jti} is a vector of other satisfaction levels that consist of ones well-being, including satisfaction towards job, economic status, and health. τ_{jt} captures the time fixed effects. d_{ji} captures the individual-level fixed effects that are uncorrelated with time. The residuals θ_{fti} and θ_{mti} imply the match quality

derived from an individual's well-being. They will be used to predict partnership dissolution in the next step.

3.3. Partnership Dissolution Equation

Given the shocks defined as above, we can express the probability of partnership dissolution as the following:

$$P(D_{t+1,i} = 1|D_{t,i} = 0) = \Phi(S_{ti} + \beta_m \hat{\theta}_{mti} + \beta_f \hat{\theta}_{fti} + \beta_X X_{ti} + \lambda_t + d_i) \quad (3)$$

In this equation, the outcome variable $P(D_{t+1,i} = 1|D_{t,i} = 0)$ stands for the probability that the couple chooses to separate during the following time period $t + 1$. It is subject to a standard normal distribution, which is determined by a series of factors about economic surplus S_{ti}, and non-economics shocks $\hat{\theta}_{jti}$ that derived from the previous stage. The detailed components of the economic surplus are defined as below:

$$S_{ti} = \beta_{11}\hat{W}_{fti} + \beta_{12}\hat{W}_{mti} + \beta_{21}\omega_{fti} + \beta_{22}\omega_{mti} + \beta_{31}unem^f_{ti} + \beta_{32}unem^m_{ti} + \beta_{41}retire^f_{ti} + \beta_{42}retire^m_{ti} \quad (4)$$

Apart from numerical representation of monetary shocks ω_{jti}, I also include dummies for unemployment of both partners $unem^j_{ti}$. Given a large fraction of participants in my sample are retired, I also add retirement dummies $retire^j_{ti}$ here.

4. Baseline results: the economic and non-economic factors of divorce

The baseline results will be presented according to the order of the model. The first subsection demonstrates the outcomes for income regressions and the plots for economic shocks. The second subsection illustrates the outcomes for satisfaction regressions and our estimation of non-economic shocks. The last subsection gives predictions about separation.

4.1. Stage 1 Regressions: Income and economic shocks

Table 3 presents the estimation results of wage regressions for males and females separately. As indicated by the Mincer earnings function, age, or experience, has a significant positive effect on annual income. Education overall positively affects income level, while having higher education has the most significant influence.

Figure 1 shows the distribution of residuals, which is our economic shock indicator ω obtained from the income regression. Those individuals who are about to separate in the next wave tend to have a more considerable variation in economic shocks. Similar trends are found for both males and females. The distribution of expected income (the predicted income obtained from the regression) can be seen in Figure 2. Women who are going to separate seem to earn more than married ones. On the contrary, separated men earn less than their married peers.

4.2. Stage 2 Regressions: Satisfaction levels and match quality

The estimation results for satisfaction regressions are presented in Table 4. Spouses' life satisfaction levels are positively correlated to each other. Female's satisfaction towards life is more significantly affected by their husbands' happiness than in the opposite way. Both health satisfaction and household income satisfaction impose significant positive effects on life overall. However, what is different from (Chiappori et al., 2018) paper, earning more significantly decreases life satisfaction. Also, spouse's earnings assert no influence on one's life satisfaction, after controlling for other related variables.

The residuals obtained from Stage 2 regressions, or the match quality θ, are plotted in Figure 3. It is indicated in the figure that separated individuals have poorer match quality than married ones. The distributions of separated individuals are more shifted to the left and are more likely to have extreme values. According to Kolmogorov-Smirnov tests for equality of distribution, the match quality distribution for individuals who are going to separate is significantly different from those who decide to stay in marriage. The difference is significant at 5% level for both males (p-value=0.000) and females (p-value=0.019). [2]

4.3. Stage 3 Regressions: Estimation separation

Before running Stage 3 regressions, Table 5 presents the correlation between the main independent variables. As we can see in this table, the four residuals we calculated from the first two stages are not correlated with each other, with the correlation value less than 0.01 for any two residuals. The result proves that our measurements of economic shocks and match qualities are indeed gender- and individual-specific, which successfully exclude the interaction among couples. And the two kinds of residuals are approximately independent of each other.

The results from Stage 3 regression are presented in Table 6. I include three models here. The first set of regressions only include the ωs, which are the economic shocks. The second set of regressions consists of only the θs, which are the match qualities. The last set of regressions has both two kinds of shocks. All of the three models contain one regression without couple fixed effects, and one with couple fixed effects. As the regression results indicate, economic shocks alone will not impact the probability of separation. Their effects are still not significant after adding non-economic shocks into the regression. Among all residual indicators, an increase in match quality θ will significantly reduce the separation hazard. The effect holds for match quality both on the husbands' side and on the wives' side. And the results are consistent with and without couple fixed effects.

In Table 7, I create two dummy variables for each of the residuals, indicating positive shocks (greater than 90th percentile of the distribution) and negative shocks (less than 10th percentile of the distribution). The specifications of the three models are the same as using numerical shocks. The coefficients before control variables are not listed in Table 7. As we can see from

[2] I also did Kolmogorov-Smirnov tests for economic shocks obtained from stage 1. The results are not significant for both males (p-value=0.925) and females (p-value=0.230).

the results, in those models without couple fixed effects, both negative and positive economic shocks still do not significantly influence separation hazard. While poor match quality received from both husbands' side and the wives' side significantly increases separation hazard, and the effect of husbands' negative match quality is larger in scale. Only positive match quality received by the wives will stabilize marriage, decreasing the probability of separation.

When adding couple fixed effects into the regression, the coefficients before wives' economic shocks become statistically significant, as both their negative wage shocks and positive wage shocks will increase the probability of separation. Also, positive non-economic shocks received by the husbands will significantly decrease separation hazard, though their effects are still less prevalent than wives' non-economic shocks in scale. The results of using dummies are consistent with our findings using numerical expressions.

Summarized from the above, different specifications of Stage 3 regressions reveal similar findings. Using BHPS dataset, economic shocks no longer significantly impact a couple's probability of divorce after controlling for non-economic shocks and predicted wages. Husbands' negative match quality will significantly influence on the stabilization of marriage than wives' match quality. Positive match quality perceived by the wives will stabilize marriage, while the effect is not found for husbands' positive match quality. Both wives' extremely positive and negative economic shocks will increase separation hazards.

5. Robustness checks

5.1. Interaction of shocks between spouses

The famous paper by Guven et al. (2012) indicates that a couple's happiness gap will strongly influence their probability of breaking-up, and the effect is asymmetric. Divorce tends to happen if wives are less happier than their husbands. Since our θs here capture the match quality, or the level of love or well-being during marriage, I am wondering if the match quality gap can also predict separation hazard in our model.

Results of this issue are presented in Table 8. Both $wage\_res\_gap$ and sat_res_gap are calculated by the residual of wives subtract the residual of husbands, and the dependent variable is still whether the couple chooses to separate in the next wave. As we can see from the table, none of the coefficients before those gaps are statistically significant. It illustrates that in our model, it is the absolute value of match quality and economic shocks that matters, as we have already controlled for couple-level time-invariant factors.

5.2. Inclusion of lagged shocks

Another important issue that I would like to discuss in this paper is that whether the ωs and θs have a lagged effect on the probability of separation. In other words, when a spouse receives a shock that will negatively influence her marriage, she might not choose to separate or divorce with her partner immediately, namely within a year (BHPS data are collected in a yearly manner).

To fully address this issue, I construct six dependent variables of two categories. The first set of variables, sep_2, sep_3, sep_4, sep_5, implies whether the couple decides to separate or divorce at the second year, the third year, the fourth year, and the fifth year, in contrast with the baseline models where the dependent variable is whether the couple chooses to separate in the next year. The second set of variables, $sep\_within3$ and $sep\_within5$, indicates whether the couple chooses to separate within a certain time range of 3 years and 5 years. Other specifications and the choices of control variables are the same as baseline models. The results using numerical shocks as independent variables are presented in Table 9, and Table 10 provides the results using dummies. All models include time fixed effects and couple fixed effects.

Looking at Table 9, almost all the coefficients before ωs and θs are not significant when the dependent variable belongs to the first category. While as in Table 6, match qualities will significantly influence the probability of separation in the next year. However, according to current data, an increase in match quality will significantly increase the probability of separation in the fifth year, which is contrary to findings in the previous section and in the first few columns of this table. One of the possible explanations to this problem is the limited sample size. There are few couples that ultimately get divorced in my sample, and the number will be even smaller if looking at couples that will still respond to interviews after 5 years. When looking at column (5) and (6) of Table 9, an increase in both the husband's and the wife's match quality will decrease separation hazard. The influence magnitude is at its greatest for separation within 3 years. The scale of coefficient is even larger than what I obtained in Table 6, where the dependent variable is whether the couple chooses to separate in the next year. Besides from that, positive economic shocks received by the wives will instablize their marriage in a 5-years-range. Similar conclusions are not found for other dependent variables.

If using dummy variables, major findings are similar to what we have above. Most of the residual coefficients from column (1) to (4) are not statistically significant. When utilizing these dummies to predict the separation hazard within a certain time range, positive match quality perceived by the wives will still significantly reduce separation hazard. Husbands' positive match quality will reduce separation hazard within 5 years but not within 3 years, and wives' negative match quality will unstabilize marriage within 3 years but not within 5 years. None of the coefficients before ω dummies are significant.

Generally speaking, match quality θs are still more important in predicting separation hazard if we allow for separation that happens within a certain time range. Economic factors are still not significant in such regressions.

5.3. Inclusion of marriage duration variables

Due to limitations in data, Chiappori et al. (2018) fail to include indicators related to marriage duration. Our data is better in that the year of marriage as well as cohabitation details are asked in Wave 10, and 11. Therefore, we can see if the results change when adding marriage duration variables into regressions. Since the year of marriage is asked only in two specific

waves of my sample, it further limits my data to 5827 observations of 1435 couples. Also, since interview years are perfectly collinear with marriage duration, so only couple-level fixed effects are included.

Table 11 and 12 reveal my findings with numerical residuals and dummies. As we can see from Table 11, still only wives' match quality matters in predicting separation hazard. If restricting to extreme values of residuals, as Table 12 indicates, negative match quality received by the husbands will significantly increase divorce hazard, while the reverse is true for wives. Also, in my regressions, the coefficient before marriage duration is positive. This finding is quite different with traditional thinkings. The risk of divorce is expected to rise during the first few months of marriage, and declines gradually afterwards (Kulu, 2014). Still none of the economic factors are significant after controlling for marriage duration.

6. Conclusions

Using BHPS data and a three-stage-least-squares method to quantitatively measure the economic and non-economic factors that might influence divorce, my results are generally different from those of Chiappori et al. (2018), that only match qualities, or the non-economic factors matter in predicting the probability of separation. Husbands' match qualities matter more in the baseline models.

My results also provide some key insights for extensions of this baseline model. The economic and non-economic factors, or the residuals from Stage 2, is best at predicting separation that happens within a 3-years time range. This time-range is quite reasonable when taking the time of going through administrative process into consideration. Wives' match qualities have similar effects with the husbands' when looking at separation hazard in the long run. Looking at results from baseline models, husband's match quality might be the reason of a sudden separation. While in the long run, match qualities from both of the spouses are of approximately the same importance. After controlling for marriage duration, negative match quality received by the husbands will significantly increase divorce hazard, while the reverse is true for wives.It is harder for women to decide to separate when their marriage duration is long. One possible explanation for this interesting phenomenon might be that women value long-time relationship more than men do. Also, they are generally more responsible to children, always thinking of the feeling of their children after potential separation. Contrary to previous findings, none of the economic factors are significant in my models.

My study still has potential shortcomings and room for future improvements. Firstly, whether the residuals from Stage 2 regressions can fully account for match qualities, or the love in marriage, still needs further examination. Secondly, partnership satisfaction data collected in BHPS questionnaire should be incorporate into the model. Even though the satisfaction data itself has some inevitable drawbacks in distribution, when utilized with extra care, it can provide important comparison to my current estimation results. Thirdly, BHPS data fails to

collect all respondents' marital history in detail. This data limitation prevent me from investigating deeper into the baseline model and including more marriage characteristics such as first marriage, cohabitation history and so on.

My study offers an important perspective to current economic research about divorce. Are we focusing to much on the monetary aspects of life? Marriage, after all, is not only based on shared risks, combined wealth, and public assets such as children. Marriage is about human relationship. Separation and divorce capture the moment when a relationship fells apart. According to my results, husband's are more likely to be the driving force of divorce when they experience negative match quality, leaving women in passive situation and being trapped in loveless marriages. Law enforcement and other public agencies should care more about those women whose familial lives are in danger, providing them with necessary assistance, and also the courage to step outside for a new life.

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Tables

Table 1: Summary statistics by gender

	(1) Female		(2) Male		(3)
	mean	sd	mean	sd	diff
Age	43.069	10.541	45.083	10.652	2.013***
No education	0.174	0.380	0.163	0.369	-0.012***
Primary education	0.125	0.330	0.134	0.341	0.009***
Secondary education	0.343	0.475	0.312	0.463	-0.031***
Higher education	0.357	0.479	0.391	0.488	0.034***
Annual income	11144.682	12795.722	22145.413	18631.496	11000.732***
Unemployed	0.013	0.113	0.025	0.155	0.012***
Life satisfaction	5.308	1.204	5.252	1.144	-0.055***
Partnership satisfaction	6.241	1.176	6.361	1.046	0.120***
Household income satisfaction	4.665	1.530	4.554	1.478	-0.111***
Health satisfaction	4.971	1.616	5.054	1.506	0.083***
No. children below 5	0.222	0.500	0.222	0.500	
No. children below 16	0.891	1.052	0.891	1.052	
Observations	22244		22244		44488

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Summary statistics by separation

	(1) Married		(2) Separated		(3)
	mean	sd	mean	sd	diff
Age	44.129	10.651	38.751	8.433	5.378***
No education	0.169	0.375	0.128	0.334	0.041**
Primary education	0.129	0.336	0.126	0.332	0.004
Secondary education	0.327	0.469	0.377	0.485	-0.050**
Higher education	0.374	0.484	0.370	0.483	0.004
Annual income	16661.380	16937.882	15002.428	12708.417	1658.952***
Unemployed	0.019	0.135	0.032	0.176	-0.013
Life satisfaction	5.288	1.169	4.473	1.392	0.815***
Partnership satisfaction	6.318	1.088	4.596	2.004	1.722***
Household income satisfaction	4.614	1.504	4.171	1.541	0.442***
Health satisfaction	5.015	1.562	4.763	1.639	0.252***
No. children below 5	0.221	0.499	0.347	0.580	-0.126***
No. children below 16	0.886	1.051	1.402	1.023	-0.516***
Observations	44050		438		44488

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Stage 1 Regression: Spouse's incomes

	(1) Wife's income (ln)	(2) Husband's income (ln)
Age	0.115***	0.123***
	(0.015)	(0.012)
Age squared	-0.001***	-0.001***
	(0.000)	(0.000)
Primary education	-0.029	0.142
	(0.064)	(0.143)
Secondary education	0.299***	0.059
	(0.104)	(0.110)
Higher education	0.606***	0.352***
	(0.133)	(0.115)
Constant	5.270***	6.289***
	(0.551)	(0.492)
Observations	21,619	21,619
R-squared	0.729	0.690
Time FE	Yes	Yes
Couple FE	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Stage 2 regressions: Spouse's satisfaction levels

	(1)	(2)
	Wife's life satisfaction	Husband's life satisfaction
Spouse's life satisfaction	0.090***	0.076***
	(0.008)	(0.007)
Health satisfaction	0.175***	0.184***
	(0.009)	(0.007)
Household income satisfaction	0.150***	0.166***
	(0.009)	(0.008)
Own income (ln)	-0.035***	-0.045***
	(0.010)	(0.013)
Spouse's income (ln)	0.005	0.008
	(0.014)	(0.009)
Age	-0.026	-0.022
	(0.016)	(0.015)
Constant	4.615***	4.543***
	(0.699)	(0.678)
Observations	21,619	21,619
R-squared	0.659	0.674
Time FE	Yes	Yes
Couple FE	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Correlation Matrix

	wage_res_f	wage_res_m	sat_res_f	sat_res_m
wage_res_f	1.0000			
wage_res_m	0.0083	1.0000		
sat_res_f	0.0038	0.0043	1.0000	
sat_res_m	0.0023	0.0041	-0.0856	1.0000

Table 6: Stage 3 OLS regressions: Estimating separation

	Model 1		Model 2		Model 3	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
wage_res_f	0.000642	0.000592			0.000677	0.000633
	(0.00114)	(0.00106)			(0.00114)	(0.00106)
wage_res_m	0.000611	0.000395			0.000676	0.000474
	(0.00138)	(0.00130)			(0.00138)	(0.00130)
sat_res_f			-0.00352***	-0.00329***	-0.00352***	-0.00330***
			(0.000953)	(0.000889)	(0.000953)	(0.000889)
sat_res_m			-0.00389***	-0.00374***	-0.00390***	-0.00374***
			(0.00117)	(0.00108)	(0.00117)	(0.00108)
pred_wage_f	-0.00136*	0.0979***	-0.00136*	0.0931***	-0.00135*	0.0931***
	(0.000799)	(0.0361)	(0.000798)	(0.0360)	(0.000798)	(0.0360)
pred_wage_m	-0.00372***	0.00460	-0.00374***	0.00523	-0.00372***	0.00565
	(0.00125)	(0.0275)	(0.00126)	(0.0275)	(0.00125)	(0.0275)
unemployed_f	0.00550	0.00828	0.00536	0.00809	0.00545	0.00821
	(0.00732)	(0.00721)	(0.00731)	(0.00721)	(0.00731)	(0.00721)
unemployed_m	0.00230	-0.0141**	0.00216	-0.0142**	0.00230	-0.0141**
	(0.00512)	(0.00617)	(0.00514)	(0.00616)	(0.00512)	(0.00617)
retired_f	-0.00106	0.00194	-0.000936	0.00210	-0.000849	0.00235
	(0.00143)	(0.00199)	(0.00145)	(0.00200)	(0.00144)	(0.00200)
retired_m	-0.00257	0.00104	-0.00225	0.00170	-0.00217	0.00190
	(0.00167)	(0.00216)	(0.00166)	(0.00213)	(0.00166)	(0.00216)
no_chb5	6.76e-05	-0.00180	4.56e-06	-0.00193	6.28e-05	-0.00182
	(0.00162)	(0.00198)	(0.00162)	(0.00195)	(0.00162)	(0.00198)
age_f	-0.000448**	-0.00200	-0.000450**	-0.00163	-0.000450**	-0.00163
	(0.000181)	(0.00258)	(0.000181)	(0.00258)	(0.000181)	(0.00257)
age_m	3.53e-05	-0.000232	3.22e-05	-0.000403	3.21e-05	-0.000420
	(0.000173)	(0.00240)	(0.000172)	(0.00239)	(0.000172)	(0.00239)
educ_pri_f	0.000572	-0.00937	0.000568	-0.00951	0.000574	-0.00944
	(0.00236)	(0.00801)	(0.00236)	(0.00805)	(0.00237)	(0.00805)
educ_pri_m	0.000942	-0.0181*	0.000919	-0.0197*	0.000920	-0.0197*
	(0.00229)	(0.0105)	(0.00229)	(0.0105)	(0.00229)	(0.0105)
educ_mid_f	0.00133	-0.0255	0.00134	-0.0231	0.00134	-0.0230
	(0.00195)	(0.0239)	(0.00195)	(0.0239)	(0.00195)	(0.0239)
educ_mid_m	0.00129	-0.00907	0.00128	-0.00868	0.00127	-0.00894
	(0.00200)	(0.00833)	(0.00200)	(0.00831)	(0.00200)	(0.00834)
educ_tert_f	0.00146	-0.0580**	0.00145	-0.0549*	0.00144	-0.0548*
	(0.00222)	(0.0288)	(0.00222)	(0.0287)	(0.00222)	(0.0287)
educ_tert_m	0.00175	-0.00709	0.00175	-0.00682	0.00174	-0.00701
	(0.00213)	(0.0192)	(0.00213)	(0.0191)	(0.00213)	(0.0192)
Constant	0.0620***	-0.773***	0.0625***	-0.747***	0.0622***	-0.750***
	(0.0146)	(0.121)	(0.0146)	(0.121)	(0.0146)	(0.121)
Observations	21,619	21,619	21,619	21,619	21,619	21,619
R-squared	0.005	0.301	0.006	0.302	0.006	0.302
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Couple FE	No	Yes	No	Yes	No	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Stage 3 OLS regressions: Independent variable in dummies

	Model 1		Model 2		Model 3	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
wage_res_f_10p	-0.000165	0.00547**			-0.000412	0.00522**
	(0.00213)	(0.00217)			(0.00212)	(0.00215)
wage_res_f_90p	0.000569	0.00544**			0.000530	0.00534**
	(0.00219)	(0.00245)			(0.00218)	(0.00244)
wage_res_m_10p	-0.000535	-0.00128			-0.000695	-0.00138
	(0.00197)	(0.00196)			(0.00197)	(0.00196)
wage_res_m_90p	0.00183	4.02e-05			0.00186	0.000155
	(0.00225)	(0.00257)			(0.00225)	(0.00257)
sat_res_f_10p			0.00614**	0.00514**	0.00616**	0.00503**
			(0.00266)	(0.00249)	(0.00266)	(0.00249)
sat_res_f_90p			-0.00301*	-0.00420**	-0.00302*	-0.00425**
			(0.00175)	(0.00192)	(0.00175)	(0.00192)
sat_res_m_10p			0.00868***	0.00767***	0.00869***	0.00759***
			(0.00284)	(0.00260)	(0.00283)	(0.00259)
sat_res_m_90p			-0.00179	-0.00387*	-0.00181	-0.00392*
			(0.00186)	(0.00204)	(0.00186)	(0.00204)
Constant	0.0161***	-0.0819	0.0151***	-0.0784	0.0149***	-0.0823
	(0.00390)	(0.0756)	(0.00391)	(0.0752)	(0.00393)	(0.0755)
Observations	21,619	21,619	21,619	21,619	21,619	21,619
R-squared	0.004	0.299	0.006	0.300	0.006	0.301
Controls	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Couple FE	No	Yes	No	Yes	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Residual gaps and separation hazard

VARIABLES	Economic shock gap		Match quality gap		Both gaps	
	(1)	(2)	(3)	(4)	(5)	(6)
wage_res_gap	0.000146	2.24e-05			0.000146	2.24e-05
	(0.000958)	(0.000890)			(0.000958)	(0.000890)
sat_res_gap			-6.97e-05	-6.16e-05	-6.98e-05	-6.17e-05
			(0.000647)	(0.000612)	(0.000647)	(0.000612)
Constant	0.0176***	-0.0813	0.0176***	-0.0813	0.0176***	-0.0813
	(0.00370)	(0.0755)	(0.00369)	(0.0755)	(0.00370)	(0.0755)
Observations	21,619	21,619	21,619	21,619	21,619	21,619
R-squared	0.004	0.299	0.004	0.299	0.004	0.299
Controls	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Couple FE	No	Yes	No	Yes	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Economic shocks, match quality, and the probability of separation in the long run (1)

	Dependent variables					
	(1)	(2)	(3)	(4)	(5)	(6)
	sep_2	sep_3	sep_4	sep_5	sep_within3	sep_within5
pred_wage_f	0.0101	-0.0125	-0.0204	-0.0161	0.0878**	0.0490
	(0.0248)	(0.0201)	(0.0175)	(0.0192)	(0.0384)	(0.0342)
pred_wage_m	0.0157	0.0115	0.00848	-0.00592	0.0340	0.0363
	(0.0187)	(0.0164)	(0.0127)	(0.0147)	(0.0295)	(0.0266)
wage_res_f	0.000523	0.000714	0.000729	-0.000461	0.00177	0.00201**
	(0.000778)	(0.000850)	(0.000667)	(0.000637)	(0.00112)	(0.000936)
wage_res_m	0.000692	-0.00152	-0.000347	0.000978	-0.000146	0.000964
	(0.00114)	(0.00147)	(0.00101)	(0.000793)	(0.00156)	(0.00133)
sat_res_f	-0.00114	8.83e-05	0.000796	0.00109*	-0.00430***	-0.00237***
	(0.000761)	(0.000774)	(0.000586)	(0.000653)	(0.000962)	(0.000838)
sat_res_m	0.000109	-0.000652	0.000303	0.00118**	-0.00417***	-0.00258***
	(0.000772)	(0.000802)	(0.000607)	(0.000576)	(0.00104)	(0.000897)
Constant	-0.136*	-0.0242	0.0609	0.142**	-0.839***	-0.605***
	(0.0769)	(0.0795)	(0.0728)	(0.0691)	(0.124)	(0.111)
Observations	21,619	21,619	21,619	21,619	21,619	21,619
R-squared	0.282	0.243	0.212	0.193	0.691	0.850
Controls	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Couple FE	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Economic shocks, match quality, and the probability of separation in the long run (2)

	Dependent variables					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	sep_2	sep_3	sep_4	sep_5	sep_within3	sep_within5
wage_res_f_10p	-0.00429***	-0.00128	-0.00187	0.00187	-0.000550	-0.000607
	(0.00164)	(0.00171)	(0.00154)	(0.00182)	(0.00236)	(0.00225)
wage_res_f_90p	-0.00265	-0.000257	0.000514	-0.000492	0.00197	0.00196
	(0.00197)	(0.00208)	(0.00203)	(0.00162)	(0.00288)	(0.00247)
wage_res_m_10p	-0.00221	0.00110	-0.000437	0.00138	-0.00238	-0.00171
	(0.00199)	(0.00183)	(0.00178)	(0.00168)	(0.00254)	(0.00234)
wage_res_m_90p	-0.00112	-0.00202	-0.00134	0.00440**	-0.00237	0.00118
	(0.00194)	(0.00188)	(0.00187)	(0.00193)	(0.00261)	(0.00217)
sat_res_f_10p	0.00209	-0.00206	-0.00212	-0.00197	0.00505**	0.00121
	(0.00202)	(0.00188)	(0.00145)	(0.00145)	(0.00252)	(0.00217)
sat_res_f_90p	-0.00337*	0.000354	-0.000737	0.00255	-0.00726***	-0.00515**
	(0.00188)	(0.00195)	(0.00158)	(0.00187)	(0.00237)	(0.00218)
sat_res_m_10p	-0.00229	0.00144	-0.000408	-0.00458***	0.00644**	0.00164
	(0.00203)	(0.00202)	(0.00174)	(0.00138)	(0.00263)	(0.00216)
sat_res_m_90p	-0.00124	0.000615	-0.00156	-0.00122	-0.00435	-0.00701***
	(0.00189)	(0.00211)	(0.00183)	(0.00176)	(0.00270)	(0.00247)
Constant	0.0700	-0.0130	-0.00292	-0.0174	0.0356	0.0297
	(0.0440)	(0.0531)	(0.0509)	(0.0443)	(0.0690)	(0.0576)
Observations	21,619	21,619	21,619	21,619	21,619	21,619
R-squared	0.282	0.243	0.212	0.194	0.689	0.850
Controls	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Couple FE	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Economic shocks, match quality, and marriage duration model (1)

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
pred_wage_f	0.0817	0.0823	0.0828
	(0.0725)	(0.0727)	(0.0726)
pred_wage_m	0.0348	0.0322	0.0321
	(0.0558)	(0.0558)	(0.0557)
wage_res_f	-0.00210		-0.00190
	(0.00181)		(0.00179)
wage_res_m	0.00173		0.00161
	(0.00226)		(0.00225)
mar_duration	0.00268	0.00249	0.00252
	(0.00189)	(0.00190)	(0.00188)
sat_res_f		-0.000670	-0.000675
		(0.00140)	(0.00140)
sat_res_m		-0.00404**	-0.00396**
		(0.00171)	(0.00170)
Constant	-0.870***	-0.855***	-0.857***
	(0.206)	(0.209)	(0.207)
Observations	5,827	5,827	5,827
R-squared	0.335	0.336	0.336
Controls	Yes	Yes	Yes
TimeFE	No	No	No
Couple FE	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Economic shocks, match quality, and marriage duration model (2)

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
wage_res_f_10p	0.00378		0.00365
	(0.00353)		(0.00350)
wage_res_f_90p	-0.00394		-0.00371
	(0.00374)		(0.00375)
wage_res_m_10p	-0.00440		-0.00435
	(0.00323)		(0.00323)
wage_res_m_90p	-0.00232		-0.00211
	(0.00453)		(0.00452)
mar_duration	0.00352*	0.00318*	0.00331*
	(0.00184)	(0.00184)	(0.00184)
sat_res_f_10p		-0.00856***	-0.00867***
		(0.00327)	(0.00326)
sat_res_f_90p		-0.00608	-0.00625
		(0.00383)	(0.00385)
sat_res_m_10p		0.00975**	0.00947**
		(0.00465)	(0.00463)
sat_res_m_90p		-0.00298	-0.00304
		(0.00356)	(0.00357)
Constant	-0.0300	-0.0351	-0.0314
	(0.0344)	(0.0345)	(0.0345)
Observations	5,827	5,827	5,827
R-squared	0.333	0.334	0.335
Controls	Yes	Yes	Yes
TimeFE	No	No	No
Couple FE	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Graphs

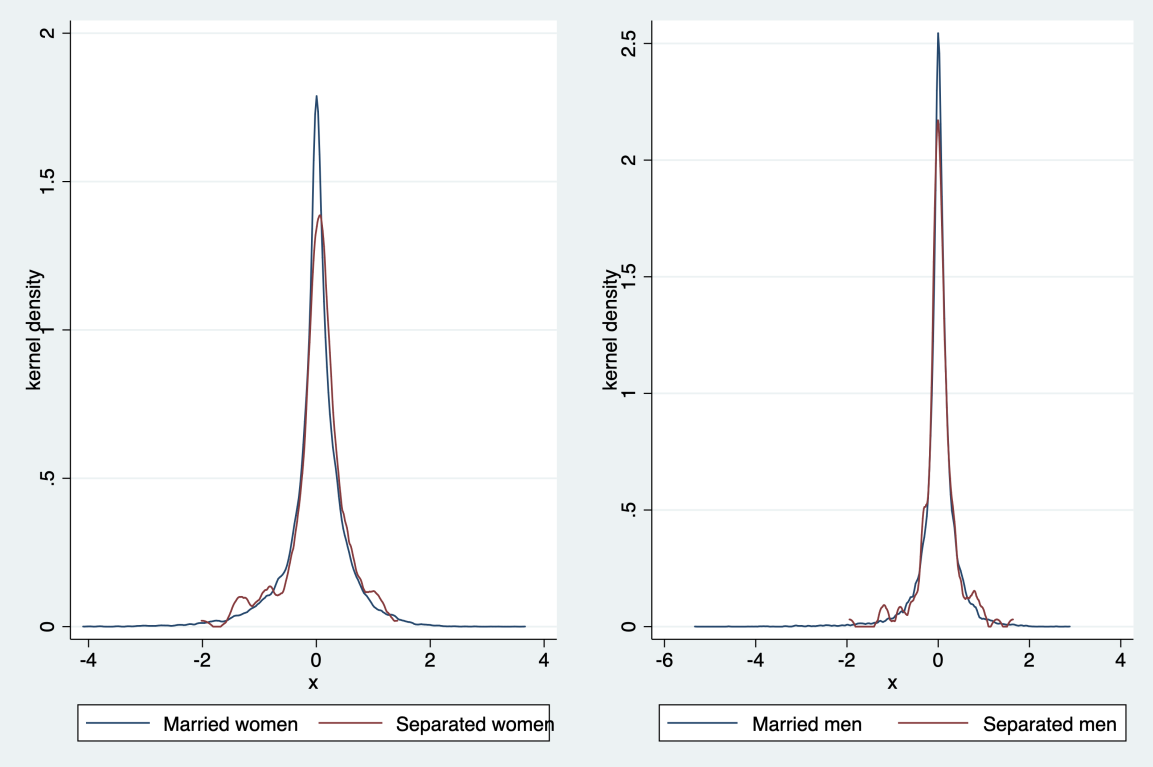

Figure 1: Distribution of residuals for income regressions

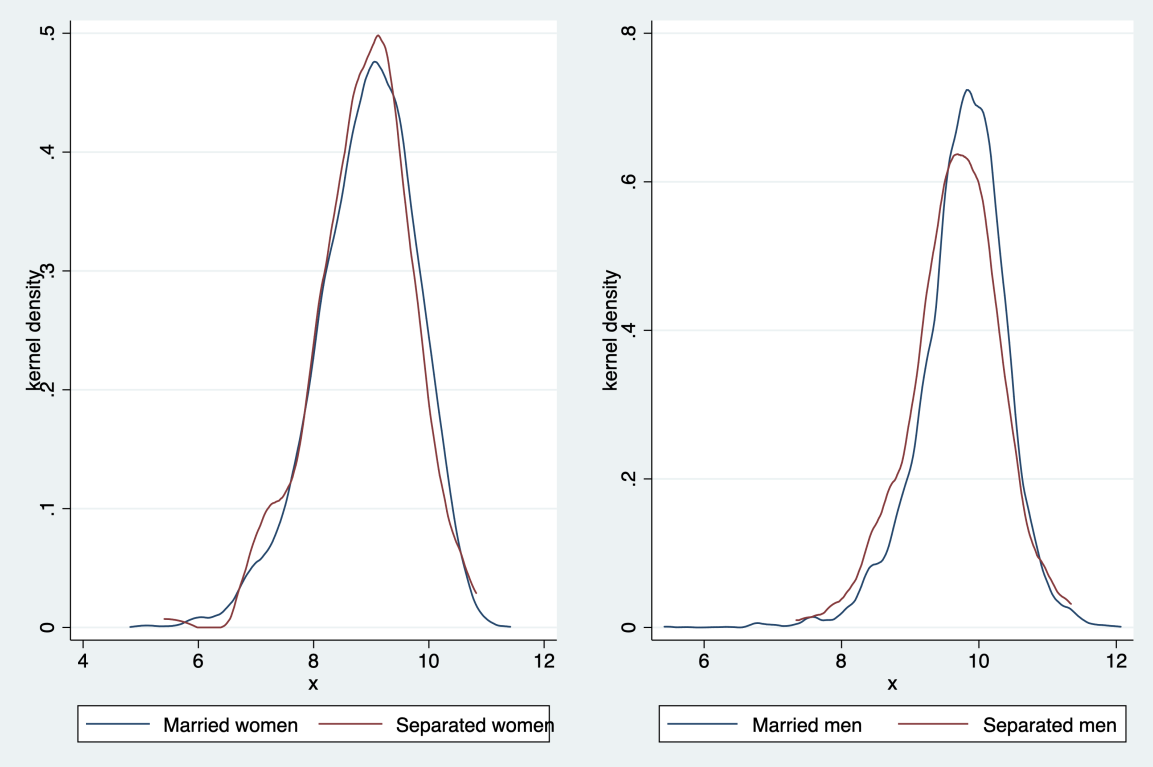

Figure 2: Distribution of expected income

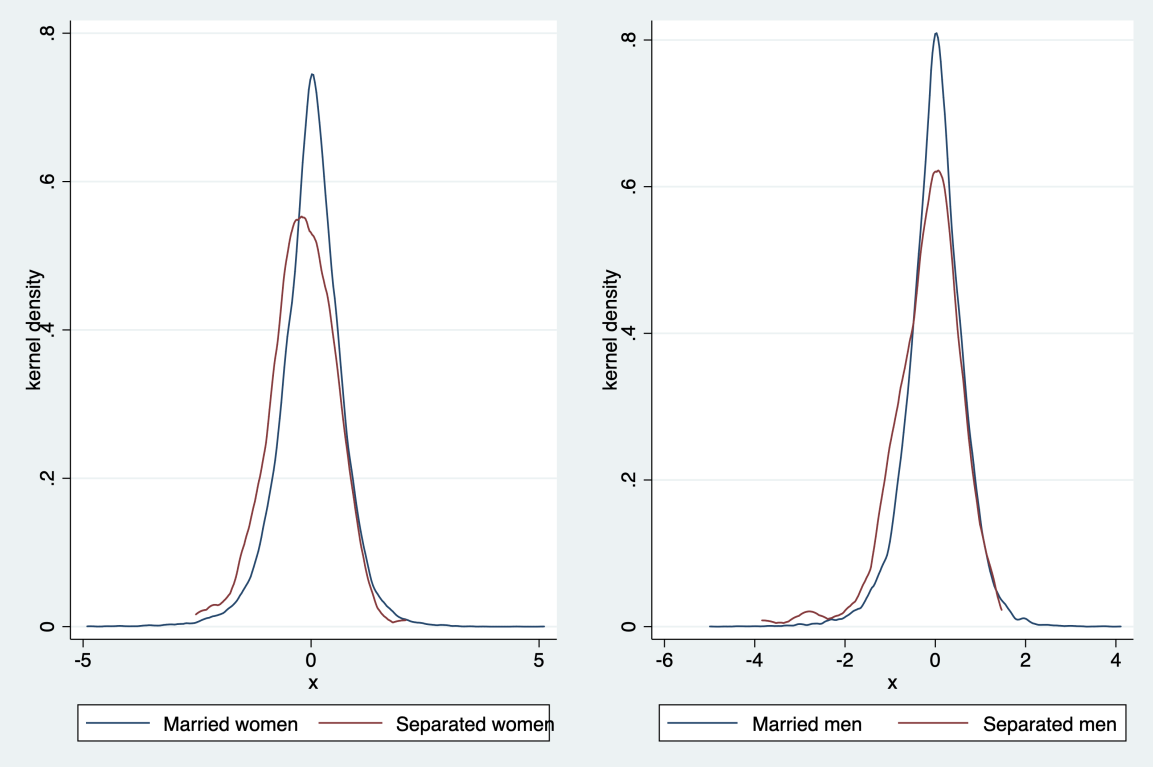

Figure 3: Distribution of residuals for satisfaction regressions