# Twice Chosen: Spouse Matching and Earnings Among Women in First and Second Marriages

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**Abstract**

This study examines spousal matching for females in second-order marriages. It is based on detailed data from longitudinal Swedish population data registers. We aim to follow women who marry, divorce, and subsequently remarry compared with females who marry and stay married over the course of the study interval. The earnings of both groups are modeled through regression analysis in the year prior to their marriages along with the earnings of each husband. The residuals from the regressions represent unobservables in the process of earnings generation. From the regressions we obtain spouse-to-be pairs of earnings residuals and we measure the correlation of residuals for each marital regime. Overall, we find significant positive correlations for all three of the marital partitions. The correlation tends to be smaller for the first of a sequence of marriages for women who divorce than for women who marry and stay so. For the second of the successive marriages, however, the correlation of the residuals is larger than that for women who marry but once. We also find evidence of "matching" between successive husbands. Women who marry men with unmeasured positive earnings capacities, in the event of divorce, tend to select and match in a similar fashion the second time around.

**Keywords**:.Marital matching, Remarriage, Assortative mating, Earnings.

**JEL Classification**: J12.

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# I Introduction

In the final decades of the twentieth century, many Western countries witnessed marked changes in the timing of marriage and the frequency of marital dissolution. These phenomena occurred at the same time social scientists developed interest in the determinants and consequences of marital formation and divorce. Economists and sociologists in particular have devoted attention to the effects on marriage of labor force outcomes such as employment and earnings. Viewing marriage as an institution in the context of markets, Becker (1974; 1981) and subsequent researchers focused on factors that tend to match individuals as spouses. A natural outgrowth of that endeavor was research concerning determinants of separation and divorce, as exemplified by Becker, Landes and Michael (1977). These early studies were followed by a substantial volume of research on marital matching and determinants and consequences of divorce.

Accompanying the trend in marital disruption has been pervasive incidence of remarriage; a substantial proportion of individuals who end their first marriages tend to enter subsequent unions. The remarriage phenomenon has engendered efforts to delineate socioeconomic factors and individual characteristics that explain formation of second marriages. Early examples in this literature include Thornton (1978), Hutchens (1979), and Wolf and MacDonald (1979). What has been largely unexplored in the remarriage literature is the phenomenon of second-spouse matching and how it compares to first-marriage matching. An exception is Mueller and Pope (1980), who compare occupational status among successive husbands of twice-married women.

This study attempts to extend the literature by examining spouse matching in second order marriages of females. It exploits detailed data registers from the Swedish population, which are compiled by Statistics Sweden and the Labor Market Board of Sweden. The registers are longitudinal in nature, which allows us to follow a sample of females through time. For the subset of women who first marry, then dissolve their marriages and subsequently enter into second marriages, we can examine the statistical anatomy of the successive matches; our particular interest, as we explain in Section III below, is matching on the basis of unmeasured determinants of earnings, which manifest themselves in residuals from estimated earnings equations. The estimates are based on regression based pairings of females with their respective first husbands and, later in the longitudinal file, with their second husbands. Because the data allow us to track both spouses back to years preceding the marriages, we are able to examine matching in its true sense, i.e., prior to the formation of each marriage. This "back to the future" feature of the data has previously been exploited by Nakosteen, Westerlund and Zimmer (2004), who restrict their attention to first marriages. Accordingly, for purposes of comparison, in our empirical analysis we likewise present estimates for a separate sample of once-married women.

Although the principle contribution of this research is to provide insight into the *a priori* matching process of a given female with two successive husbands, it also creates an opportunity to examine the "matching" process that unites the husbands. Although the husbands clearly do not choose one another in the marriage market, the phenomenon that potentially links them is their common selection by the same female at two different points in time. The sample design of this study is unique in facilitating analysis of the extent, if any, to which this indirect matching of successive husbands manifests itself in the process of remarriage.

The remainder of this paper is organized as follows. Section II provides an overview of previous research. Since we focus on the phenomenon of spouse selection in the context of remarriage, our review of the traditional literature concerning determinants of marriage and divorce is somewhat perfunctory, as we refer the reader to references contained in selected papers from that body of research. Section III establishes the statistical framework for the empirical analysis, while Section IV presents estimates of the critical parameters. Section V summarizes and concludes the study.

## II Background

This section presents an overview of selected previous research that motivates the present study. For our purposes, the most succinct classification of the literature is with respect to (1) marital matching; (2) determinants of divorce; and (3) studies of remarriage.

*Marital Matching and Sorting of Spouses*

In a paper that launched a substantial amount of modern research on marriage, Becker (1974) argued that spouses tend to match on the basis of market and home specialization. His hypothesis is that optimal marital sorting is based on comparative advantage within the spouse pair; husbands, typically possessing greater earning potential, engage in market work to exploit the advantage, while wives specialize in home production and family rearing. Empirical testing of Becker's hypothesis has relied in part on earnings regressions for married couples, using the models to obtain earnings residuals. The negative correlation implied by Becker's specialization hypothesis has not been a

common finding. Smith (1979) obtained residual correlations of 0.098 for white couples and 0.035 for blacks. Becker (1981) estimated partial correlations for spouses' wages, controlling for age and schooling, obtained 0.32 for white couples and 0.24 for blacks. These results are suggestive of positive spouse sorting, a result that is further supported by Lam (1988).

One shortcoming of residual correlations for existing marriages is that they are likely reflective of factors that manifest themselves after marriage, and thus might not be informative about the sorting process that paired the spouses to begin with. This challenge is addressed by Nakosteen, Westerlund and Zimmer (2004), who use the Swedish register data to estimate residual correlations for spouses based on the period immediately prior to marriage. Using two distinct marriage cohorts, their estimates range from 0.203 for the full sample to 0.08 for a sample restricted on the basis of data imputations. These estimates, which differ significantly from zero, are further evidence of positive marital sorting, again contrary to Becker's (1974) original hypothesis. Readers may refer to the above cited paper for further references in the marital sorting literature.

*Divorce and Remarriage*

In early work on marital dissolution, Becker, Landes and Michael (1977) view married persons as if they assess the expected gains from remaining married relative to the costs associated with divorce. Dissolution results when expected utility from remaining married is less than expected utility after divorce. Marriages that are formed at young ages, reflecting a period of abbreviated search for a suitable spouse, are relatively prone to divorce. Traits that tend to raise the utility from remaining married, thereby sustaining the union, include marriage-specific capital in the form of children or household wealth. Becker, Landes and Michael (1977) also postulate that marriages tend to fail in the face of unexpected changes in spouses' earnings, a hypothesis that is corroborated

by Starkey (1991). Following the theme of earnings stability, Weiss and Willis (1997) find that unexpectedly high earnings of husbands tend to reduce the likelihood of divorce, whereas in the case of wives, earnings "surprises" have the opposite effect. Readers may refer to the latter paper for additional references in the literature on marriage dissolution.

Previous research on remarriage has attempted to identify factors that match individuals with new partners after the end of their first marriages. In view of the often adverse economic effects of divorce on women, much attention has focused on female transitions back to marriage. Smock (1990), using data from the 1988 National Survey of Families and Households, compares the remarriage experiences of blacks and whites. Her evidence indicates that less educated blacks experience a diminished rate of return to marriage, while no significant education effect is apparent for whites. On the other hand, remarriage prospects of whites tend to diminish with age, while there is no significant age effect among blacks. For both race groups, those with three or more children and those who separate at relatively older ages are less likely to remarry.

Chiswick and Lehrer (1990) analyze a sample of women from the 1982 National Survey of Family Growth. Among whites, transitions to marriage are more likely among those with no children and whose first marriages were of relatively short duration, and less likely for those older than 28 years of age. A similar age pattern holds for blacks, but blacks appear not to have an adverse effect of longer durations in their first marriages, and unlike whites there is no apparent effect associated with absence of children. Chiswick and Lehrer's model implies two hypotheses concerning husbands in second marriages. First, the economic status of the second husband should be positively associated with the duration of the wife's first marriage. As far as we can determine, this has not been subjected to empirical scrutiny. Second, the second husband's

economic status should be negatively associated with the number of children from the wife's first marriage. Modest support for that proposition has been reported by Duncan and Hoffman (1985: Table 14.1), using data from the Michigan Panel Study of Income Dynamics (PSID). In a finding that bears directly on this study, Duncan and Hoffman also report a strongly significant positive relation between earnings of the second husband and earnings of the first husband.

Hutchens (1979) analyzes the effect of welfare receipt (in the form of Aid to Families with Dependent Children) on remarriage prospects of female household heads. Using data from the PSID, his principal findings indicate that welfare receipt is associated with diminished remarriage prospects. In addition, marriage transitions decline with age and are lower among nonwhites. Wolf and MacDonald (1979), in a departure from other studies, examine the relation between earnings and remarriage for men. Using a sample from the state of Wisconsin, their findings indicate that males' remarriage prospects are not related to the level of or variation in their earnings, and similarly not by their earnings relative to appropriate peer groups. However, measures of permanent income show a positive impact on remarriage prospects.

Mueller and Pope (1980) analyze differences in occupational status between successive husbands of twice married women; as such, their paper appears to be the most closely related to the present study, insofar as it reveals something indirectly about the matching process characterizing the behavior of twice-married women. Based on the 1970 National Fertility Survey, Mueller and Pope cross classify the occupations of women's first and second husbands. Their results indicate that approximately 50 percent of remarrying women "marry up" in the sense of matching with second husbands in higher occupational categories; approximately 20 percent were downwardly mobile;

and the remaining 30 percent experience no change in husbands' occupational status.

These studies provide insight concerning the process of remarriage. This is potentially important for purposes of public policy, given the substantially lower incomes of households headed by single mothers who are divorced or never married, and since marriage represents a potential escape from poverty for single mothers and their children. What the remarriage literature has not yet addressed is the issue of marital matching in second marriages. Knowledge of the matching process can contribute to better understanding of the extent, if any, to which matching in second marriages differs from first marriages. In particular, given the pervasiveness of higher-order marriages in many countries, improved understanding of the sorting process that brings second spouses together can be informative about the long term stability of second versus first marriages. The following section describes a statistical framework in which that question can be addressed for the Swedish data.

## III Statistical Framework

The unit of observation in this study is an initially married female, and the data record includes information on as many as two husbands. As we noted in Section I, we partition the sample into those whose marriages remain intact for the duration of the sample period (hereafter referred to as "once-married"), and those who experience dissolution and subsequently remarry (hereafter "twice-married"). We observe the twice-married females at two points in time, immediately prior to the first and second marriages. We also observe a complete record of data for the men each woman marries in succession.

Denote the earnings equations for these "spouse" pairs by

$$Y_{fi}^{(1D)} = \beta_f^{(1D)} x_{fi} + \varepsilon_{fi}^{1D} \quad (1)$$

$$Y_{mi}^{(1D)} = \beta_m^{(1D)} x_{mi} + \varepsilon_{mi}^{1D} \quad (2)$$

where $Y_{fi}$ refers to the logarithm of annual earnings for female *i.* The superscript refers to the period preceding the first marriage which in this case ultimately culminates in divorce. On the right hand side, $x_{fi}$ denotes a vector of explanatory variables and $\beta_f$ is a conformable vector of unknown coefficient parameters. The random error term $\varepsilon_{fi}$ is normally distributed with zero mean and unknown variance $\sigma^2_{\varepsilon f|1D}$. Equation (2) represents the analogous equation for the first husband, with variables and parameters subscripted accordingly and with the normally distributed error term possessing zero mean along with variance $\sigma^2_{\varepsilon m|1D}$ .

For the second marriage of the same woman, the pair of earnings equations is represented as:

$$Y_{fi}^{(2D)} = \beta_f^{(2D)} x_{fi} + \varepsilon_{fi}^{(2D)} \quad (3)$$

$$Y_{mi}^{(2D)} = \beta_m^{(2D)} x_{mi} + \varepsilon_{mi}^{(2D)} \ , \quad (4)$$

with analogous subscripting and superscripting. Here, the error terms possess respective variances $\sigma^2_{\varepsilon f|2D}$ and $\sigma^2_{\varepsilon m|2D}$. It is worth repeating that, inherent in the sample design, the data that generate equations (3) and (4) are recorded after the dissolution of the first marriage but before the inception of the second. In that sense, in both cases the model knows the marriage will dissolve before the spouses themselves do.

For stable marriages, the pair of earnings equations is specified as:

$$Y_{fi}^{(S)} = \beta_f^{(S)} x_{fi} + \varepsilon_{fi}^{(S)} \quad (5)$$

$$Y_{mi}^{(S)} = \beta_m^{(S)} x_{mi} + \varepsilon_{mi}^{(S)} , \quad (6)$$

with the S superscript signifying a stable marriage for the duration of the sample period. The other symbols are defined in a manner analogous to (1) – (4), and the error terms possess respective variances denoted by $\sigma_{\varepsilon f|S}^2$ and $\sigma_{\varepsilon m|S}^2$.

The data set permits estimation of equations (1) – (4) for the sample partition of twice-married women and equations (5) – (6) for the partition of once-married women. From these regressions we obtain spouse-to-be pairs of earnings residuals, which represent estimates of unmeasured disturbances to earnings for each individual. The emphasis on unmeasured attributes is due to the nature of the marriage experience as it relates to earnings. In one respect it is a matter of course that *measured* earnings of spouses tend to be correlated. For example, it is well known that individuals tend to marry partners with similar levels of formal schooling, and of similar ethnicity, which are in turn correlated with earnings. They tend to marry persons similar in age, and earnings progress with age as they gain work experience. Moreover, spouses reside in the same region and therefore share the economic fortunes of the regional economy. Consequently, our preferred measure of marital matching, following Becker (1981), Smith (1979), and others, is the estimated correlation between residuals. The residuals capture latent characteristics of individuals that affect earnings but are not accounted for by explanatory variables such as schooling, age, or region of residence. Although not observed by the researcher, these characteristics are likely visible to potential spouses, and they include traits such as confidence, ambition, possible family connections that

impact earnings, and mental or emotional health. Our essential premise is that, in addition to exerting an unmeasured positive impact on earnings, such traits increase the attractiveness of individuals as potential marriage partners.

The three sets of regressions described above produce three estimated correlations between spouses, and they permit a fourth one of interest, namely the correlation between first and second husbands for twice-married women. These are summarized below.

| Twice married: Wife and first husband | Twice married: First Wife and second husband | Twice married: First husband and second husband | Once married: Wife and husband |
|---|---|---|---|
| $\rho[\varepsilon_f^{1D}, \varepsilon_m^{1D}]$ | $\rho[\varepsilon_f^{2D}, \varepsilon_m^{2D}]$ | $\rho[\varepsilon_m^{1D}, \varepsilon_m^{2D}]$ | $\rho[\varepsilon_f^{S}, \varepsilon_m^{S}]$ |
| $= \frac{\sigma_{\varepsilon f \mid 1D, \varepsilon m \mid 1D}}{\sigma_{\varepsilon f \mid 1D} \cdot \sigma_{\varepsilon m \mid_1 1D}}$ | $= \frac{\sigma_{\varepsilon f \mid 2D, \varepsilon m \mid 2D}}{\sigma_{\varepsilon f \mid 2D} \cdot \sigma_{\varepsilon m \mid 2D}}$ | $= \frac{\sigma_{\varepsilon m \mid 1D, \varepsilon m \mid 2D}}{\sigma_{\varepsilon m \mid 1D} \cdot \sigma_{\varepsilon m \mid 2D}}$ | $= \frac{\sigma_{\varepsilon f \mid S, \varepsilon m \mid S}}{\sigma_{\varepsilon f \mid S} \cdot \sigma_{\varepsilon m \mid S}}$ |

The numerators in each expression represent covariances between the respective error terms identified in the subscripts. In the first, second, and fourth cases, positive estimates indicate presence of spouse selection on the basis of similar earnings traits: individuals who for unmeasured reasons tend to earn above the regression corrected mean tend to select as spouses those with similar earnings tendencies. Negative estimates, on the other hand, are indicative of specialization by spouses in the spirit of Becker's (1974) hypothesis. We have an interest in the comparative magnitudes of the first two cases, as they provide evidence of the extent to which the matching process evolves, if at all, between first and second marriages. The third parameter conveys a different dimension of matching. What the two husbands have in common is that each was paired with the same wife. A positive estimated

correlation would indicate that, if the first husband exhibits substantial unmeasured strength in earnings, there is a tendency for the second one to be similarly above the mean.

## IV Data and Sample

We estimate income equations and analyze the pre-marital residual correlations using longitudinal data with yearly observations 1990-2003 on a larger sample of married or cohabitating couples. From the total Swedish population in the year 2001 we sampled all females aged 20-65 who were married or cohabitating in that year, and who were living as single at least once during 1990-2000. Using family identification codes we merged all males married or cohabitating at least once with at least one individual in the sample of females. This means that we confine the analysis to female-male couples and exclude the relatively few observations of same sex registered partnerships from our sample.

Cohabitation is common in Sweden, it is generally accepted, and having children without being married is not controversial. The variable indicating family status is subject to measurement error in that cohabitation is only registered if the couple has at least one common child living in the household. This is most likely of minor importance here, since most cases of childless cohabitation represent short lived relationships between relatively young individuals. For the sake of simplicity, from this point we use the terms married and marriage synonymous with cohabitating and cohabitation.

In the sampling process we encountered a small sample of females being married with the same person in sequences, with one year registered as single in between. These observations are presumably the result of coding errors or

cases were children in cohabitating couples moves in and out from the household. Therefore, we classified these observations as stable couples as long as the female repeatedly became "remarried" with the same male. Our final sample consists of 367,834 females who married only once, and 71,297 who married at least twice 1990-2000.

Of the latter sample, we have pre-marriage observations for both first and second marriage for 24 089 females.[1] For the females married only once we identified 361 272 husbands and for the females married twice we identified 68 272 husbands. We are not able to observe pre-marriage attributes of the first husband for marriages taking place before 1991. This limitation leaves us with 23 450 observations that include husband's attributes before the first as well as before the second marriage. The samples are reduced somewhat in the statistical analysis because of missing values and the requirement of positive pre-marriage earnings to be included in the estimation of income equations. The exact numbers of remaining observations are given in each step of the analysis.

Table 1 contains variable definitions and descriptive statistics for variables included in the earnings regressions. The explanatory variables include age and its square, indicators for the presence of dependent children, region of residence, and nativity of birth. The table presents sample means and standard deviations for the sample of once-married spouses, limited to those with pre-marital earnings of more than 50,000 SEK. Descriptive statistics for wives and husbands in first and second marriages are given in table A1 in the appendix. This partition of the data contains individuals whose average age is in their early 30's, the average slightly larger for men than for women.

[1] The difference is due to the fact that the first marriage took place before 1991 and therefore not observed in our data.

**Table 1.** Variable Definitions and Descriptive Statistics. Once Married Couples.

| Variable | Description | Males | Females |
|---|---|---|---|
| Y | Annual earnings, year 2000 SEK. | 120,397<br>(0.42) | 118,014<br>(0.374) |
| Age | Years. | 32.91<br>(7.56) | 30.97<br>(6.98) |
| Education | Reference category = maximum 9 years primary school. | | |
| High school education | Dummy variable = 1 if maximum education is high school. | 0.170<br>(0.38) | 0.200<br>(0.40) |
| University education | Dummy variable = 1 if maximum education is university degree. | 0.330<br>(0.47) | 0.390<br>(0.49) |
| Dependent children | Reference category = no dependent children in the household. | | |
| Children | Dummy variable = 1 if there are children aged < 18 years living in the household. | 0.032<br>(0.17) | 0.102<br>(0.30) |
| Small children | Dummy variable = 1 if there are children aged < 7 years living in the household. | 0.007<br>(0.08) | 0.050<br>(0.22) |
| Region of residence | Reference category = Stockholm region | | |
| East Mid Sweden | Dummy variable if residence is in Uppsala, Södermanland, Östergötland or Västmanlandcounties. | 0.160<br>(0.37) | 0.160<br>(0.36) |
| Småland | Dummy variable if residence is in Jönköping, Kronoberg, Kalmar or Gotland counties. | 0.080<br>(0.27) | 0.080<br>(0.27) |
| South Sweden | Dummy variable if residence is in Blekinge or Skåne counties. | 0.130<br>(0.34) | 0.130<br>(0.34) |
| West Sweden | Dummy variable if residence is in Halland or Västra Götaland counties. | 0.200<br>(0.40) | 0.20<br>(0.40) |
| North Mid Sweden | Dummy variable if residence is in Värmland, Dalarna or Gävleborg counties. | 0.080<br>(0.27) | 0.08<br>(0.27) |
| Mid Norrland | Dummy variable if residence is in Västernorrland or Jämtland counties. | 0.040<br>(0.19) | 0.040<br>(0.19) |
| Upper Norrland | Dummy variable if residence is Västerbotten or Norrbotten counties. | 0.050<br>(0.22) | 0.05<br>(0.22) |
| Swedish native | Dummy variable if individual was born in Sweden. | 0.95<br>(0.21) | 0.95<br>(0.21) |
| Number of obs. | | 300,054 | 294,896 |

Note: Income > 50,000 SEK .The first entry in each cell is the sample mean. Figures in parentheses are standard deviations. Sample sizes differ due to earnings restrictions (see Section IV)

Approximately half of the sample has an high school education or a university degree, and most of the population lives in the three highly urbanized areas of Stockholm, Malmö, Gothenburg. We restrict the samples to spouses with positive earnings. The problem of sample selection bias induced by excluding nonworking women does not seem to be problematic in the case of Sweden, since its labor force participation rate for females is one of the highest in the world. There is, however, some concern with including all earners, since many individuals with near-zero earnings might be part time workers or sporadic in their labor force participation. In order to examine our results by income level, we present estimates for a sequence of subsets of the sample based on income restrictions. In addition to the complete sample, we progressively exclude individuals with earnings less that 10,000 SEK; 25,000 SEK; 50,000 SEK; 75,000 SEK; and finally 100,000 SEK. The sample reductions are based on individuals. In particular, we do not use what would have been the more restrictive criterion of both spouses satisfying the respective minimum thresholds as joint requirements for inclusion in the sample. For that reason, the samples that produce the regression equations differ in size between husbands and wives. To produce the residual correlations within each restricted sample, however, we use only the residual pairs for which both spouses satisfy the respective earnings restrictions.

We estimate the earnings equations separately for the subsamples of once married and, and for those who re-marry, thus allowing for different parameters for the two subsamples. [2]

[2] *F*-tests indicate that the hypothesis of equality of parameters is rejected.

## V Results of Estimation

Estimates of the regression model for the sample of once-married spouses are presented in Table 2. The estimates correspond to the minimum earnings threshold of 50,000 SEK per year. The dependent variable is the natural logarithm of annual earnings. Entries in parentheses are standard errors, which confirm the strong significance of all explanatory variables. The estimates for both genders reveal patterns that are commonly found in cross section estimates of earnings. Earnings increase with age, a proxy for work experience, and they do so with the familiar concave trajectory. As expected, the education coefficients reflect positive returns to schooling relative to the category of the minimum compulsory nine years. The region coefficients show consistent earnings deficiencies relative to Stockholm, the largest being associated with North Mid Sweden and the Norrland regions. The coefficient associated with origin status indicates a substantial advantage for native Swedes, particularly among men. The *R* square statistics are consistent with most cross section earnings studies, revealing that more than 24 percent of sample variation in log earnings is explained by the variables in the model. The unexplained portion, subsumed in the residual, forms the unmeasured basis on which we calibrate spouse matching in the form of residual correlations, as described in Section III.

Proceeding in this fashion, we obtained analogous regression estimates for the sample partition of twice-married women, paired in succession with their respective husbands. In each case we performed the estimations for the sample subsets defined by the progressive earnings exclusions, as described in Section III. For the sake of brevity, we do not present the results of those 23 pairs of regressions here. After obtaining the residuals, we estimate the residual correlations, which are presented in Table 3.

**Table 2.** Estimates of the Earnings Model: Once Married Couples.

| Variable | Males | Females |
|---|---|---|
| Constant | 10.605 *** | 10.448 *** |
| | (0.012) | (0.0114) |
| Age | 0.060 *** | 0.065 *** |
| | (0.001) | (0.001) |
| Age squared | -0.001 *** | -0.001 *** |
| | (<0.001) | (<0.001) |
| High school education | 0.091 *** | 0.082 *** |
| | (0.002) | (0.002) |
| University education | 0.199 *** | 0.171 *** |
| | (0.002) | (0.001) |
| Children | -0.057 *** | -0.137 *** |
| | (0.004) | (0.003) |
| Small children | -0.003 | -0.149 *** |
| | (0.009) | (0.004) |
| East Mid Sweden | -0.115 *** | -0.124 *** |
| | (0.002) | (0.002) |
| Småland | -0.131 *** | -0.144 *** |
| | (0.003) | (0.002) |
| South Sweden | -0.113 *** | -0.118 *** |
| | (0.002) | (0.002) |
| West Sweden | -0.100 *** | -0.105 *** |
| | (0.002) | (0.002) |
| North Mid Sweden | -0.151 *** | -0.161 *** |
| | (0.003) | (0.002) |
| Mid Norrland | -0.158 *** | -0.149 *** |
| | (0.004) | (0.003) |
| Upper Norrland | -0.155 *** | -0.166 *** |
| | (0.003) | (0.003) |
| Swedish native | 0.141 *** | 0.075 *** |
| | (0.003) | (0.003) |
| R-Square | 0.235 | 0.288 |
| s.e. | 0.366 | 0.315 |
| N | 300,054 | 294,896 |

Note: Earnings > 50,000 SEK. Figures in parentheses are absolute standard errors. Marital year dummies omitted from listing. Sample sizes differ due to earnings restrictions.

Several noteworthy patterns emerge in the table. Most noticeable is the persistence of positive signs, indicating a tendency for matching by spouses on the basis of similar rather than contrasting unmeasured earnings capacity. The estimates, all of which differ significantly from zero, range from $\hat{\rho} = 0.114$ (first marriages of twice-married women, incomes restricted above 50,000 SEK) to $\hat{\rho} = 0.228$ (second marriages of twice marrieds, incomes above 100,000 SEK). Positive matching occurs across both marriage regimes and for all income categories. Looking first at the once-married sample, the correlations generally increase in size as the sample is restricted to higher income thresholds. The correlation for the subgroup of highest earners, $\hat{\rho} = 0.203$, is more than 50 percent larger than that of the population as a whole; in this select group, positive matching is particularly strong. These estimates contrast with the first marriages in the twice-married sample in two respects. First, they are larger in every earnings-excluded sample than their counterparts in the population of unstable marriages. Second, the gap between the estimates increases, albeit somewhat unevenly, as the exclusion threshold increases.

For the twice married sample, the correlations reveal an added dimension. For all the income-excluded samples, the correlation for second marriages exceeds that for first marriages,[3] and the discrepancy tends to grow with income. For the lowest threshold (Y > 10,000 SEK), the second correlation exceeds the first by 9 percent; for the most select income group, the gap increases to 42 percent. Marital matching is persistently positive, even in unstable marriages, and it tends to strengthen both with income and in the context of second marriages.

[3] *F*-tests indicate that the hypothesis of equality of parameters is rejected.

**Table 3.** Estimated Residual Correlations

| Income Restriction | Marriage Order | Twice Married: Husband and Wife $\hat{\rho}[\varepsilon_f^{1D}, \varepsilon_m^{1D}]$ $\hat{\rho}[\varepsilon_f^{2D}, \varepsilon_m^{2D}]$ | Twice Married: First Husband and Second Husband $\hat{\rho}[\varepsilon_m^{1D}, \varepsilon_m^{2D}]$ | Once Married: Husband and Wife $\hat{\rho}[\varepsilon_f^{S}, \varepsilon_m^{S}]$ |
|---|---|---|---|---|
| Y>0 SEK | 1 | .147<br>N= 18,244 | | |
| | 2 | .123<br>N= 51,958<br>(.005) | .107<br>N=17,546<br>(.000) | .133<br>N= 316,762<br>(.006) |
| Y>10 000 SEK | 1 | .135<br>N= 16,280 | | |
| | 2 | .147<br>N= 47 705<br>(.177) | .120<br>N=16,263<br>(.168) | .158<br>N= 300,034<br>(.003) |
| Y>25 000 SEK | 1 | .137<br>N= 14,119 | | |
| | 2 | .163<br>N= 44,108<br>(.006) | .129<br>N=14,930<br>(.490) | .154<br>N= 279,875<br>(.044) |
| Y>50 000 SEK | 1 | .114<br>N= 11,415 | | |
| | 2 | .180<br>N= 39 303<br>(.000) | .146<br>N= 13,123<br>(.011) | .164<br>N= 252,154<br>(.000) |
| Y>75 000 SEK | 1 | .137<br>N= 9,059 | | |
| | 2 | .206<br>N= 34,587<br>(.000) | .156<br>N=11,561<br>(.168) | .179<br>N= 225,508<br>(.000) |
| Y>100 000 SEK | 1 | .161<br>N= 6,377 | | |
| | 2 | .228<br>N= 28,879<br>(.000) | .182<br>N= 9,100<br>(.187) | .203<br>N= 192,925<br>(.001) |

Note: All correlations are significant at the one-percent level or lower. P-values within parenthesis are for the test of difference relatively to the correlation pertaining to the first marriage among those who marry twice. Calculations based on Fishers' r to z transformation. The number of observations for the first marriage among females with at least two marriages is lower than the number of observations for the second marriage. The reason for this is that some first marriages took place before 1990. Family codes are only available from 1990 and the husbands can not be traced with accuracy in the population registers. Throughout, if nothing else is stated, our estimations are based on couples marrying between 1991 and 2003, and the pre-marriage earnings as single is estimated on observations the year before marriage 1990-2002.

The estimates are also revealing about the quasi matching of successive husbands. As we noted in Section II, this represents association between unmeasured earnings capacity between two successive husbands. The correlations display a pronounced upward trend as the sample is increasingly restricted on the basis of income, indicating that the quasi matching is stronger among men with higher earnings. Looking for example at the third earnings exclusion sample (Y > 50,000 SEK), the estimated correlation is 0.146. What is particularly striking is that the estimate exceeds the correlation between the wife, who is common to both marriages, and her first husband. Thus the matching of *husbands* is at least as strong as was the husband-wife matching in the first marriage. This estimate is also similar in magnitude to the spouse matching for stable marriages in the same earnings exclusion category; the latter estimate, 0.164, exceeds the husband matching estimate by only 12 percent. This contrast remains intact for the two highest income exclusions as well. Stated differently, when the sample excludes the lowest earners, first and second husbands display an extent of matching that is closer to that of stable couples than is the matching in the first husband's marriage.

Finally, it is worth noting that the matching estimates for second marriages exceed their counterparts among once married for earnings exclusions above 25,000 SEK. It is tempting to take this as further evidence of stronger matching in second marriages. However, the comparison holds only above the 25,000 SEK threshold, which begs explanation; more important is the lack of control, as this comparison does not have the advantage of a common wife as a frame of statistical reference.

## VI Assessment and Summary

In this study, we follow women who marry, divorce, and subsequently remarry. We also study their counterparts who marry and stay married over the course of the study interval. The earnings of both groups are modeled with regression analysis in the year prior to their marriages, as are the earnings of each husband. Our focus is on the correlation of the residuals from the earnings regression of each marital pair. The residuals represent unobservables in the process of earnings generation, and we measure this correlation for each marital regime. We find significant, positive correlations for all three of the marital partitions, in orders of magnitude that are consistent with previous studies. Further, the correlation tends to be smaller for the first of a sequence of marriages for women who divorce than for women who marry and stay so. For the second of the successive marriages, however, the correlation of the residuals is larger than that for women who marry but once. We also find evidence of "matching" between successive husbands, which leads to a useful inference. Women who marry men with unmeasured positive earnings capacities, in the event of divorce, tend to select and match in a similar fashion the second time around; if anything, that tendency is stronger in the second marriage, and it becomes more pronounced in samples that progressively exclude low earners. Another intriguing result is that, for samples exclusive of low earners, the strength of quasi matching between successive husbands is at least as large and indeed might exceed matching between first husbands and first wives.

In view of the substantial incidence of marriage dissolution and remarriage in most Western countries, these issues are of substantial importance for policy. First is the issue of child and family poverty. Since dissolution tends to exert particular economic hardship on females and the children in their custody, a matching process that pairs high earning women with similarly endowed men

tends to mitigate the divorce consequences most effectively for those women who are relatively strong earners to begin with. Second, as strong earners tend to match over time, whether in first or second marriages, there can arise subtle shifts in the distribution of income occasioned by the continuous sorting of strong earners.

There is potential for additional research in this area. One question concerns the apparent strengthening of matching between first and second marriages for those who dissolve their first marriages. It would be useful to corroborate this phenomenon from other data sources, in particular for several countries. More important, assuming some independent corroboration, is the question of why this occurs. Whether it arises from learning that takes place in the first marriage, producing a type of economic discernment in the search for a second spouse, or more simply that spouses view second marriages in a fundamentally different way than first marriages, or perhaps for other reasons, remains an interesting question for research.

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# Appendix

**Table A1**. Variable means, standard deviations within parenthesis

| | Married once | | Married at least twice | | | |
|---|---|---|---|---|---|---|
| | Wife | Husband | Wife Marriage 1 | Husband Marriage 1 | Wife Marriage 2 | Husband Marriage 2 |
| Variable | | | | | | |
| Earnings it | 11.8014 (.3736) | 12.0397 (.4187) | 11.5771 (.3407) | 11.8110 (.3882) | 11.8014 (.4179) | 12.1128 (.4598) |
| Age | 30.97 (6.976) | 32.91 (7.555) | 26.76 (5.882) | 29.30 (6.600) | 38.65 (8.244) | 39.39 (.9327) |
| Agesq | 1007.65 (513.712 | 1139.98 (585.161) | 750.55 (380.516) | 901.87 (459.641) | 1561.75 (683.135) | 1638.33 (784.409) |
| Educ 2 | .20 (.403) | .17 (.378) | .17 (.377) | .12 (.327) | .16 (.363) | .18 (.386) |
| Educ 3 | .39 (.489) | .33 (.471) | .19 (.391) | .18 (.382) | .27 (.444) | .23 (.422) |
| Children | .1024 (.303) | .0315 (.175) | .1817 (.386) | .0551 (.228) | .6519 .(4764) | .0991 .(2988) |
| Smallchild | .0504 (.219) | .0065 (.080) | .0979 (.297) | .0140 (.117) | .2792 (.4486) | .0207 .(1425) |
| East Mid | .16 (.363) | .16 (.366) | .16 (.371) | .17 (.379) | .17 (.379) | .18 (.384) |
| Småland | .08 (.271) | .08 (.274) | .07 (.248) | .07 (.259) | .07 (.259) | .08 (.266) |
| South | .13 (.340) | .13 (.340) | .13 (.339) | .13 (.335) | .14 (.343) | .14 (.343) |
| West | .20 (.403) | .20 (.403) | .18 (.387) | .19 (.390) | .19 (.391) | .19 (.390) |
| North Mid | .08 (.270) | .08 (.274) | .10 (.297) | .10 (.302) | .10 (.300) | .10 (.306) |
| Mid Norr | .04 (.193) | .04 (.193) | .05 (.208) | .05 (.208) | .04 (.204) | .04 (.205) |
| Upper Norr | .05 (.221) | .05 (.223) | .05 (.227) | .06 (.231) | .05 (.223) | .06 (.231) |
| Swedish | .95 (.214) | .95 (.212) | .93 (.260) | .93 (.261) | .90 (.303) | .9201 .(2711) |
| Mi92 | .10 (.294) | .10 (.295) | .22 (.414) | .22 (.416) | (.0113 (.1058) | .0109 (.1039) |

To be continued

Table A1 continued

| | | | | | | |
|---|---|---|---|---|---|---|
| Mi93 | .09 | .09 | .16 | .16 | .0266 | .0255 |
| | (.282) | (.281) | (.368) | (.363) | (.1608) | (.1577) |
| Mi94 | .08 | .08 | .11 | .10 | .0399) | .0388 |
| | (.272) | (.272) | (.308) | (.305) | (.196 | (.1931) |
| Mi95 | .08 | .08 | .08 | .08 | .0504 | .0509 |
| | (.265) | (.265) | (.274) | (.277) | (.219) | (.2198) |
| Mi96 | .07 | .08 | .06 | .06 | .0591 | .0611 |
| | (.263) | (.264) | (.240) | (.240) | (.236) | (.2395) |
| Mi97 | .07 | .07 | .04 | .04 | .0797 | .0794 |
| | (.257) | (.258) | (.202) | (.204) | (.271) | (.2703) |
| Mi98 | .07 | .07 | .02 | .02 | .0847 | .0858 |
| | (.252) | (.253) | (.147) | (.151) | (.278) | (.2800) |
| Mi99 | .07 | .07 | .01 | .01 | .1050 | .1076 |
| | (.258) | (.258) | (.108) | (.108) | (.307) | (.3099) |
| Mi00 | .07 | .07 | .01 | .00 | .1219 | .1246 |
| | (.262) | (.263) | (.075) | (.068) | (.327) | (.3303) |
| Mi01 | .07 | .07 | .00 | .00 | .1265 | .1259 |
| | (.252) | (.251) | (.034) | (.029) | (.332) | (.3318) |
| Mi02 | .07 | .07 | .00 | .00 | .1439 | .1442 |
| | (.251) | (.248) | (.000) | (.000) | (.351) | (.3513) |
| Mi03 | .06 | .06 | .00 | .00 | .1510 | .1452 |
| | (.241) | (.239) | (.000) | (.000) | (.358) | (.3523) |
| N | 294,896 | 300,054 | 16,122 | 15,062 | 49,232 | 52,349 |

* All variables except Mit measured as single the year before marriage.