Public Transfers and Marital Dissolution[*]

Sigve Tjøtta and Kjell Vaage[**]

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Abstract:

In this paper we analyse determinants of marital dissolution. The focus is on the alleged influence from public transfers, including governmental transfers directed towards divorced families, child allowance, and child support awards. We use a Norwegian panel of 2.800 couples who were married in 1989, together with a broad range of socio-economic variables, including (expected) public and private transfers in case of divorce. The sample is observed over a six-year period, with the purpose of registering marital dissolution.

Our findings are consistent with matching models where divorce is explained according to assortative mating hypothesis. We find that the level of transfers has a significantly positive effect on the divorce probability, and that the distribution of transfers in favour of the wife increases the same probability. The fact that internal re-distribution between spouses affects the divorce propensity is consistent with non-unitary family models, but at odds with the predictions from unitary and/or common wealth models.

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[**] Department of Economics, University of Bergen, Fosswinckels gate 6, N-5007 Bergen, NORWAY.

1. Introduction

The divorce rate in Norway, as in most Western countries, has increased sharply since the sixties, leaving Norway with one of the highest divorce rates in Europe. As a response to these increases, a growing body of research has attempted to identify its determinants. Demographic changes have been suggested, for example increasing rates of female education and labour market participation. If both males and females invest in human capital and work in the labour market,[1] the gains from specialisation inside the marriage decrease and, hence, the value of marriage will decrease. When gains from marriage become smaller, an increase in marital instability is to be expected. Another explanation for the increasing divorce rate is the decreasing marital fertility rates. Children can be seen as specific marital capital within the family, i.e.; its value is higher inside than outside the marriage. When the number of children declines, the value of marriage declines, inducing marital instability.

In this paper we explore whether governmental programs towards divorced families induce marital instability. Of course, this is not necessarily an unintended effect. If the market fails to provide insurance against collapsed marriages, it might be optimal to use public transfers to prevent that the marginal offers of staying married exceed the marginal gains from getting a divorce.

Transfers to divorced families might influence the divorce decision trough the amount of transfers to the divorced family as a whole, and through the distribution between the (ex-)spouses. In Norway, as in many other countries, the public transfer is

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[1] There is a substantial literature on how divorce in turn affects the (female) labour supply (see, e.g., Johnson and Skinner (1986, 1988), Haurin (1989), and Tanda (1994)).

aimed at divorced families with dependent children under the age of 18. Basically, the amount depends on income, the number of children, and the labour market status of the custodial parent. The distribution depends on child support from the non-custodial to the custodial parent, which—contrary to most other countries—is efficiently enforced in Norway. In most divorced families the redistribution goes from the father's to the mother's household.

Standard models predict that an increase in *expected* transfers will increase the probability of divorce, since an increase in such transfers reduces the financial costs of divorce for the divorced family as a whole**.** As for redistribution in expected transfers between spouses, the predicted effect on divorce differs according to theoretical model. According to unitary family models, where family decisions are modelled as though spouses were maximizing a common unique utility, relative endowment between spouses does not matter for the divorce decision.[2] In non-unitary models, on the other hand, a relative endowment may affect the divorce decision, leaving the effect on divorce rate ambiguous.[3] Our ambition is to test these conflicting predictions in our econometric analysis.

In addition to altering the costs of divorce, there might be other, slightly more subtle manners through which the welfare system might influence marital stability. There are multiple economic reasons for marriage; the division of labour and rearing and

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[2] Unitary family decision model also predict pooling of income between spouses. Using a natural experiment in UK (a policy change that transferred child allowance from husband to wife) Lundberg *et* al (1997) reject the pooling hypothesis.
[3] Also the empirical results are ambiguous; Hoffman and Duncan (1995) find that marital instability was positively correlated to the amount of AFDC benefits received. Nixon (1997), on the other hand, reports negative effect of enforced child support.

sharing of children are already mentioned. Weiss (1997) adds, i.e., extended credit and coordination of investment activities (one works while the other one goes to school), and pooling of non-marketable risk (one works while the other one is sick). Even if the institution of marriage historically has fulfilled these functions, they may be substituted by the market and/or by the welfare system. Maternal leave and public child support makes it easier for a woman to bear and rise children, sickness and unemployment insurance reduce the value of risk pooling, etc. In general, therefore, the development of social insurance reduces the needs for insurance through marriage, thereby reducing the gains from marriage and, hence, increases the divorce propensity.[4]

Empirical studies to test whether governmental transfer system towards divorced families affect divorce decisions are relative scarce.[5] Hoffman and Duncan (1995) and Moffitt (1990) find evidence that an increase in public transfer to custodial parent tends to increase the propensity to divorce. Nixon (1997) reports that stronger child support enforcement policy, measured by U.S. cross-state variation in enforcement climate, reduces divorce rates.

Even though the divorce decision involves both spouses, most studies we are aware of model the divorce probability for only one of them (most often the wife), with more or less incomplete information on the partner[6]. Our analysis is based on a random

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[4] There might be a counter-effect, however. If the welfare state reduces the number of marriages, the stability of the couples that still marry, in spite of reduced financial incentives, is probably increased.
[5] These are all based on U.S. data. European contributions are remarkably scarce. There is a related literature on the drop in (female) income *caused by* marital splits (e.g., Jarvis and Jenkins, 1999); but this research tends to treat the divorce as an exogenous event, instead of modelling its determinants.
[6] Knowing which of the partner initiated the divorce would certainly ease the modelling process. Such information is, however, not available in (public) register data. Even in surveys that kind of information will, for obvious reasons, be highly unreliable.

sample of approximately 2 900 *couples* that were married by the 1st of January 1989[7]. These are observed through 1994 with the purpose of registering changes in marital status. The data set includes common background information, like number and age of children, etc., as well as a broad range of individual data, such as income, labour market attachment, education, etc. This allows for a thorough analysis of differences between spouses as causes for marital splits. The custodial rights determine the money transfers to and within divorced families. For divorced couples, we observe whom of the spouses receive custody, and use this information to estimate the custody probability. The values are then imputed for the entire sample. We then calculate expected transfers for couples that remain married, to explore the effects of the level as well as the distribution of transfers on marital instability.

Before moving to the empirical analysis, some inherent causality problems should be mentioned. Couples facing higher probability of divorce will invest less in marriage, for example give birth to fewer children and invest less in specialisation, and hence typically women will participate more and men less in the labour market, in both cases as a self-insurance in case of divorce. Furthermore, increased divorce probabilities will increase the demand for improved social insurance, including insurance for marital dissolution. The potential endogeneity problems in econometric models are obvious. One should also be aware of the possibility of self-reinforcement: Increasing divorce rates expand the remarriage market, which increases the probability of remarriage and thus

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[7] Jensen and Smith (1990), analysing the effects of unemployment on marital dissolution, also use data on married couples.

makes divorce less costly. Ideally, this calls for a *dynamic* econometric framework, but this is prevented by data limitations.

The paper is organised as follows. In the next section we give a brief description of the public and private transfers involved for divorced families. Section 3 reviews some of the previous research on how public transfer to divorced families and child support policies affect the divorce decision. Data and model specification are presented in Section 4, while Section 5 reports the results from the estimations. Finally, Section 6 offers some concluding remarks.

2. Transfers to divorced families in Norway

In Norway, the divorce-related transfers are aimed at families with dependent children (under the age of 18). An important motivation behind the transfer program, dating back to 1946, is to help the spouses achieve economic independence. The transfers were originally intended for mothers, and some parts of it survived until 1983. As of 1983 the program is neutral with respect to gender. However, in practice the majority of the receivers are mothers.

The public transfers set the *level* of the support for divorced families. The level depends on number and age of the children, on the labour market attachment, and on the spouses' income. Important elements in the public transfers are extra public child support, reduced tax rates, and benefits to unemployed or educating lone breadwinners. On average, this part of the transfers is about 10 per cent of the pre-divorce disposable family income. As noted in the introduction, the alleged marital instability stems from

these transfers, since they unambiguously reduce the costs of divorce for all family members.

The *distribution* between the parents depends entirely on the custodial arrangements. The parent with child custody receives all the public transfers. In addition he/she receives the general support to families with dependent children and, finally, child support from the non-custodial parent. In Norway, transfers from the non-custodial to the custodial parent are enforced by law. If the non-custodial fails to pay, the government will transfer the money to the custodial part, and take responsibility for collecting the debt. To our knowledge, this makes the Norwegian child support system quite unique. The amount of child support is in principle subject to negotiations between the divorcees with a standard rate as the default outcome. However, the standard rate is practised in 90 per cent of the cases[8] and is 11 per cent of gross income for one child, 18 per cent for two children, and a further declining rate up to a maximum of 27 per cent of the non-custodian's income.

The custodial arrangements are crucial in our context, since they influence on the spouses' use of own resources to the children, the rights to receive public transfers, enforced child support etc. In addition, children can be considered as "assets" in their own respect. The Norwegian law on child custody settles one of the parents as custodian and the other as non-custodian. Joint custody is ruled out as an outcome from a juridical conflict, and therefore it is only observed if parents agree upon it. The law is neutral towards the custodian's gender. Choice of custodian is guided according to what is in the best interest of the children. Clearly, in most divorces it is hard for a third party to

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[8] Ministry of Child and Family (1996, page 11).

identify and verify whom of the parents will be the better custodian for their children. Hence, the law further takes into account observables such as earnings capacity, and whom of the parents spend more time at home.

The next section reviews previous research on how public transfers to divorced families and child support policies affect the divorce decision.

3. Previous research on marriage, divorce and the welfare policy

Following Chiappori (1992), family decisions models can be divided into two broad categories; (i) unitary models where a *unique* function is maximized under common budget constraints, and (ii) collective models including cooperative as well as non-cooperative models. Among unitary models we find Samuelson's (1956) consensus model, Becker's (1974,1991) altruist model, and Becker *et al* (1977) common wealth model for marriage and divorce. In unitary models the family behaves as if it is maximizing one utility function subject to a joint budget constraint. Clearly, the internal distribution of endowments does not affect family decisions in any meaningful way in such models. Collective models, on the other hand, open for the possibility that the relative distribution between spouses matters for family decisions.[9]

The typical analysis of marriage and divorce is based on the principle of maximisation of expected common wealth. The seminal papers within this framework are

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[9] Collective models for intact families include Nash bargaining models introduced by Manser and Brown (1989) and McElroy and Horney (1981), where the threat point is determined by the utilities in case of divorce. In these models divorce policies may influence the decision inside the families, but as long as the threat point is strictly inside the efficient set, the model will not result in divorce. In Lundberg and Pollak (1993) the threat point is the non-co-operative Nash solution. Another type of collective models for intact families is the Pareto efficient models as developed by Apps and Rees (1988) and Chiappori (1988, 1992).

Becker (1974) and Becker *et al* (1979). Marriage is seen as a partnership of joint production and consumption in the purpose of maximisation financial wealth as well as non-market wealth, such as children and companionship. Individuals search for partners with attributes contributing to the maximisation of their common wealth. The equilibrium sorting will have a tendency towards positive assortative mating with respect to personal characteristics that are complements in production and consumption (such as education, age, property incomes), and negative assortative mating for characteristics that are substitutes (such as wage earning capacities). When a partnership forms, the couple is uncertain both in regards to the quality of the match and the personal characteristics such as future wage capacities. As time passes and uncertainty resolves, the spouses re-evaluate their original decision and decide to continue the marriage if the expected common wealth is maximised by doing so. Personal characteristics and external factors affect the divorce decision in two ways. First, conditional on realisation of the quality of the match, unexpected changes in personal characteristics and/or external factors may influence the gains from remaining married, and hence influence on the divorce decisions. Second, for a particular realisation of the quality of a match, the couples are more likely to divorce if the initial gains from marriage were small.

The effect of external transfer on the divorce decisions in the common wealth model is two-fold. First, increase in external transfer to divorced families increases the divorce propensity, since this reduces the financial consequences of divorce. Second, the introduction of divorce transfers will induce more marginal couples to marry. Hence, the stock of marginal marriage increases, and we are more likely to observe higher divorce

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In these models the spouses (by assumption) reach a Pareto-efficient allocation, while the actual realisation

rates. Overall, in equilibrium an increase in external transfer in case of divorce will increase observed divorce rates. Hoffman and Duncan (1995) find empirical evidence that an increase in welfare support to custodial parents has a significant positive effect on the divorce probability. This finding is partly supported by Mofitt (1990), who finds that an increase in support to custodial parents will have a positive but non-significant effect on divorce.

Public policies influence on the *distribution* of expected divorce transfers between spouses mainly through child support awards, the efficiency of child support enforcement policies, and laws on custodial right. Given an allocation of custodial rights, both increasing child support award and strengthening of the enforcement efforts, will increase the *expected* child support and, hence, will strengthen the position of the custodian and weaken the position of the non-custodian. Given the ex ante uncertainty about custody, each spouse will have an expected divorce transfer including public transfers as well as child support. Unitary models, such as the common wealth model, predict pooling of expected divorce transfer.[10] However, empirical evidence seem to reject the pooling hypothesis of expected divorce transfer. Nixon (1998) finds evidence that stronger child support enforcement policy, measured by U.S. cross-state variations in enforcement climate, reduces divorce rates. In a similar way Argys and Peters (1999), using U.S. data, find that increasing efficiency in the enforcement of child support awards matters for

depends on the spouses' relative endowments, for example earning capacities.

[10] We think of a situation where the spouses are engaged in divorce negotiations where each spouse has property right to an uncertain lottery of divorce transfers. A reallocation of these uncertain divorce lotteries changes the compensation pattern however not the actual divorce decision. If the reallocation benefits the spouse with the lowest preferences of braking out of the marriage, he can use this increase in expected divorce transfers to compensate his spouse to stay. If the reallocation is towards the spouse with the highest preferences for divorce, the compensation needed for her to stay is equally less. Hence, as long as the

divorce settlement; it increases the probability that support awards will be courted instead of voluntary. Using U.S. panel data, Hoffman and Duncan (1993) find a non-significant effect of changes in expected child support on divorce.[11][12]

Clark (1999) models explicitly the divorce decision where the outcome is, by assumption, Pareto efficient and depends on relative endowments including allocation of dissolution rights and custodial rights. His model predicts that divorce laws that grossly favour one of the spouses – for example by excessive or insufficient compensation for prior economic sacrifices, increase the likelihood for divorce.

4. The data and model specification

Our analysis utilises data from the KIRUT database, which consists of information from various administrative registers for a 10 per cent random sample of the Norwegian working age population. The database contains a broad range of background information on marital status, number and age of children, income, education, etc. These variables are updated yearly, providing us with a panel covering the period 1989 to 1994.

We picked all *couples* married by the 1st of January 1989. Since our focus is on transfers and divorce, we concentrate on couples in their fertile age and/or with

Coase theorem (1960) applies, allocations of property rights will affect neither the divorce decision nor other parts of the divorce settlement.

[11] In related literature, Peters (1986, 1992), using U.S. cross sections data with state variations in divorce laws, finds support for the claim that the switch from consent to unilateral divorce law (implying that the right to dissolve a marriage changes from the spouse that most definitely wants to stay to the spouse that most definitely wants to leave) had no effect on the divorce rates. Allen (1992) criticises Peter's classification of unilateral states, corrects and finds that the change in law did have a significant positive effect on the divorce rates. Using U.S. panel data from 1968 to 1987, Friedberg (1997) finds a significant positive impact on divorce rates from the change to a unilateral law. Finally, Smith (1997), using time series data, finds a significant short-term effect but no long-term effect on the divorce rates of a change from consent to unilateral law in U.K.

dependent children. This is done by restricting the sample to contain only couples where the wife was maximum 40 years of age in 1989. In addition, we excluded individuals with missing background information, which left us with 2.806 couples. The sample is then observed through 1994, with the purpose of identifying changes in marital status. By 1994, 276 of the couples were divorced.[13] Their year of divorce is registered, and forms the basis for the calculations of pre and post divorce variables.

The dependent variable is an indicator counting 1 if the married couple become divorced in the period, and 0 otherwise. The same kind of background information is available for both spouses. As a general remedy against endogeneity, we apply explanatory variables that are predetermined relative to the dependent variables. In most cases the values of the background variables refer to 1989. To the extent that our data allows the parameterisation, we include *levels* as well as *differences* for each couple in the divorce equation.

(Table 1 about here)

Table 1 reveals that at the starting year of 1989 (when all the couples were married) the age and education means were quite similar for married and divorced couples. The married couples were on average slightly older, with slightly higher level of education. The age-differences are slightly larger for the divorced, while the opposite is true for educational differences.

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[12] The rejection of the expected transfer pooling hypothesis is further supported by empirical findings that consumption pattern in intact families dependent on spouses relative income as well as total family income, see Phipps and Bruton (1992), Hoddinott and Haddad (1995), Lundberg, Pollak and Wales (1997).

[13] Separated couples are counted as divorced.

SosBenefits is an indicator for whether one or both of the spouses were receiving means tested benefits in 1989. Even if the share is small in both states, the mean is notably larger for divorcees. *ForeignCitiz* indicates foreign citizenship for one of or both spouses, which is rare, but considerably more frequent among the divorced.

NoChildren, #Children, *AgeYoungest*, and *NewChild* measure the influence from children on marital disruption. The foremost is a dummy variable equal to one if the couple is childless; the second measures number of dependent children. Age of the youngest child is measured by the third, while the fourth is an indicator for whether the couple had any new children before divorce/during the observation period. The share of childless couples is notably larger for dissolved compared to intact marriages. The number of children and age of youngest child is not very different, while there is a marked higher rate of children born during the observation period for married compared to divorced couples.[14, 15]

The variables $LabForce^{Fam}$ and $\Delta LabForce$ measure the couples' total labour market participation and degree of specialisation, respectively. For each spouse the value of an indicator variable *LabForce* ranges from 0 to 1, where 1 is full time labour market participation. We define $LabForce^{Fam} = LabForce^{Husb} + LabForce^{Wife}$ and $\Delta LabForce = LabForce^{Husb} - LabForce^{Wife}$. The variable $\Delta LabForce = 1$ indicates the highest degree of traditional specialisation (husband in the labour market and wife at

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[14] Part of this comes from our design: Except for couples divorced in 1994, married couples will have longer marital tenure than divorced, which increases the possibility of having new children.

[15] A possible objection against the variable *NewChild* as a regressor is that the causality might be ambiguous. One might argue that the happily married have an increased probability of having a new child or, on the contrary, that the decision of having a new child might be an attempt to solve the marriage from disruption. In either case, the divorce expectation influences on the *NewChild* variable and, hence, violates the exogeneity assumption. In our model, not only does *NewChild* enter as an explanatory variable in its

home) within the family. Note the distinct difference between the marital states, with a considerably higher degree of male labour market specialisation for married than for divorced. Note also that the variables are predetermined, since they measure the participation in 1989, i.e. *before* divorce.

The income variables are based on the spouses' incomes in 1988.[16] Table 1 shows that the family income for married couples on average is slightly higher than the dissolved families' pre-divorce income. Δ*Income* is considerably higher for married couples; specialisation in the families once again appears as a natural explanation.

As explained in Section 3, the transfers critically depend on the custodial arrangement. In all empirical analyses that we are aware of, the researchers assume—explicitly or implicitly—that the mother becomes the custodian. This is also the case with most divorces in Norway. Still, in a significant numbers of cases (some 15 per cent in our sample) the father ends up as the custodian. We therefore estimate the probability of getting custody in a separate regression (see Appendix). For each spouse S (S = Husb(and), Wife) we calculate transfers in case of custody and non-custody according to the rules in force, $Trans_C^S$ and $Trans_{NC}^S$, respectively.[17] Expected transfer for spouse S then becomes:

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own, in addition, it influences the value of the transfers variables (see description below). The standard procedures for specification are therefore no longer valid.

[16] We do have access to more recent income information (1989-1994). A major concern is, however, that the income variables are as predetermined as possible. In the trade-off between precision and predeterminedness, we give priority to the latter. All incomes and transfers are deflated by the Norwegian Consumer Price Index, with 1995 as base year.
[17] Note that we use the actual rules in force, and that the calculated amounts not necessarily equals the realisations. Details are available from the authors upon request.

Husband: $\quad (1-\hat{p})Trans_C^{Husb} + \hat{p}Trans_{NC}^{Husb} \equiv Trans^{Husb}$

Wife: $\quad \hat{p}Trans_C^{Wife} + (1-\hat{p})Trans_{NC}^{Wife} \equiv Trans^{Wife}$

where $\hat{p}$ is wife i's estimated probability of getting custody. In the econometric model we include total expected transfers, $Trans^{Fam} = Trans^{Husb} + Trans^{Wife}$, as well as difference in expected transfers, $\Delta Trans = Trans^{Husb} - Trans^{Wife}$; the latter reflecting redistribution of expected transfers between spouses.

An important point in our analysis is that the custodial rights determine the distribution of transfers between the spouses, and that this fact should be reflected when we model the spouses' behaviour. This is why we suggest a separate equation for the probability of receiving custody, rather than simply to assume that the mother becomes custodial. The use of an *estimated* probability of child custody as an element in calculating the transfer variables is not trivial, however:

Define C as maternal custody, given divorce, D. Let the conditional probability of which, p, be determined by a vector of explanatory variables, Z, and an error term, ε;[18]

$$p \equiv \mathrm{Pr}ob(C = 1 \mid \mathbf{Z}, D = 1) = \mathbf{Z}'\boldsymbol{\alpha} + \varepsilon$$

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[18] Spouse index is omitted for ease of exposition.

Based on the sub-sample of divorced couples, we estimate (by a probit model) the parameters $\boldsymbol{\alpha}$, and use them to impute the probability of custody, $\hat{p}$, for the *complete* sample; divorced as well as married. In this manner we are able to calculate expected transfers for *all* individuals according to the formulas presented earlier. The divorce probability now becomes

$$\Pr ob(D=1\,|\,\mathbf{X}, \hat{p}) = \mathbf{X}'\boldsymbol{\beta} + \tau_1 \hat{Trans}^{Fam} + \tau_2 \Delta \hat{Trans} + v$$

where $\hat{Trans}^{Fam}$ and $\Delta\hat{Trans}$ are estimated family transfers and transfer differences, respectively, and $\mathbf{X}'\boldsymbol{\beta}$ is a vector of other relevant regressors in the divorce equation. In some respects the approach resembles a selection model as that of Heckman (1976, 1978, 1979). If unobserved characteristics influence on the probability of custody as well as the probability of divorce, i.e., $\mathrm{cov}(\varepsilon, v) \neq 0$, then the parameter estimates of the divorce equation become inconsistent, since $\mathrm{cov}(v, p) \neq 0$. It is not hard to think of cases where this might be the case. If, for example, the husband becomes a notorious drunkard, his divorce probability *and* the probability that his wife will end up with the child custody increase simultaneously. If the wife is the one with problems of this kind, the divorce probability presumably increases correspondingly, while she now becomes the part with *reduced* probability of receiving custody. In any case, this constitutes an endogeneity problem caused by unobserved heterogeneity.[19]

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[19] The fact that the correlation between the two possibilities can be positive as well as negative does not remove the endogenity problem. It simply implies that the direction of the bias is unknown, a priori.

In standard selection models this is remedied by the calculation of a generalised residual which, when entered into the outcome equation, in principle corrects for the simultaneity bias. The situation is somewhat more complicated in our case, since the estimated probability enters the outcome equation also as weights in the calculation of the transfers variables. The properties of the standard models with generalised residuals will therefore not apply in our case.

Note, however, that it is the *estimated* and, hence, instrumented probability of custody that enters the divorce equation.[20] Moreover, the transfers variables are only partly determined by the custody probabilities; the other component is the public regulations in force, which has been applied individually to the whole sample. The fact that the transfers included are calculated according to predetermined rules, and not observed, is also presumed to contribute to their exogeneity.

Table 1 reveals that divorced families on average receive the same amount in transfers as the comparable (expected) amount for intact families. As expected, the wives are net receivers of transfers, which is illustrated with the negative figures of $\Delta Trans$ in Table 1. Divorced men on average expect to transfer NOK 87.610 to their ex-wives, while the comparable amount for married men is NOK 105.320.

5. Results

The probit estimates of determinants for marital dissolution, converted to marginal effects, are reported in Table 2.

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[20] The parameterisation, and hence the functional form, is different in the two equations, and constitutes our identifying restrictions.

(Table 2 about here)

Starting with the average age of the spouses, we find that the probability of a marital split is reduced by 0.8 per cent for each married year. This result is probably a mix of several effects. It can be explained by a generational effect, since we know that the younger cohorts on average have a more liberal view of divorce than the older ones. Furthermore, if we, lacking information on the year of marriage, assume a positive correlation between age and number of marriage years, the negative effect on divorce probability might be explained by the facts that (i) low marriage age increases the probability of divorce, and (ii) the fact that unstable marriages dissolve first, leaving the remaining marriages with a reduced probability of divorce.

The age difference between spouses appears to contribute positively to marital dissolution. This finding is consistent with the interpretation that great age difference is associated with low initial gains from marriage and, hence, gives support to the (positive) assortative mating hypothesis.

Working with a reduced form model we have no manifest *a priory* suggestions to the sign of the education variables. To the degree that educational level, as a proxy for human capital for the family, is positively correlated with the probability of becoming re-married for both spouses, we expect to find a negative parameter. The sign is as expected, but the coefficient is not significantly different from zero. The interpretation of the effect from the variable measuring the educational difference between the spouses ($\Delta Educat$) is less straightforward. If the level of education signals social and/or cultural orientation,

one might assume positive assortative mating taking place and, hence, that large differences contribute negatively to the stability of the marriage. Education as investment in human capital is an example of a characteristic that contributes to the wage earnings capacity. As such, we expect negative assortative mating to take place, with positive coefficient as a consequence. Finally, applying the re-marriage argument, the spouse with the higher education is expected to have increased divorce probability. On the other hand, the less educated spouse has increased incentives to keep the marriage unbroken. Not surprisingly, with such a list of possible effects working in opposite directions, the educational difference-parameter turns out to be insignificantly different from zero.

As expected, couples where one or both of the spouses receive social benefits have increased probability of becoming divorced. Continuing down the table we find that foreign citizenship (*ForeignCitiz*) has a positive effect on the estimated probability. Hence, the probability of divorce is higher for these categories.

All four parameters related to children are significant—the coefficient for the *NoChildren*-dummy only at the 10 per cent level, though—and have the expected sign. Couples without children have increased probability of divorce. Marital stability increases with the number of children, but decreases as the children get older. Couples that got one or several children in the period from 1989 to 1994 have a marked less probability of becoming divorced.

The spouses aggregate labour market participation, *LabForce^{Fam}*, relates to the frequently advocated hypothesis that marriage is more fragile in families exposed to the "time-trap", with both parents participating in the labour force and, hence, that have little time left for family matters. We find no support for this hypothesis, in that the coefficient

is insignificantly different from zero. However, the significantly negative coefficient for the $\Delta LabForce$ variable once again appears to confirm the (negative) assortative mating hypothesis. Hence, the traditional specialisation—with the husband working in the labour market and the wife at home—adds to the stability of the marriage.

The coefficient for $Income^{Fam}$ is very far from being significant, indicating that a proportionate[21] increase in both spouses' income has no sizeable effect on the probability of divorce. The negatively estimated coefficient attached to the $\Delta Income$ variable implies that redistribution in favour of the husband has a negative impact on the divorce probability. Of course, by way of parameterisation, this implies that redistribution in favour of the wife increases the divorce probability.[22] Predictions on the income differences can be derived from the assortative mating hypothesis. If the husband has high relative earnings, this indicates a high degree of specialisation. High specialisation tends to stabilise the marriage, since it gives the opportunity of realising gains from coordination of work at home and in the labour market. This gives support to a negative (i.e. stabilising) effect from $\Delta Income$, which represents the "traditional" families with the husband being the main earner.

Finally, we turn to the main object of this study, namely the effects from external transfers. *A priori* we believe the expected transfers to the family, $Trans^{Fam}$, to have a positive effect on the probability of divorce since, firstly, increased transfers to both

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[21] Since we control for variation in the income differences between couples, variation in the family income can only come about by changing both spouse's income in the same direction and by the same amount. Hence, the estimated coefficient represents level variation conditional on income differences being unaltered.

[22] Arguing along the same lines as for the $Income^{Fam}$ variable, $\Delta Income$ is a pure *distributional* measure. To see why, note that the (partial) effect of a marginal change in $\Delta Income$ measures the impact of a change in the income difference, all other covariates—including family income—being constant. With constant

spouses unambiguously reduces the costs of dissolution. Secondly, increased level of transfers presumably increases the stock of marginal marriages at first hand, which in turn leads to higher divorce rates. This is supported by our findings, in that we find the coefficient to be positive, and clearly significant.[23] As was the case for the income variables, a change in $\Delta Trans$ represents a pure redistribution of expected transfer in favour of the husband. We estimate the impact to be negative and highly significant.

The results regarding expected transfers differences call for several remarks. First, the fact that redistribution *does* matter supports the collective model approach of family modelling. As discussed in Section 3, internal (re-)distribution between spouses does not affect the divorce decision if we base our predictions on unitary models. In this respect, our findings are at odds with the altruist and common wealth models of Becker (1974, 1981) and Becker *et al.* (1977). Collective models, on the other hand, open for this possibility (Chiappori, 1988, 1992, Chiappori and Weiss (2000)).

Second, a redistribution of the expected transfer in favour of the husband has a negative and hence stabilising effect on marriage. Or—conversely—a redistribution in favour of the wife increases the divorce probability. A possible explanation can be found in the sociological literature (see e.g. Zeiss *et al* (1980) and Moxnes (1990)) where a common finding is that the wife most often takes the initiative to divorce and, accordingly, the part that usually determines whether the marriage shall remain

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family income a change in the income difference is only possible with a complete redistribution between the couples.

[23] This result partly gives support to Hoffman and Duncan (1995), who find a small *and* significantly positive effect on the probability of divorce, and to Moffitt (1990), who reports at a positive effect, albeit insignificant at the 5 per cent level.

unbroken. This might shed some light on our findings: The higher the expected transfers difference is in favour of the husband, the higher is the husband's incentive to break up, as is the wife's incentive to stay married. Equivalently, redistribution in favour of the wife increases the wife's incentives and reduces the husband's incentives to divorce. It then becomes an empirical question whom of the spouses actually gets his or her way. Our results are consistent with the hypothesis that the wife on average decides whether the marriage shall remain intact.

6. Summary and concluding remarks

In this paper, we have estimated determinants to martial dissolution. The focus has been the influence from variation in public transfers, controlling for a number of socio-economic and demographic variables. Increasing average age of the spouses was found to add to the stability of the marriage, while age difference in favour of the husband had the opposite effect. The degree of specialisation, in that the traditional family structure with the husband specialising in the labour market and the wife in the home production has a stabilising effect on the marriages in our sample. As for the age and the labour force participation variables, they lend support to the assortative mating hypothesis. The effects of the income variables may to some degree be interpreted in a similar way. High earnings capacity for the husbands signals high labour market productivity and, hence, high degree of specialisation. High degree of specialisation tends to stabilise the marriage, since it gives the couple the opportunity of realising the gains in the labour market and in the home production. There is no sizeable effect of our education variables on marital (in)stability.

Our results indicate that the level of transfers has the expected positive effect on the estimated probability of divorce. Hence, public transfers to divorced families appear to destabilise marriages. As pointed out in the introduction, this might be optimal as long as the markets fails to provide insurance against divorce, but it is hard—and definitely beyond the scope of the present paper—to argue whether the present divorce rates are too high or too low.

Re-distribution of the transfers in favour of the husband and in disfavour of the wife significantly reduces the divorce probability. This we interpret as being in accordance with collective models for family dissolution, but at odds with unitary and common wealth models. Our findings that redistribution in favour of the husband stabilises the marriage, while redistribution in favour of the wife has the opposite effect, is consistent with the findings from several survey analysis: that the wife in most cases is the part which determines whether the marriage will remain intact.

References

Allen, D. W. (1992) " Marriage and Divorce: Comment" *American Economic Review* 82, 679-85.

Apps, P. F., and R. Rees (1988) "Taxation and the Household" *Journal of Public Economics, 35(3), 353-69*

Argys, L. M., and E.H Peters (1999) "Can the Family Support Act Put Some Life Back into Deadbeat Dads? An Analysis of Child-Support Guidelines; Award Rates, and Levels", *Journal of Human Resources;* 36(2), 224-52

Becker, G (1991) *A Treatise on the Family,* Enlarged Edition, Cambridge, Mass., USA: Harward University Press.

Becker, G. S., E. M. Landes, and R. T. Michael (1977) "An Economic Analysis of Marital Instability", *Journal of Political Economy* 85 (6), 1141-1187.

Clark, Simon (1999) "Law, Property, and Marital Dissolution", *Economic Journal* 109 (454), C41-54.

Chiappori, P. A. (1988) "Rational Household Labor Supply"Econometrica, 56(1), 63-90.

Chiappori, P. A. (1992) "Collective Labor Supply and Welfare" *Journal of Political Economy,* 100, 437-467.

Chiappori, P. A and Y. Weiss (2000) An Equilibrium Analysis of Divorce. Working Paper, http://econ.tau.ac.il

Coase R. (1960) "The Problem of Social Cost" *Journal of Law and Economics* , 3, 1-44

Friedberg L. (1997) "Did Unilateral Divorce Raise Divorce Rates? Evidence from Panel Data", National Bureau of Economic Research Working Paper: 6398, February 1998.

Haurin, D. R. (1989), "Women's Labor Market Reactions to Family Disruption." *Review of Economics and Statistics* 71, 54-61.

Heckman, J.J. (1976), "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models". *Annals of Economic and Social Measurement* 5(4), p.475-92.

Heckman, J.J. (1978), "Dummy Endogenous Variables in a Simultaneous Equation System". *Econometrica* 46(4), p.931-59.

Heckman, J.J. (1979), "Sample Selection Bias as a Specification Error" *Econometrica* 47(1), p.153-61.

Hoffman, S. D. and G. J. Duncan (1995), "The Effect of Incomes, Wages, and AFDC Benefits on Marital Disruption." *Journal of Human Resources* 30 (1), 19-41.

Jarvis, S. and S. P. Jenkins (1999), "Marital Splits and Income Changes: Evidence for Britain." *Populations Studies*, 53(2), 237-54.

Jensen, P. and N. Smith (1990), "Unemployment and Marital Dissolution." *Journal of Population Economics*, 3, 215-229.

Johnson, W. R. and J. Skinner (1986), "Labour Supply and Marital Separation." *American Economic Review* 76, 455-469.

Johnson, W. R. and J. Skinner (1986 ?? 1988), "Accounting for Changes in the Labor Supply of Recently Divorced Women." *Journal of Human Resources* 23, 417-436.

Phipps, S. A. and P. S. Burton (1992) "What's Mine Is Yours? The Influence of Male and Female Incomes on Patterns of Household Expenditure" Economica 65(260), 599-613

Lundberg, S and Pollack, R. (1993) 'Separate spheres bargaining and the marriage market.' *Journal of Political Economics,* vol. 101, 987-1010.

Lundberg, S, Pollack, R. and T.J. Wales (1997) "Do Husbands and Wives Pool Their Resources? " *Journal of Human Resources*, 32(3), 463-480

The Ministry of Child and Family (1996), "Høringsnotat. Forslag til endringer i barnebidragsordningen etter barnloven", (in Norwegian) September 1996, Oslo, Norway.

McElroy, M. B. and M. J. Horney (1989) "Nash-Bargained Household Decisions: Toward a Generalization of the Theory of Demand" *International-Economic-Review*; 22(2), 333-49

Moffitt, R. (1990) "The Effect of the U.S. Welfare System on Marital Status", *Journal-of-Public-Economics, 41(1),* 101-24.

Moxness, K. (1990) *Kjernesprengning i familien? Famiileforandring ved samlivsbrudd og dannelse av nye samliv,* Universitetsforlaget, Oslo

Nixon, L. A. (1997), "The Effect of Child Support Enforcement on Marital Dissolution." *Journal of Human Resources,* 32 (1), 159-181.

Peters, E. (1986), "Marriage and Divorce: Informational Constraints and Private Contracting", *American Economic Review*, 76 (3), 437-54

Peters, E. (1992), "Marriage and Divorce, Reply", *American Economic Review* , 82 (3), 686-93

Peters, E. (1993), "The Importance of Financial Considerations in Divorce Decisions." *Economic Inquiry* 31 (1), 71-86.

Samuelson, P.A (1956) " Social Indifference Curves" *Quarterly Journal of Economics* 70(1),1-22

Tanda, P. (1994), "Marital Instability, Reproductive Behaviour and Women's Labour Force Participation Decisions." *Labour* 8 (2), 279-301.

Weiss, Y. (1997), "The Formation and Dissolution of Families: Why Marry? Who Marries Whom? And What Happens Upon Divorce?" in Rosenzweig, M. R. and O. Stark (eds.) *Handbook of Population and Family Economics*, Elsevier.

Weiss, Y. and R. J. Willis (1985), "Children as Collective Goods in Divorce Settlements" *Journal of Labor Economics* 3(3), 268-92.

Weiss, Y. and R. J. Willis (1993), "Transfers among Divorced Couples: Evidence and Interpretation." *Journal of Labor Economics* 11 (4), 629-678.

Weiss, Y. and R. J. Willis (1997), "Match Quality, New Information, and Marital Dissolution." *Journal of Labor Economics* 15 (1), S293-S329.

Zeiss, A.M., R.A. Zeiss, and S. M. Johnson" Sex Differences in Initiation of an Adjusment to Divorce" *Journal of Divorce,* 21-33

APPENDIX

Table A1. Determinants for child custody. Probit estimates, marginal effects (%)

Dependent variable: The mother's probability of receiving child custody.

	Coeff	Std err
#Children	0.07	2.87
AgeYoungest	-1.48**	0.55
Age^{Husb}	0.27	0.56
Age^{Wife}	-0.23	0.70
$Breadw^{Husb}$	11.14**	4.07
$Breadw^{Wife}$	0.45	5.23
$Income^{Husb}$	0.06**	0.03
$Income^{Wife}$	-0.02	0.04

N:	206
Pseudo R^2:	0.155
Observed probability:	0.88
Predicted probability:	0.92

Notes to the table:
- ** indicates significance at least at the 5 per cent level.
- All variables are observed at the year of divorce.
- *#Children* and *AgeYoungest* measure number of children and age of youngest child, resp.
- Age^S is age of spouse *S, S* = (Husb(and), Wife)
- $Breadw^S$ is a dummy variable indicating whom of the spouses is main breadwinner (1 if he/she works more than the other; 0 otherwise).
- $Income^S$ is earnings for spouse *S*.

Table 1. Descriptive Statistics

Variable	MARRIED (N=2670) Mean	DIVORCED (N=276) Mean
Age^{Fam} (years)	34.17	32.57
ΔAge (years)	2.92	3.37
$Educat^{Fam}$ (years)	11.59	11.16
$\Delta Educat$ (years)	0.49	0.23
$SosBenefits$	0.02	0.09
$ForeignCitiz$	0.05	0.11
$NoChildren$	0.11	0.18
$\#Children$	1.84	1.53
$AgeYoungest$	5.55	5.11
$NewChild$ (after 1989)	0.29	0.12
$LabForce^{Fam}$	1.15	1.09
$\Delta LabForce$	0.33	0.12
$Income^{Fam}$ (1000 NOK)	218.56	202.70
$\Delta Income$(1000 NOK)	72.52	50.16
$Trans^{Fam}$ (1000 NOK)	38.94	38.82
$\Delta Trans$ (1000 NOK)	-105.32	-87.61

Notes to the table:
To the extent that the data allows for parameterisation, the table refers to family *levels* and *differences*, respectively. For example, the value 34.17 for Age^{Fam} in category *Married* refers to the total mean of spouse averages, while the value 2.9 for ΔAge in the same category means that average difference is 2.9 years in favour of the husband.

Table 2. Determinants of marital dissolution. Probit estimates.

Dependent variable:
Probability of being divorced in 1994, conditional on being married in 1989.

	Average	Marg.effect (%)
Age^{Fam}	34.08	-0.78***
ΔAge	2.90	0.41**
$Educat^{Fam}$	11.55	-0.33
$\Delta Educat$	0.47	0.04
SosBenefits (1989)	0.02	13.49***
ForeignCitiz	0.02	9.66**
NoChildren	0.11	2.72
#Children (1989)	1.81	-4.25***
AgeYoungest (1989)	5.60	0.57***
NewChild (after 1989)	0.28	-12.28***
$LabForce^{Fam}$	1.15	4.32
$\Delta LabForce$	3.44	0.98***
$Income^{Fam}$ (NOK 10 000)	21.88	-0.00
$\Delta Income$ (NOK 10 000)	7.08	-0.27***
$Trans^{Fam}$ (NOK 10 000)	3.84	0.87***
$\Delta Trans$ (NOK 10 000)	-10.32	-0.39***

N :	2 806
Observed probability:	0.092
Predicted probability:	0.064
Pseudo $R^{2:}$	0.137

Notes to the table:
** and *** indicate significance at least at the 5 and 1 percent level, respectively.