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Abstract. This paper analyses the phenomenon of income-pooling by applying the Danish household expenditure survey, merged with authoritative register information. Responses to additional questions on income sharing among 1696 couples also allows us to analyses whether the intra-household distribution of resources reflects individual preferences, the distribution of power, and pre-marital experiences. The analyses show that most Danish households use some type of income pooling and that the likelihood of income pooling varies considerably according to individual characteristics (age, education, occupation, past partners, upbringing) and household characteristics (household income, duration of marriage, location of residence and the existence of public goods, including children). However, when all variables are evaluated in a common model, only the duration of marriage and the existence of children clearly affect the likelihood of income pooling.

Keywords: household production and intra-household allocation; personal income, wealth and their distributions; game theory and bargaining theory; methodology for collecting, estimating, and organizing microeconomic data.

JEL Classification: D13, D31, C7, C81.

The established literature on household behavior often assumes that household members pool their resources. However, a large number of studies show that a number of sharing factors - e.g., the intra-household distribution of income - have a significant impact on household consumption, indicating that spouses do not pool *all* their resources. Nonetheless, that spouses do not pool *all* their resources does not mean that they do not pool *any* resources. The existence of public goods, such as children, necessarily involves the pooling of at least some of the resources.

This paper examines the *degree* of income pooling in Danish households and the ways in which pooling behavior varies with individual and household characteristics such as spouses' ages, education, residence, and upbringing. That is, we distinguish between individual preferences, information on the spouses relative power, and experiences obtained through childhood.

The paper is divided into three parts: Part one provides a theoretical framework and advances several hypotheses about income pooling. Part two examines these hypotheses in the context of Danish society, and part three summarizes the results.

1. Background

1.1. Models of household behavior

The literature on household behavior has traditionally modeled behavior as a *unitary model*, which views households as a unit represented by a household utility function (Becker 1991). A key feature of the unitary approach is that it is very easy to operationalize, and that it conveniently leads to the conclusion that individuals within households are pooling their resources. The problem is that the unitary model assumes

either that individuals act as if they were maximizing a social welfare function (Samuelson 1956) or that a dominant individual is managing the households (Becker 1991). However, as most spouses now consider themselves individuals, neither of these restrictive assumptions fits the facts.

Since the 1970s, researchers have been looking for alternatives to the unitary model. These alternatives suggested fall into two groups: *cooperative models* (Manser & Brown 1980, McElroy & Horney 1981, Chiappori 1988 & 1992, Browning et. al. 1994) and *non-cooperative* models (Lundberg & Rose 1999, Pollak 1993, Browning & Lechene 2001). The main difference between these two sets of models has been their respective assumptions about efficiency. The cooperative framework assumes that the outcome of a bargaining process is efficient, while the non-cooperative framework makes no such automatic assumption. Lundberg & Pollak (2003) clearly argue that if a current decision affects future bargaining power, and if there are limits on the spouse's ability of contracting over future decisions, which taken together might lead to inefficient outcomes, thus failing to achieve Pareto optimality. Nonetheless, most researchers have so far tended to operate with the cooperative assumption, because it is straight forward to see the household decision-making process as a repeating game exploiting possible Pareto improvements.

We can further divide the cooperative models into *collective models* (Chiappori 1988, 1992, Browning et. al. 1994) and *Nash bargain models* (Manser et. al. 1980, Browning & Chiappori 1998, McElroy & Horney 1981). In the collective models, the assumption is that household decisions depend on a group of *distributional factors* and *preference factors* (Browning & Chiappori 1998). The preference factors are the same as

those in the unitary model - that is, factors determining household preferences – whereas the distributional factors are individual power factors influencing the decision process through a *"sharing rule"* (Browning & Chiappori 1998). Thus, the collective model suggests that the outcome of the household decision process will reflect not only household preferences (as in the unitary model) but also the intra-household distribution of power. A number of studies have found the relative income of spouses to be an important distributional factor (Thomas 1990, Browning et al. 1994, Lundberg & Rose 1999, Pollak 1993, Wales 1997, Ward-Bates 2000, Attanasio & Lechene 2000), while Browning et al. (1994) found the relative age of spouses to have a significant impact to the outcome of the household decision process.

However, the collective models do not specify which factors constitute distributional factors influencing the household decision-making process. In contrast, Nash bargain models attempt to explicitly model the decision process. According to these models, a spouse will remain in a marriage only if the utility of staying exceeds the value of leaving. Thus, all individuals will have a *threat point* — a level of utility that would make them indifferent to leaving or staying – that the household bargaining process will reflect (McElroy 1990). The threat point of an individual is a function of both the value of staying in the marriage (e.g., love, public shared goods) and the value of leaving the marriage (Manser & Brown 1980). The effective threat point of an individual depends on both individual parameters (e.g., age, education, occupation, income) and environmental parameters (e.g., sex ratio, unemployment rate).

The literature on household behavior therefore suggests that a number of factors need considering if we are to explain a household's choice of distributional regime. In the

unitary setting, spouses evaluate the advantages and disadvantages of employing an income-pooling regime at the *household level*, whereas in a cooperative context spouses evaluate the advantages and disadvantages at the *individual level*. Since we can see the unitary model as a special version of the cooperative model, one in which spouses have equal preferences, the cooperative setting is the most appropriate starting point.

1.2. The choice of distributional regime

In the cooperative setting, the choice of distributional regime will reflect both individual preferences and the intra-household allocation of power. Individual *preferences* will determine how spouses evaluate the different possible regimes, while the *intra-household allocation of power* will determine how spouses will resolve possible conflicts between the preferences.

The choice of a distributional regime can be seen as a simple bargaining game in which each spouse can choose to 'accept income pooling', 'reject income pooling' or 'leave the marriage'. Since a spouse cannot prefer 'leaving the marriage' to the other two alternatives (because, in this case, the marriage will cease to exist), the three alternatives can be ranked in four ways:

I. Income pooling > no income pooling > leaving the marriage
II. Income pooling > leaving the marriage > no income pooling
III. No income pooling > income pooling > leaving the marriage
IV. No income pooling > leaving the marriage > income pooling

This game yields 16 combinations (see table 1):

TABLE 1 ABOUT HERE

As Table 1 shows, 'income pooling' can occur as a result of two different orderings:

1. *Both spouses prefer income pooling to any other alternative [(I,I), (I,II), (II,I), (II,II)]*
2. *One of the spouses prefers income pooling to any other alternative (I/II), but the other prefers 'income pooling' only to 'leaving the marriage' [(II,III), (III,II)].*

In the first case, the choice of income pooling is straightforward, as both spouses agree that income pooling is the best way to organize the household economy. In the second case, the choice is more complicated, because one of the spouses actually prefers using a non-pooling regime. In this case, the income-pooling regime arises as a result of the rational behavior of the 'weaker' partner (i.e., the spouse who has a relatively low value for living as a single person). The weaker spouse, knowing that the partner would never accept living in a 'non-pooling regime', thus accepts the income-pooling regime to avoid ending the marriage (the worst possible outcome).

These considerations suggest that a couple's choice of an income-pooling regime will reflect factors related both to preferences (e.g., age, children, public goods) and to power (e.g., relative income, education, occupation). However, before considering how factors such as age, education, and children might affect the likelihood of income pooling, we need to discuss the main incentives behind the decision to pool or not to pool resources.

1.3. Incentives for pooling resources

The most obvious reasons to pool resources are convenience, altruism and a desire to exploit the benefits of specialization. The convenience and altruism arguments are straightforward: The existence of public goods, children, etc., requires spouses to coordinate their economic behavior to some extent, and a very convenient form of coordination is the pooling of incomes. Similarly, a skewed distribution of income will give altruistic spouses an incentive to transfer some of his or her income to the partner — and an easy way to solve transfer problems is to pool income. Finally, the incentive for pooling resources can derive from the perceived gains from specialization (Lundberg & Rose 1999), in this case from a gender gap in the market wages of men and women. Specialization presumes comparative advantages in gender-related home or market production exist, with benefits resulting from capitalizing on those advantages. Among couples, spouses can increase household utility if the spouse with the comparative advantage in home production specializes in this activity, while the other spouse specializes in market production. Specialization requires that the spouse who works in the labor market compensate the spouse who specializes in home production. Again a simple form of compensation is income pooling.

Among the factors inhibiting the pooling of income resources are egotism, perceived loss of independence, and a decrease in the option value of quitting the marriage (including the fear of divorce). The consequence of egotistic preference is evident, because an egotistical spouse will always be reluctant to pool resources if he or she has the higher income. The argument for the loss in individuality is also clear: A spouse with a high preference for individuality will prefer a distributional regime

whereby he or she is not forced to coordinate any economic decisions with the partner. The final factor inhibiting pooling of income is the loss in the option value of leaving the marriage (an option closely linked to the fear of divorce), see Orsini and Spadaro (2005) for micro-simulations of threat-points in four countries, and is conditional on the assumption that a household that pools incomes also exploits the benefits of specialization.

Since exploiting the gains from specialization requires one of the spouses to decrease his or her participation in the outside labor market, such a regime will lead to a decrease in the human capital of the non-working spouse. We can therefore assume that most individuals will be reluctant to make such an offer before they are certain that the relationship will prevail. Stratton et al. (2005) confirm a positive relationship between the durations of the marriage and the degree of specialization in household production.

Incentives for pooling resources will thus reflect both *individual characteristics* and *household conditions*. Individual characteristics (e.g., the spouses' relative incomes) will influence the taste for individuality, while household conditions (e.g., the presence of children) will determine the suitability of an income-pooling regime. Since individual preferences are highly subjective and the suitability of income pooling is household–specific, the incentives to pool resources must vary among households, as well as among individual household members.

The following two sections discuss the probable effects of power factors and preference factors on the likelihood of income pooling, and then offer two hypotheses.

1.3.1. Income pooling and power factors

The resource theory of power argues that intra-household allocations of power reflect the relative resources that individual family members hold (see Rollins & Bahr [1976] for a formal theory of power relationships in marriage and Gillespie [1971] for a discussion of the measurement of power). This theory therefore suggests that the differences between spouses' incomes, relative educations, upbringings and occupations, insofar as they are sources of marital power, influence the household decision-making process, including the choice of income distribution.

However, the relationship between power and the likelihood of income pooling is somewhat ambiguous. First, the causal relationship between income distribution and actual income pooling remains unclear. While the distribution of income will influence incentives to pool resources, the decision to pool resources could also lead to a skewed distribution of income if the couple attempts to exploit the gains from specialization. Moreover, the impact of a skewed distribution of income on the incentives to pool resources depends on the emotional relationship between spouses (e.g., egotistical, altruistic). If spouses are egotistically inclined, a skewed distribution of income would make the higher-income-earning spouse reluctant to pool resources. On the other hand, if spouses are altruistically inclined, a skewed distribution of income would increase the incentive of the higher-earning spouse to pool resources. Thus, a clear relationship between income distribution and the likelihood of income pooling does not exist.

Second, one might also anticipate that the *relative education* of the spouses could influence (or be influenced by) the likelihood of income pooling. In other words, in cases of differences in spousal education, one might believe that gains from specialization

suggest a positive relationship between educational difference and the likelihood of income pooling. However, if the spouses are egotistical, the causality could also run in the opposite direction, making the higher-educated spouse reluctant to pool incomes. Therefore, a clear causal relationship between educational difference and the likelihood of income pooling does not exist.

A difference in the *occupational status* of spouses can affect the likelihood of income pooling. The rationale for suggesting such a relationship follows the same argument as that for education. Thus, while a difference in occupational status can increase or decrease the incentives for pooling resources, the pooling of resources could also be a simple consequence of an attempt to reap the benefits of specialization. Moreover, the incentives to pool resources are likewise assumed to be correlated to the spouse's attachment to the labour market - employed or unemployed - since incentives to pool resources vary with the amount of individual resources.

The impact of the final set of potential sources of power, *age (and age differences) and upbringing* of the spouses is also unpredictable. The literature on marital power indicates that individual resources vary with the social settings in which the spouses have grown up. Therefore, although both age and upbringing could influence the distribution of power (and thus the choice of distributional regime) within a household, the specific impact of these factors is hard to predict.

In brief, while some sort of relationship between income pooling and power exists, both its direction and its causality are unclear. A skewed distribution of power could count either as an incentive to pool resources or as an incentive not to pool resources. To complicate things even more, a skewed distribution of power could also simply result

from a household's using an income-pooling regime to benefit from specialization. Looking at power factors alone, therefore, will give us no defining insight into the decision-making process.

1.3.2. Income pooling and preferences

Since income pooling is merely one of many ways to organize a household economy, the choice of income pooling regime will always reflect the preferences of the spouses. The factors influencing these preferences fall into two groups: factors affecting the *suitability* of income pooling (public goods, children, etc.) and factors affecting the *preferences for individuality* (age, education, occupation, etc.). In addition, the spouses' preference for income pooling could also be affected by *past partner experience* (see Heimdal & Houseknecht 2003, who show that type of relationship and previous divorce affect the income organization within the family). Either debt, lost capital, or lost labor market experience from specialization in household production could strongly affect a formerly divorced spouse's preferences.

The *suitability* of an income-pooling regime will differ widely across households. A newly wedded couple with no public goods such as a car or house will have different reasons for coordinating economic affairs than will a couple who has purchased a number of public goods during a long marriage. Likewise, the existence of children also affects the preference for income pooling, because children can be considered a public good. A household with children would most likely have a greater need to coordinate its economic affairs, and thus find an income-pooling regime more appealing, than would a childless couple. Moreover, a child increases the amount of work within a household – suggesting a high preference for income pooling for the purpose of benefiting from specialization.

The *preference for individuality* (and thus no preference for income pooling) will likely vary with demographic factors such as sex, age, education, location of residence and economic independence. However, the impact of specific demographic factors remains unpredictable, because no causal relationship between economic independence and preference for income pooling is clear (see earlier discussion of power factors).

The final factor that might affect the likelihood of income pooling is *past partner experience*. Here we could postulate that a preference for, or aversion to, income pooling might be related to some sort of learning process, so that a previously married spouse could be either more or less reluctant to accept income pooling. Likewise, some persons who have been previously married are likely to be wealthier or poorer, suggesting that spouses of remarried persons could be more or less reluctant to pool resources. The effect of past partner experience, while likely to influence the probability of income pooling, is therefore difficult to predict.

1.4. Summary

Given that both power and preference factors are likely to affect income pooling, we suggest that the impact of power factors alone cannot help us formulate any clear hypotheses about the likelihood of income pooling. However, we have emphasized two other factors likely to have a major impact on the probability of income pooling: the duration of marriage and the amount of household resources (e.g., public goods, including children). The duration of marriage will influence the incentives to exploit the benefits of specialization, while the existence of (more) public goods will influence the likelihood of income pooling to better coordinate the household's economic affairs. The

discussion therefore suggests the following two hypotheses regarding the likelihood of income pooling:

Hypothesis 1: Income pooling will correlate positively with the existence of public goods in a household.

Hypothesis 2: Income pooling depends positively on expectations of continued marriage and, thus, on the marriage career of the spouses.

We do not distinguish between cohabitation and marriage, as cohabitation in Denmark is often a prelude to marriage. This is in contrast to the U.S., where a more marked distinction exists between cohabitants and married couples in the specialization between the partners (Stratton et al, 2005) and thus in the degree to which they act cooperatively (Nordblom, 2004).

In addition to suggesting the two hypotheses, the discussion noted a number of other factors that could influence the likelihood of income pooling. The impacts of these factors, however, were so unpredictable as to make it formulating any specific hypotheses difficult. Nonetheless, despite the lack of theory, we believe that we can examine the impact of these factors by posing and answering the following three empirical questions:

Question 1: Does the intra-household allocation of resources (income, education and occupation) have any impact on the likelihood of income pooling?

Question 2: Does the upbringing of the spouses have any impact on the likelihood of income pooling?

Question 3: Does past partner experience influence the likelihood of income pooling?

In the following section, we use a Danish data set to empirically examine these hypotheses and questions.

2. Empirical Evidence

The previous section argued that the likelihood of income pooling would vary with the distribution of power, preferences and experience within the household. However, with a few exceptions, predicting the impact of specific variables—like showing causal relationships—is usually difficult.

The analyses in this section therefore serve two purposes. The first is to elucidate the characteristics of couples who choose to pool their resources, i.e., to examine the binary relationships between income pooling and individual or household characteristics. The second purpose is to examine those factors with the greatest impact on the likelihood of income pooling. We do so by simultaneously evaluating all variables—power, preference, and experience.

FIGURE 1 ABOUT HERE

The empirical analysis is divided into three parts: First, we introduce two measures of income pooling. Second, to illustrate how these measures vary with each set of variables, we do a number of simple binary statistics. Third, to examine the relative importance of the various household characteristics, we evaluate all factors in a complete statistical model.

2.1. Data

The following analyses use data from the Danish Household Expenditure Survey. The survey provides information on the buying habits of Danish households, including information characterising both households and individual household members. Besides survey information, the data set also includes information about respondents from various Danish *registers,* e.g., the tax authorities' income register.

The *survey data* come from the Danish Expenditure Survey (HES), a continuous survey of household buying habits covering 1,696 households. The survey consists of a self-administered accounting book ('diary') and a questionnaire ('interview'). The diary data record all purchases of each household member during a two-week period, whereas the interview gives information on the household's expenditures on certain public goods (rent, heating, etc.) and on purchases and possession of durables (television, vehicles, etc.). As a supplement, the questionnaire poses some questions about the respondents' backgrounds, such as the length of time the respondents have been living together and the management of household finances.

The *register data* come from several registers (e.g., income register, the child data base) and cover information about the age, income, education, and labour market status of all household members. The data set also contains information about the children and eventual former partners (ages, income levels, etc.).

For further details on the data set, see Bonke & Browning (2003).

2.2

From the questionnaire, we can deduce two measures to account for a household's degree of income pooling. The first measure is a direct question about the household's distributional regime. The second measure is an indirect measure where income pooling is determined as a result of the response to a question regarding a hypothetical change in the income distribution, i.e. the one spouse earns more/less and the other spouse less/more.

The first measure – the direct measure - stems from the question asking the spouses to indicate the best way (among 8 possibilities) to describe their method of organizing their finances. The responses are in Table 2:

TABLE 2 ABOUT HERE

As Table 2 shows, nearly all Danish households (90%) claim to be using some sort of income pooling regime (i.e. options 1 and 2). Moreover, the vast majority of these 'income pooling' households state that all the money is shared – indicating the pooling of all resources. In the following analysis, only those households that stated that they pool all their resources (i.e., 68 percent) are termed 'income pooling' households.

The second measure – the indirect measure – stems from questions asked individual spouses about their reactions to a change in their relative income (increase/decrease). The questions were as follows:

A. If you were earning 1000 DKK more per month (after taxes) and your spouse 1000 DKK less, would you then spend more money on yourself? It is assumed

that you and your partner work the same number of hours as now. It is only the distribution of income that has changed.

B. If you were earning 1000 DKK less per month (after taxes) and your spouse 1000 DKK more, would you then spend less money on yourself? It is assumed that you and your partner work the same number of hours as now. It is only the distribution of income that has changed.

Since there are two questions (A, B) and two options (yes, no) the respondent can answer in 4 different ways (A, B) = [(yes, yes), (yes, no), (no, yes), (no, no)]. For example, (yes, no) means that the person increases his or her expenditures if his or her relative income increases, but does not decrease expenditures if his or her relative income falls.

Combining the answers given by the two spouses yields 16 possible outcomes, as Table 3 shows:

TABLE 3 ABOUT HERE

If spouses are indeed pooling their resources, a hypothetical change in income will not affect the individual consumption of the partners. A household using an income-pooling regime would therefore answer [(no, no), (no, no)], whereas other households will choose one of the other 15 answer combinations. As the table shows, most households (78%) state indirectly that they use some kind of income pooling regime. However, the percentage of income pooling households indicated by the indirect measure does not completely correspond to the percentage indicated by the direct measure.

TABLE 4 ABOUT HERE

Table 4 examines the correlation between the two income-pooling measures, showing a high correlation. More than two out of three households claiming to be using an income-pooling regime (the direct measure) acknowledge such a distribution regime in their response to the hypothetical question on a change in the relative income (the indirect measure). Furthermore, the table suggests that the direct measure of income pooling yields a slightly 'better' indication of actual income pooling than the indirect question. In other words, the percentage of households that use 'hypothetical pooling', but not 'regime pooling', is larger than the percentage of households using 'regime pooling' but not 'hypothetical pooling'. This result stands, despite the direct measure's being based on a question asked of both spouses jointly, whereas the indirect measure rests on questions asked of the spouses individually. However, because neither measure can perfectly reflect income pooling, determining which measure is the most appropriate is difficult. We have therefore examined both measures as a form of control, because a variable with the same impact on both income pooling measures will have a stronger impact on the likelihood of 'true' income pooling than a variable with a significant impact on only one measure.

2.3. Who are pooling their resources?

As we have argued, the degree of income pooling will vary with both power and individual preferences. In the next section, we discuss these factors separately, following which we offer a complete model that includes all relevant factors.

2.3.1. Income pooling and power

We can evaluate the allocation of power in a household on the basis of the spouses' 'resources'. These are income, education, occupation, and age difference, all parameters likely to have some sort of impact on the degree of income pooling within a household. However, since the majority of the households consider themselves to be equal and the theoretical impact of the specific power factors properly unsure, we can anticipate a limited impact (Tichenor, 1999).

Table 5 shows how income pooling varies with a number of potential power sources. The only variable apparently influencing the choice of income pooling is the relative occupation or employment of the spouses. When applying the indirect measure, we see that the likelihood that spouses choose to pool resources is highest in dual-earner households and lowest in households where neither spouse is employed. This result is interesting, because the relative income of the spouses does not seem to influence the spouses' incentives to pool their resources – suggesting that income pooling is more influenced by preferences and experience (related to the age of the spouses) than by power.

We investigate the direction of the causal relationship between the sharing and the pooling of the income (see earlier discussion) by omitting the income share variable from the logistic regressions below. As no significant impact on the other coefficients appears,

we believe that income sharing in principle affects income pooling, and not the other way around.

2.3.2. Income pooling and preference factors

The incentives to pool resources are also likely to vary with the household members' preferences for individual, as opposed to cooperative, solutions. The household characteristics that we can expect to have an impact on household members' preferences for coordination fall into two groups: (1) a group of *individual characteristics*, based on the personal backgrounds of the spouses (age, education, occupation and upbringing), and (2) a group of *household characteristics* (income, children, housing, durable goods and location of residence). The individual characteristics reflect the spouses' basic preferences, whereas household characteristics (e.g., children and housing) could influence the suitability of coordination and thus, the preferences for such behavior.

TABLE 5 ABOUT HERE

TABLE 6 ABOUT HERE

Table 6 shows how the choice of income pooling varies with the individual characteristics of the spouses. Age, occupation and upbringing have an apparent impact on the choice of income pooling. Young couples and student couples seem more reluctant to pool their resources than do older people who are employed. Likewise, people who have grown up with a mother working half-time or not at all are more likely to pool their incomes than people whose mothers have been full-time employees outside the home.

However, whereas the relationship between age/occupation and income pooling is as expected, the impact of upbringing on income pooling is less obvious.

The next group of variables likely to influence (or be influenced by) income pooling are variables that characterize the household. Table 7 presents an overview of binary relationships between these household variables and the likelihood of income pooling.

TABLE 7 ABOUT HERE

Table 7 shows how a number of household characteristics, such as children and marriage career (i.e., the number of years of living with the same partner in cohabitation or marriage) affect income pooling. The table indicates that couples who have lived together for fewer than five years are much less likely to pool their resources than other couples, just as couples without children tend to be more reluctant to pool their resources. Public goods, such as a house or a car, increase the likelihood of spouses pooling their incomes, and income pooling is more common in high-income than in low-income families.

2.3.3. Income pooling and experience

The last group of variables likely to influence income pooling is the experience of the partners. Our purpose in examining these variables is to check whether the choice of income pooling reflects some sort of learning effect. In other words, we are checking whether spouses who have been previously married are more or less reluctant to pool income than individuals who have not been previously married. The experience can be considered a special preference factor.

TABLE 8 ABOUT HERE

Table 8 presents the relationship between income pooling and "past partner" experience. The table indicates that past partner experience could influence the incentives for pooling resources in subsequent marriages, as income pooling appears less common in households where one of the spouses has been previously married. However, the impact of past partner experience apparently varies with the type of measure used, as only the direct measure comes up with significant results concerning the husband's partner career, while no effects are found for wife's partner career independently of the measure applied.

The length of a former marriage affects income pooling for both women and men, and for both of the two measures. However, only short term relationships decrease the likelihood of income pooling, while long term relationships – more than 3 years – have no effect on the pooling of resources in the present marriage.

2.4. Explaining income pooling

The aim of the previous section has been to investigate the bilateral relationship between income pooling and factors of *power and preference*. However, the findings come with a high degree of uncertainty, since all variables have been correlated to some extent. The purpose of this section is to take control for correlations by evaluating all the variables within a single model.

TABLE 9 ABOUT HERE

Table 9 shows the result of logistic regression analyses, where a number of power and preference factors explain the two measures of income pooling. The results indicate that income pooling is more common among older couples (couples who have lived together for some time, i.e. more than five years, than among newer couples, just as the existence of children increases the likelihood of income pooling. These results are valid for both measures of income pooling. The relative education and the relative occupation also influence the likelihood of income pooling according to the indirect measure; the analyses show the likelihood of income pooling is higher among spouses who have the same educational level and who are both employed.

Overall, the analyses indicate that the choice of income pooling is mainly a function of the duration of marriage and the existence of public goods in the form of children. However, these two factors are closely related to demographic factors such as household income, location of residence and the upbringing of the spouses. Although these secondary variables do not have a direct impact on the likelihood of income pooling, they appear to have an indirect impact.

3. Conclusion

The purpose of this paper has been to analyze the concept of income pooling and discuss factors that we could expect to affect the level of income pooling in a household.

In the *first part*, we argued that the choice of 'income-pooling regime' reflects both individual preference factors and power factors within the household. From a theoretical

discussion of incentives that can affect the pooling of income, we anticipated that the likelihood of income pooling would positively correlate with the duration of a relationship and the existence of public goods (car, house, children, etc.) in the household. Moreover, we suggested that the intra-household allocation of 'power sources' (income, education, occupation, etc.) and the upbringing of the spouses might also influence the likelihood of income pooling. However, as the impact of the intra-household allocation of power remained uncertain, we formulated no concrete hypotheses at that point.

In the *second part*, we evaluated the likelihood of income pooling on the basis of a Danish data set. The analyses showed that most Danish households report using some type of income pooling, although the likelihood of income pooling varies considerably with a number of individual characteristics (age, education, occupation, past partners, upbringing, etc.) and household characteristics (household income, duration of marriage, location of residence and the existence of public goods, including children). However, when we controlled for correlations by evaluating all variables in a common model, only duration of marriage and the existence of public goods - in the form of children - have a clear impact on the likelihood of income pooling.

The analyses indicate that the likelihood of choosing income pooling depends primarily on its suitability to the household situation (duration of marriage and the existence of children). By contrast, neither the relative power of individual spouses nor the intra-household distribution of income has any impact on the choice of income pooling.

The conclusion is that there are only rather few conditions determining the pooling of resources within the household, and that the pooling regime is more widespread than any other regime among Danish households.

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Table 1. Possible outcomes of the income pooling game

	I	II	III	IV
I	income pooling	income pooling	no income pooling	no income pooling
II	income pooling	income pooling	*income pooling*	marriage dissolved
III	no income pooling	*income pooling*	no income pooling	no income pooling
IV	no income pooling	marriage dissolved	no income pooling	no income pooling

Figure 1. The model of income pooling

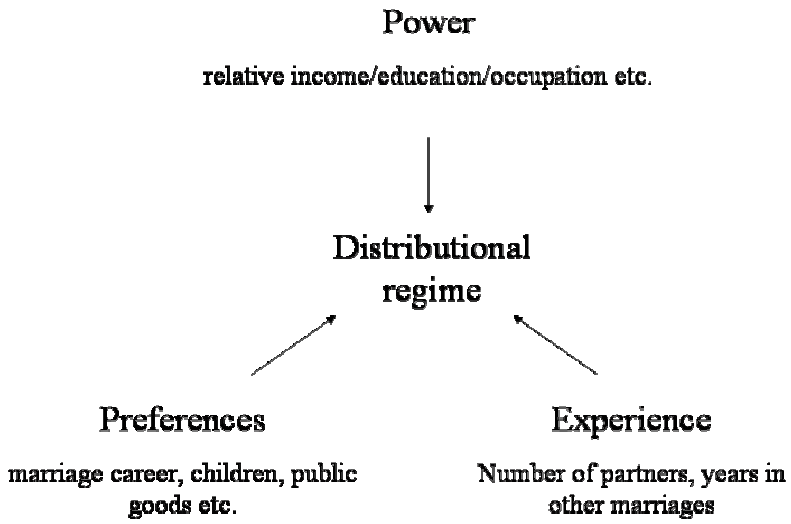

Table 2. The direct measure of income pooling

	Number of observations	Percent
All money is shared, we do not distinguish between 'my' or 'your' money.	1151	67.9
Some money is regarded as one's own and some as joint money.	366	21.6
What we earn individually belongs to each of us.	96	5.7
The husband manages the money, and the wife receives an allowance when she is in need of cash.	14	0.8
The wife manages the money and the husband receives an allowance, when he is in need of cash.	37	2.2
The husband manages some of the housekeeping money, the wife manages the rest of these money.	5	0.3
The wife manages some of the housekeeping money, the husband manages the rest of this money.	12	0.7
Some other arrangement	15	0.9
Total	1696	100.0

Table 3. The indirect measure of income pooling (updated)

		Wife			
		(yes, no)	(yes, yes)	(no, no)	(no, yes)
Husband	(yes, no)	11	3	14	3
	(yes, yes)	3	64	10	13
	(no, no)	16	37	1328	83
	(no, yes)	10	11	25	64

Income pooling

No income pooling

Table 4. The direct and indirect measure of income pooling (updated)

		Hypothetic pooling					
		Yes	No	Total	Yes	No	Total
		No. of observations -			Percent-		
Pooling regime	Yes	1024	127	1151	63.5	7.9	71.4
	No	239	223	462	14.8	13.8	28.6
	Total	1263	350	1613	78.3	21.7	100.0

Table 5. Income pooling and power factors

	Direct measure	Indirect maeasure
Power factors:	- Percent income pooling -	
Relative income		
(Wife's share of household income)	*0.3983*	*0.5311*
0 - 20 pct.	72.0	77.8
20 – 40 pct.	66.2	76.9
40 – 60 pct.	66.7	81.7
60 - 80 pct.	65.9	77.2
80 - 100 pct.	68.4	77.7
Relative age		
(Diff = husband age - wife age)	*0.0942*	*0.4233*
Diff < - 2	69.9	79.1
Diff > - 2 & Diff < 0	67.4	77.2
Diff > 2	60.7	81.4
Relative education		
(Low, Medium, High)	*0.741*	*0.703*
Husband > Wife	68.2	75.2
Husband = Wife	68.2	81.1
Husband < Wife	66.0	78.3
Relative occupation	*<0.001*	*<0.001*
Husband employed/Wife employed	71.2	82.6
Husband employed/Wife not employed	63.2	69.8
Husband not employed/Wife Employed	56.7	72.1
Husband not employed/Wife not employed	52.7	56.3
Relative autonomy		
(Degree of autonomy in buying)	*0.191*	*0.3972*
Husband > Wife	64.3	72.2
Husband = Wife	67.6	78.6
Husband < Wife	74.4	78.8

Table 6. Income pooling and individual characteristics

	Direct measure	Indirect measure
Power factors:	- Percent income pooling -	
Husband' s age (yrs.)	*<.0001*	<.0001
20-29	41.9	59.0
30-39	71.7	80.5
40-49	75.2	84.3
50-59	75.9	84.3
Wife's age (yrs.)	*<0.001*	<.0001
20-29	48.3	63.2
30-39	74.2	82.0
40-49	75.3	85.4
50-59	74.3	83.6
Husband's education	*0.503*	*0.083*
Basic school	70.4	80.8
Vocational training /upper sec.	67.2	79.3
Higher education	66.7	74.9
Wife's education	*0.082*	*0.473*
Basic school	21.1	80.6
Vocational training /upper sec.	65.9	78.2
Higher education	67.1	77.1
Husband's occupation	<.0001	<.0001
Employed	69.8	80.4
Student	42.9	52.7
Unemployed/retired	67.3	76.0
Wife's occupation	<.0001	<.0001
Employed	70.0	81.8
Student	43.9	54.1
Unemployed/retired	80.0	80.0

Table 6 (continued). Income pooling and individual characteristics

	Direct measure	Indirect measure
Power factors:	- Percent income pooling-	
Upbringing I (Husband)	0.5264	0.3544
Lived with both parents	68.3	78.8
Lived with one parent	66.3	76.1
Upbringing I (Wife)	0.9255	0.0771
Lived with both parents	67.9	78.8
Lived with one parent	67.7	74.0
Upbringing II (Husband)	0.0181	0.0943
Mother full time employed when husband was 14 years old	64.4	76.2
Mother part time employed when husband was 14 years old	67.9	76.9
Mother not employed when husband was 14 years old	72.9	81.8
Upbringing II (Wife)	0.0003	0.0139
Mother employed full time when husband was 14 years	62.3	74.6
Mother employed part time when husband was 14 years old	71.8	80.7
Mother not employed when husband was 14 years old	73.5	80.8

Table 7. Income pooling and household characteristics

	Direct measure	Indirect measure
Power factors:	- Percent income pooling -	
Civil status (1st January - Year of survey)	*(<0.001)*	*(<0.001)*
Single	45.9	59.5
Married	80.1	84.8
Consensual unions	66.7	85.5
Cohabiting couples	35.6	58.3
Years of marriage	*(<0.001)*	*(<0.001)*
5 or less	48.1	63.0
6 – 10	68.6	79.9
11 – 20	79.2	86.1
21 or more	81.3	87.3
Children in household	*(<0.001)*	*(<0.001)*
None	56.8	71.1
One	70.7	80.9
Two	79.0	87.0
Three or more	87.7	86.9
Common children in household	*(<0.001)*	*(<0.001)*
Yes	77.8	85.2
No	48.2	65.0
Children in household (of wife only)	*(0.079)*	*(0.269)*
Yes	62.8	81.0
No	68.6	77.8
Children in household (of husband only)	*(0.049)*	*(0.742)*
Yes	62.3	79.1
No	68.7	78.2
Property ownership(house/flat)	*(<0.001)*	*(<0.001)*
Owner of house/flat	73.5	82.0
Rented house/flat	57.6	71.6
Residence (Geographic location)	*0.94*	*0.2343*
East Denmark	68.0	77.0
West Denmark	67.8	79.4
Residence (urbanization)	*0.5366*	*0.0533*
Capital	66.9	75.5
Large city (pop. 100,000+)	66.0	77.0
Town (10.000 -99.999)	69.1	81.5

Rural (0-9.999)	70.6	81.8
Ownership of a car	*(<0.001)*	*(<0.001)*
Yes	70.9	81.0
No	51.2	63.5
Household income	*(<0.001)*	*(<0.001)*
Lower quintile	54.1	64.5
Lower middle quintile	63.7	74.6
Middle quintile	69.7	80.1
Upper middle quintile	75.3	84.6
Upper quintile	73.3	84.4

Table 8. Income pooling and experience

	Direct measure	Indirect measure
Power factors:	- Percent income pooling -	
Experience with other partners (number)		
(Husband)	*0.0445*	*0.4152*
None	69.4	78.7
One	63.1	75.5
Two or more	63.5	79.2
Experience with other partners (years)		
(Husband)	*0.0008*	*0.0037*
0 years	69.8	79.4
1 - 3 years	58.5	71.1
More than 3 years	69.9	80.7
Experience with other partners (number)		
(Wife)	*0.2159*	*0.8381*
None	68.9	78.4
One	65.1	78.1
Two or more	63.9	76.4
Experience with other partners (years)		
(Wife)	*0.0002*	*0.0002*
0 years	70.3	79.8
1 - 3 years	57.1	68.8
More than 3 years	69.0	80.6

Table 9. Income Pooling and explanatory factors. Logistic regression analyses.

	Direct measure		Indirect measure	
	Odds ratio	Significance	Odds ratio	Significance
Relative age		0.187		0.420
(Diff = husband's age – wife's age)				
Diff < - 2	1.087	0.091	1.102	0.676
Diff > - 2 & Diff < 0	-	-	-	-
Diff > 2	0.722	0.084	1.400	0.266
Relative education				
(Low. Medium. High)		0.983		0.421
Husband > Wife	1.000	0.930	0.800	0.209
Husband = Wife	-	-	-	-
Husband < Wife	0.973	0.856	0.981	0.581
Relative occupation		0.377		0.011
Husband employed / Wife employed	-	-	-	-
Husband employed / Wife unemployed	0.898	0.601	0.583	0.532
Husband unemployed/ Wife employed	0.618	0.157	0.695	0.725
Husband unemployed / Wife unemployed	0.849	0.909	0.424	0.043
Relative autonomy in buying		0.096		0.335
Husband > Wife	0.689	0.059	0.657	0.230
Husband = Wife	-	-	-	-
Husband < Wife	1.424	0.032	0.898	0.694
Wife's share of household income		0.197		0.466
0 - 20%.	1.382	0.088	1.017	0.487
20 – 40%.	0.963	0.273	0.852	0.571
40 - 60 %	-	-	-	-
60 - 80 %	0.945	0.230	0.737	0.106
80 - 100 %	1.269	0.302	1.025	0.485
Upbringing – living		0.425		0.369
Husband with both parents / wife with both parents	-	-	-	-
Husband with both parents / wife not with both parents	0.965	0.576	0.744	0.128
Husband not with both parents / wife with both parents	0.842	0.169	0.893	0.676
Husband not with both parents / wife not with both parents	1.522	0.128	1.287	0.264

Upbringing -- mothers work when 14		0.292		0.566
Husband full-time -- wife full-time	-	-	-	-
Husband full-time / wife not full-time	1.365	0.070	0.844	0.844
Husband not full-time / wife full-time	0.978	0.283	0.753	0.256
Husband not full-time / wife not full-time	1.112	0.939	0.881	0.868
Years of marriage		<.0001		<.0001
5 or less	-	-	-	-
6 – 10	1.727	0.116	1.807	0.293
11 -20	2.456	0.149	2.652	0.074
21 or more	4.369	<.0001	3.880	<.0001
Partners		0.783		0.760
Husband one / wife one	-	-	-	-
Husband one / wife more than one	0.867	0.818	0.907	0.389
Husband more than one / wife one	0.833	0.617	1.177	0.473
Husband more than one / wife more than one	0.898	0.995	1.106	0.653
Household income		0.229		0.420
Lower quintile	1.014	0.999	0.878	0.160
Lower middle quintile	0.976	0.763	1.066	0.999
Middle quintile	-	-	-	-
Upper middle quintile	1.303	0.054	1.381	0.083
Upper quintile	0.833	0.014	1.065	0.995
Children in household		<.0001		0.003
Yes	-	-	-	-
No	0.401	<.0001	0.635	0.003
Ownership of a car		0.061		0.064
Yes	-	-	-	-
No	0.707	0.061	0.699	0.064
Home ownership (house/flat)		0.224		0.383
Own house/flat	-	-	-	-
Rented house/flat	0.834	0.224	1.155	0.383
Residence (urbanization)		0.295		0.605
Capital	-	-	-	-
Large city(100,000+)	0.805	0.736	1.147	0.804
Town (10,000 -99.999)	0.848	0.902	1.275	0.298
Rural (0-9,999)	0.715	0.213	1.045	0.664
LR χ^2 (35)	240.5035	<.0001	175.955	<.0001
Wald	205.399	<.0001	158.5193	<.0001

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