Marriage, the Sharing Rule, and Pocket Money: The Case of South Korea

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I. Introduction

The unitary household model treats a household as a single decision-making unit. It assumes that the household's preferences can be represented by a single utility function (Samuelson 1956; Becker 1981). Then the income pooling hypothesis must hold; household members combine their incomes to maximize the utility function. Alternatively, the collective household model allows that individual members have potentially divergent preferences. Individuals will assert their preferences in the household decision-making process, and so they will not necessarily pool their incomes because the control of income is potentially an important determinant for bargaining power.[1] This article revisits the income pooling hypothesis using within-marriage changes in relative spousal earnings.

The main goal of this article is to test the constancy of bargaining power over time within the marriage. The motivation behind the hypothesis is both theoretical and empirical. Stability of bargaining power is necessary to rationalize the assumption of Pareto efficiency in the collective household model (Browning et al. 1994).[2] In a dynamic setting, the intertemporal efficiency of household decisions depends on whether spouses can commit to a particular balance of power at the time of household formation and so bargaining power is constant within the marriage (Mazzocco 2006). Empirically, previous studies using cross-sectional data have implicitly suggested that the balance of power is stable over time. Many of the distribution factors used in these studies are

[1] See, to name a few, Thomas (1990), Bourguignon et al. (1993), Browning et al. (1994), and Lundberg, Pollak, and Wales (1997). The income pooling hypothesis is universally rejected.

[2] Bargaining power is more stable to the extent that there is little friction in the marriage market. If there are serious frictions, inefficient marriages could be sustained.

predetermined before the marriage, for example, age gap, education gap, and premarital asset holdings, or else they are predictable to spouses during their dating period, for example, the wife's income share (Browning et al. 1994; Browning and Chiappori 1998; Beegle, Frankenberg, and Thomas 2001). The fact that these premarital factors continue to affect household decisions implies that spouses make a binding contract based on information available at the time of the marriage and the resulting initial balance of power between spouses persists over time. Using longitudinal data on individual-level private consumption from South Korea, I allow for time-constant unobserved power and test its significance on household decisions. Then I reexamine the income pooling hypothesis by testing whether within-marriage changes in relative income affect the balance of power and thereby the sharing rule. If such changes are fully anticipated, under the dynamic efficiency hypothesis, they should not affect bargaining power.

This article is therefore related to some recent theoretical developments to link the marital balance of power to the spousal matching process in the marriage market (Chiappori, Iyigun, and Weiss 2005; Iyigun and Walsh 2005). The premise of the so-called integrated collective model is that a marriage is a relationship into which a pair of individuals with different preferences sort themselves. In the marriage market, individuals choose their spouse to maximize the expected gains from marriage. As a result, the balance of power between spouses is endogenously shaped in the first place and will continue to form the basis of intrahousehold resource allocation. From this perspective, it is important to adequately identify the initial balance of power to understand joint household decisions.

The main novelty of this article is that I use a new measure of private assignable consumption—pocket money. It is culturally defined in South Korea as private expenditure that one can spend at one's own will. While pocket money does not account for a household's whole private consumption, as I will explain later, this category of consumption makes up a significant part of household expenditure. Therefore, the division of pocket money between spouses will give us a good approximation of the household's sharing rule. I observe the pocket money spending of each spouse over time, which provides an opportunity to test for the constancy of bargaining power in a dynamic setting.

In summary, the results indicate that the balance of bargaining power is constant over time. The income pooling hypothesis is strongly rejected using the pooled cross-section data. However, it is no longer rejected after accounting for unobserved household heterogeneity and time-constant bargaining power. The results suggest that relative earnings can proxy the long-term balance of

power to an extent that variation in relative earnings across households reflects endogenous spousal matching. For the sample of South Korean couples, the initial balance of power is robust to temporary changes in relative earnings even if they are unanticipated. Commitment to a sharing rule plays a significant role in marriage.

The remainder of this article is organized as follows. Section II presents a traditional collective household model in which relative earnings determine the sharing rule. Section III describes the empirical strategy for estimating the causal effects of relative earnings on the sharing rule. Section IV introduces data and shows some preliminary results. Section V presents the main results and the robustness checks, and Section VI concludes.

II. Conceptual Model

I first consider a general collective household model in which the sharing rule can be identified with two exclusive goods.[3] The model presented here is not new but draws on Bourguignon et al. (1993) and Browning et al. (1994). Consider a household with two decision makers (spouses), $i = h, w$, whose preferences are defined over his and her own private consumption (c_{il}), where $l = 1, \dots, L$. Assume that there is no public consumption.[4] Each spouse's utility function is $U_i = U_i(c_{il}, \dots, c_{iL} | X)$, where X is a set of observable preference factors. Once married, the spouses care for each other, so that their utility is given by $W_i[U_h, U_w]$. The collective household model assumes that spouses achieve a Pareto efficient allocation.[5] This assumption seems reasonable in that marriage is a long-term relationship with good information. Any solution on the Pareto frontier can be obtained by maximizing

$$\mu W_h[U_h, U_w] + (1 - \mu)W_w[U_h, U_w] \tag{1}$$

subject to the household budget constraint

$$\sum_{l=1}^{L} (c_{hl} + c_{wl}) \leq C, \tag{2}$$

where C represents the part of total income that is allocated for private con-

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[3] Exclusive goods can be thought of as individual consumptions of an assignable good (Browning et al. 1994).

[4] This omission is valid under the assumption that the preferences for private consumption are separable from the preferences for public consumption. The model can be extended to include public goods (Blundell, Chiappori, and Meghir 2005).

[5] Empirical findings on this assumption are mixed. Browning and Chiappori (1998) examine the assumption's testable implications for demand functions and support the validity of the assumption. However, Udry (1996) finds that farming households in Burkina Faso do not efficiently allocate production resources across household members.

sumption. Temporarily, I assume that C is exogenous. In the case in which there is no public consumption and the model is static, C equals the household's total income ($Y = y_b + y_w$), where y_i is spouse i's income. Therefore, the assumption is equivalent to the assumption that labor supply is exogenous.[6]

A solution to the above problem depends on a specific value of μ, which is called a distribution of power function, and individual preferences (Browning and Chiappori 1998). The value of μ is known to the spouses but is unknown to the econometrician. To understand the household's decision-making process, we need to identify the unknown μ. To do so, I assume that μ depends upon some observable distribution factors and unobserved relative power

$$\mu = \mu(\theta, Z, u), \tag{3}$$

where θ is a function of individual earnings, that is, $\theta = \theta(y_b, y_w)$. For example, when μ increases in θ, one may specify $\theta = y_b - y_w$ as the husband's relative earnings increase his power. A vector Z includes a variety of factors, such as the number of children and total earnings (Y). Finally, u represents the husband's unobserved relative power. It can be shown that, assuming "caring" preferences and Pareto efficiency, there exists a specific sharing rule, the rule of dividing total income between spouses, for a value of μ (Chiappori 1992; Browning et al. 1994). This is the consequence of the well-known two-stage budgeting procedure; first, total income is divided between spouses by a sharing rule, and then each spouse independently chooses the optimal consumption bundle subject to the individual budget constraint. The proof follows the Second Fundamental Welfare Theorem (Chiappori, Fortin, and Lacroix 2002). For a consumption good l, the solution can be represented by the following sharing rule:

$$c_{bl} = f_{bl}(Y, \mu(\theta, Z, u) \,|\, X) = f_{bl}(\phi(Y, \theta, Z, u, X) \,|\, X), \tag{4a}$$

$$c_{wl} = f_{wl}(Y, \mu(\theta, Z, u) \,|\, X) = f_{wl}(Y - \phi(Y, \theta, Z, u, X) \,|\, X), \tag{4b}$$

where ϕ is the husband's share of the income for private consumption, representing the sharing rule. Note that preference factors in X affect not only individual demand functions but also the income share directly. Some distribution factors in Z, such as number of children, could also be included in X, but I assume that earnings do not directly affect preferences for consumption

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[6] This is a strong assumption, in particular, because a married women's labor force participation is a critical household decision. Following Browning et al. (1994), I will check this assumption by restricting my sample to full-time working couples.

good *l*. Those variables in *Z* that affect preferences are no longer distribution factors.

Individual earnings affect the sharing rule in two ways—through θ and through total income (*C* or *Y*). This particular structure of the consumption function not only provides some testable restrictions for the collective household model but also allows us to identify the sharing rule. Suppose that we can identify two exclusive goods or individual consumptions of an assignable good.[7] The partial derivatives of individual consumptions with respect to y_b and y_w are as follows:

$$\alpha_b \equiv \frac{\partial c_{bl}}{\partial_{yb}} = \frac{\partial f_{bl}}{\partial \phi} \times \left[\frac{\partial \phi}{\partial Y} + \left(\frac{\partial \phi}{\partial \theta} \times \frac{\partial \theta}{\partial y_b}\right)\right], \tag{5a}$$

$$\beta_b \equiv \frac{\partial c_{bl}}{\partial y_w} = \frac{\partial f_{bl}}{\partial \phi} \times \left[\frac{\partial \phi}{\partial Y} + \left(\frac{\partial \phi}{\partial \theta} \times \frac{\partial \theta}{\partial y_w}\right)\right], \tag{5b}$$

$$\alpha_w \equiv \frac{\partial c_{wl}}{\partial y_b} = \frac{\partial f_{wl}}{\partial (Y - \phi)} \times \left\{1 - \left[\frac{\partial \phi}{\partial Y} + \left(\frac{\partial \phi}{\partial \theta} \times \frac{\partial \theta}{\partial y_b}\right)\right]\right\}, \tag{5c}$$

$$\beta_w \equiv \frac{\partial c_{wl}}{\partial y_w} = \frac{\partial f_{wl}}{\partial (Y - \phi)} \times \left\{1 - \left[\frac{\partial \phi}{\partial Y} + \left(\frac{\partial \phi}{\partial \theta} \times \frac{\partial \theta}{\partial y_w}\right)\right]\right\}. \tag{5d}$$

Suppose that these partial derivatives are consistently estimated. Then, first, we can test whether individual earnings change the sharing rule.[8] If earnings do not affect the sharing rule, that is, if $\partial \phi / \partial \theta = 0$, then we cannot reject that $\alpha_b = \beta_b$ and $\alpha_w = \beta_w$, which is called the income pooling hypothesis in the literature. As I mentioned, this article examines whether individual incomes matter even after accounting for the unobserved power in μ.

Second, if the income pooling hypothesis is rejected for both spouses, assuming a certain functional form of θ, we can identify the sharing rule up to an additive constant. Note that the above system of equations consists of the four unknowns, $\partial f_{bl}/\partial \phi$, $\partial f_{wl}/\partial (Y - \phi)$, $\partial \phi / \partial Y$, and $\partial \phi / \partial \theta$. The last two terms

[7] If we can identify all private consumptions, then it will be trivial to identify the sharing rule. In my data, I know individual consumptions of a single assignable good, i.e., pocket money, but I do not assume that pocket money accounts for the household's whole private consumption.

[8] I cannot test the proportionality restrictions using individual earnings because they affect total income as well as the sharing rule. For the distribution factor proportionality test, we need at least two pure distribution factors (Chiappori, Fortin, and Lacroix 2002).

are of particular interest, First, $\partial\phi/\partial\theta$ represents the marginal effect on the sharing rule of the distribution factor that depends on individual earnings. If θ is increasing in y_h and decreasing in y_w, then an increase in the husband's relative earnings will increase his own share and the sign of the derivative should be positive. Second, $\partial\phi/\partial Y$ measures the marginal effect of total income on the husband's share, holding θ constant. By definition, it must lie between 0 and 1. The value of 0.5 implies that any additional amount of total income would be split equally between spouses.

We can extend the traditional model to a dynamic model where we need to take into account additional household decisions such as intertemporal substitution of consumption and savings (see, e.g., Aura 2004; Lich-Tyler 2004; Mazzocco 2006). One simple modification is that C is different from Y by savings, which depend on μ because spouses have potentially different preferences, such as a discount factor or risk aversion. In this case, however, as Mazzocco (2006) shows, if there is no feedback effect of savings on the decision power and once C is decided, the problem of deciding individual consumptions is equivalent to the static maximization problem. But the identification results presented here should be modified since there are two different kinds of bargaining over individual consumptions and household savings. The marginal effect of total income should include an intermediate effect of total income on household savings (and thereby consumption). And, more important, the marginal effect of relative earnings on the sharing rule should consist of the intrahousehold distribution effect as well as the intertemporal substitution effect, because a spouse's power changes household savings (and thereby current consumption).

For the purpose of this article, an important implication of such a dynamic household model is that, if spouses can commit at the time of household formation and they achieve intertemporal efficiency, the distribution of power function, μ, must depend only on variables known or predicted at the time of marriage (Mazzocco 2006). Therefore, under the dynamic efficiency hypothesis, μ should not change by within-marriage changes in relative earnings as long as they are anticipated. The initial balance of power, which is unobservable to the econometrician and therefore subsumed under u, should incorporate all information available upon marriage. However, in a cross-sectional setting without accounting for the existence of a sharing rule that spouses set up in the beginning, we are likely to reject the income pooling hypothesis as long as relative earnings at a certain time are correlated with the unobserved initial bargaining power.

The existence of time-constant bargaining power is relevant to the integrated

collective model (Chiappori et al. 2005; Iyigun and Walsh 2005). While the traditional model is silent with regards to why two individuals with different preferences choose to form a household, the new approach extends the traditional model to cover spousal matching in the marriage market. As such, the integrated approach begins with the standard premise that individuals choose their spouse optimally to maximize their expected gains from marriage. Then, a sharing rule is associated with a specific spousal match and, once married, the sharing rule continues to form the basis of resource allocation. It is shown that there exist Pareto efficient intrahousehold resource allocations across households when spousal matching is optimal and the marriage market is cleared.[9]

The integrated model implies that relative spousal earnings should be treated as endogenous since an individual's lifetime earning power is one of the most important determinants for spousal matching in the marriage market. As a result, relative spousal earnings might as well be endogenously chosen by the same procedure that governs intrahousehold resource allocation. Any observed relationship between relative earnings and intrahousehold allocations across households is likely to reflect at least in part the pattern of spousal matching. A test of the income pooling hypothesis on cross-sectional data without considering the existence of the initial balance of power into which spouses self select is likely to be biased.

III. Empirical Strategy

In this section, I take a simple case of the previous section's general model to derive an estimable demand function. Assume that there are only two goods, good 1 and good 2. Let good 1 represent an empirically assignable good—pocket money. The price of pocket money is normalized to one, and the relative price of good 2 is p. Assume that spouses have the same additive constant absolute risk aversion (CARA) preferences. That is, spouse i's utility function is

$$U_i = -\frac{1}{\sigma}\exp(-\sigma c_{1i}) - \frac{1}{\sigma}\exp(-\sigma c_{2i}). \tag{6}$$

The household maximizes $\mu U_h + (1 - \mu)U_w$ subject to $c_{1h} + pc_{2h} + c_{1w} + pc_w \leq Y$. All notations are the same as in the previous section. Assuming interior

[9] Iyigun and Walsh (2005) also show that, when spousal matching and the sharing rule are determined by premarital investments, there exist Pareto efficient investments and intrahousehold allocations.

solutions, we obtain the following spousal demand functions for pocket money (good 1):

$$c_{1b} = \frac{1}{2(1+p)}Y + \frac{p}{\sigma(1+p)}\ln p + \frac{1}{2\sigma}\ln\frac{\mu}{1-\mu}, \tag{7a}$$

$$c_{1w} = \frac{1}{2(1+p)}Y + \frac{p}{\sigma(1+p)}\ln p - \frac{1}{2\sigma}\ln\frac{\mu}{1-\mu}. \tag{7b}$$

In this simple example, the role of relative bargaining power is clear in that a portion of total income, $(1/2\sigma)\ln(\mu/1-\mu)$, is transferred between spouses in terms of pocket money. It is also shown that the income pooling hypothesis should not be rejected if we remove the last term including μ. Finally, I specify the distribution of power function as

$$\mu = \frac{\exp(\pi_1 y_b - \pi_2 y_w + Z\pi_3 + u)}{1 + \exp(\pi_1 y_b - \pi_2 y_w + Z\pi_3 + u)}. \tag{8}$$

Thus $0 < \mu < 1$. If a spouse's earnings increase his or her relative power, both π_1 and π_2 should be positive. Plugging the distribution of power function into the demand functions, we obtain:

$$c_{1b} = \left[\frac{1}{2(1+p)} + \frac{\pi_1}{2\sigma}\right]y_b + \left[\frac{1}{2(1+p)} - \frac{\pi_2}{2\sigma}\right]y_w$$
$$+ \frac{1}{2\sigma}Z\pi_3 + \frac{p}{\sigma(1+p)}\ln p + \frac{u}{2\sigma}, \tag{9a}$$

$$c_{1w} = \left[\frac{1}{2(1+p)} - \frac{\pi_1}{2\sigma}\right]y_b + \left[\frac{1}{2(1+p)} + \frac{\pi_2}{2\sigma}\right]y_w$$
$$+ \frac{1}{2\sigma}Z\pi_3 + \frac{p}{\sigma(1+p)}\ln p - \frac{u}{2\sigma}. \tag{9b}$$

Two things are notable. First, if individual earnings affect the distribution of power function ($\pi_1 \neq 0$ or $\pi_2 \neq 0$ or both), the income pooling hypothesis should be rejected. Second, however, if the unobserved power (u) is correlated with individual earnings, a test of the income pooling hypothesis is likely to be biased. In particular, without accounting for correlation between u and individual earnings, the effects of one's earnings on his or her own consumption will be upward biased while the effects of his or her partner's earnings will

be downward biased. Therefore, even if $\pi_1 = \pi_2 = 0$, we could falsely reject the income pooling hypothesis.

This simple model guides us to specify our empirical equation, in particular showing that the unobserved power can be represented by an additive spouse-specific term. I can treat u as a fixed effect according to the hypothesis that the unobserved bargaining power is constant over time within a marriage. Under the dynamic efficiency hypothesis, unobserved power incorporates any anticipated change in relative earnings. In the extreme case with no unanticipated shock in relative earnings, we have $\pi_1 = \pi_2 = 0$, so the income pooling hypothesis should not be rejected after accounting for u. In this article, I estimate the above equations using longitudinal data on private consumptions (pocket money). To my knowledge, there is no other study that uses longitudinal data on private consumptions to examine intrahousehold resource allocation from the perspective of the collective household model. Most studies using longitudinal data have used total consumption (e.g., Lich-Tyler 2004; Mazzocco 2006).

In the spirit of the above model, I estimate for each spouse i the following:

$$c_{ift} = \alpha_i y_{hft} + \beta_i y_{wft} + W_{ft\gamma i} + T_t \delta_i + F_f + u_{if} + e_{ift}, \tag{10}$$

where the dependent variable c_{ift} is average monthly pocket money of spouse i in household f in year t,[10] the individual good subscript l is omitted, and W_{ft} is a vector of spouse or household characteristics, including education, age, number of children, and residential location.[11] A set of yearly dummy variables (T_t) is included to represent spouse-specific time trends. They capture any price effect since there is no variation in price across households.

The advantage of the specification, while restricting the functional form, is to allow for unobserved heterogeneity in a comprehensive way. First, F_f represents a household-specific fixed effect, which is supposed to capture any omitted time-constant household-common characteristic. The rationale behind this term is that, as spouses are more individualistic, private consumption would increase for both spouses. In the sample that I will use, private consumption is significantly and positively correlated between spouses even after

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[10] In an earlier version of this article, I used the natural logarithm of pocket money as the dependent variable. The results were similar.

[11] I do not distinguish empirically preference factors (variables in X) and distribution factors (those in Z) to avoid any arbitrary exclusion restriction. Browning et al. (1994), e.g., find that the age gap between spouses affects the balance of power but not preferences. Both Browning et al. (1994) and Browning and Chiappori (1998) exclude the between-spouse difference in log earnings from X (preference factors) as a pure distribution factor.

controlling for total income. Without accounting for this household-level heterogeneity, both α_i and β_i are likely to be upwardly biased.

More important, the specification allows for an individual spouse-specific fixed effect (u_{if}). The main rationale for including this term is the existence of a long-term balance of power between spouses, which is probably formed at spousal matching and therefore unobserved to the econometrician.[12] However, as an individual-specific fixed effect, it might capture any omitted time-constant individual characteristic. Therefore, I will examine whether this fixed-effect term represents, among others, the time-constant unobserved bargaining power by examining the correlations between the fixed effect and some variables that are believed, in the literature on household bargaining, to be distribution factors. The theoretical model restricts $u_{hf} = -u_{wf}$, but I do not empirically impose this considering the possibility of specification error. Finally, e_{ift} is a pure error term and is independently and identically distributed over time across spouses and households.

The use of longitudinal data allows us to remove unobserved heterogeneity. I transform equation (10) into

$$\ddot{c}_{ift} = \alpha \ddot{y}_{hft} + \beta \ddot{y}_{wft} + \ddot{W}_{ft\gamma i} + \ddot{e}_{ift}, \tag{11}$$

where double dots denote a within transformation. By estimating equation (11), I can test the income pooling hypothesis consistently in a dynamic setting. The identification assumption is that individual earnings are uncorrelated with the error term after the within transformation. A disadvantage of the fixed-effects estimation is that we cannot differentiate u_{if} from F_f because they are removed at the same time. Fortunately, the differentiation can be achieved by estimating a between-spouse difference equation. Take the difference between spouses; then we have

$$\Delta c_{ft} = \Delta\alpha y_{hft} + \Delta\beta y_{wft} + W_{ft}\Delta\gamma + \Delta u_f + \Delta e_{ft}, \tag{12}$$

where Δ represents the difference between spouses. Note that F_f is removed but that u_{if} remains in the form of the first difference. The difference term can be interpreted as the husband's unobserved relative bargaining power. According to the model, it should be u/σ.

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[12] The specification resembles Frisch demand functions except that, in the current model, private consumption will depend on spouses' earnings if they affect bargaining power. I appreciate that an anonymous referee pointed this out. Frisch demand functions provide an alternative interpretation that the individual-specific fixed effect represents the marginal utility of wealth in the unitary context. Browning, Deaton, and Irish (1985) find that household income is significant in the demand function with the fixed effect, a result that does not support the theory of life cycle optimization under full anticipation.

The ordinary least squares (OLS) estimates for equation (12) are potentially biased due to $\Delta\varepsilon_f$. We can estimate it consistently by applying the standard fixed-effects estimation method:

$$\Delta\ddot{c}_{ft} = \Delta\alpha\ddot{y}_{hft} + \Delta\beta\ddot{y}_{wft} + \ddot{W}_{ft}\Delta\gamma + \Delta\ddot{e}_{ft}. \tag{13}$$

Comparing equations (12) and (13), I can implement two additional tests. First, any difference between the OLS and fixed-effects estimates must be ascribed to the correlation between explanatory variables and the remaining fixed effect (Δu_f). Among other matters, it would be interesting to see how the coefficients on individual earnings change after controlling for the husband's unobserved bargaining power. If earnings are significantly correlated with the time-constant unobserved bargaining power, it suggests that relative spousal earnings should be endogenously chosen along with the sharing rule when spouses self-select into the marriage.

Second, I can explicitly estimate the husband's unobserved relative power. To my knowledge, this is the first attempt to estimate the unobserved power after partialing out unobserved heterogeneity at the household level. Dercon and Krishnan (2000) estimated the unobserved relative Pareto weights in household allocation, but they did not take into account unobserved heterogeneity across households.

IV. Data and a Preliminary Test

A. Data Source and Sample

The data used in this study are from the Korean Household Panel Study (KHPS). The KHPS is the first panel survey on Korean households. It is conducted by the Daewoo Research Institute and is designed to be similar to the Panel Study of Income Dynamics (PSID). The data are available for the period 1993–98. My sample spans the last 4-year period over which information on private consumption (pocket money) is available. To ensure the homogeneity of the sample, I drop observations if spouses are living separately, household heads are female, or husbands are not working. I also restrict the sample to young households in which the wife was younger than age 41 in 1995. There are two reasons for this age restriction: first, age-group cohorts are different in Korea's rapidly changing society in both measurable and unmeasurable ways; second, labor earnings are presumably the most important source of household income for these young couples. By contrast, intrahousehold resource allocation for old couples would be affected by many complicating factors other than their earnings, such as unearned financial incomes and supportive transfers from adult children. Finally, observations are deleted if

TABLE 1
DESCRIPTIVE STATISTICS OF CRUCIAL VARIABLES

	1995	1996	1997	1998
Husband's age	36.33	37.02	37.72	38.40
	(4.71)	(4.85)	(5.09)	(5.70)
Husband's education	12.66	12.64	12.70	12.61
	(2.63)	(2.64)	(2.66)	(2.62)
Husband's monthly earnings	1.68	1.89	1.97	1.65
	(.94)	(1.06)	(.94)	(.98)
Husband's weekly hours worked	60.82	60.03	58.21	58.67
	(19.98)	(19.11)	(18.68)	(18.96)
Husband's monthly pocket money	19.87	21.27	21.42	16.62
	(17.93)	(20.92)	(18.80)	(11.95)
Wife's age	32.91	33.65	34.35	35.06
	(4.01)	(4.31)	(4.48)	(4.96)
Wife's education	11.82	11.83	11.87	11.83
	(2.28)	(2.30)	(2.32)	(2.27)
Wife's monthly earnings	.15	.26	.27	.25
	(.39)	(.57)	(.55)	(.52)
Wife's weekly hours worked	15.21	15.26	16.60	13.88
	(28.44)	(25.92)	(26.89)	(27.96)
Wife's monthly pocket money	6.66	7.52	7.88	6.33
	(5.90)	(7.10)	(7.14)	(6.44)
Number of children	1.81	1.86	1.88	1.90
	(.70)	(.69)	(.73)	(.77)
Metropolitan cities	.56	.56	.56	.55
	(.50)	(.50)	(.50)	(.50)
N	1,297	1,212	1,136	966

Note. Standard deviations are displayed in parentheses. Monthly earnings are in million Korean won, and pocket money is in 10,000 won.

there is any missing value for crucial variables. The final sample is an unbalanced panel, consisting of 4,611 observations on 1,393 couples over 4 years.

Table 1 presents the descriptive statistics. Since the data for Korea are likely to be unfamiliar to most readers, I examined the descriptive statistics for the major variables to check for consistency with other national statistics from various sources. Average monthly household earnings were roughly 1.83 million Korean won in 1995, 2.24 won in 1997, and 1.90 won in 1998 (approximately $1,400, $1,730, $1,450, respectively), and they accord well with other national statistics. For instance, the National Survey of Household Income and Expenditures (NSHIE), a cross-sectional household expenditure annual survey, shows that the average income of a household whose head was neither self-employed nor unemployed was 1.64 million Korean won in 1995, 1.94 in 1997, and 1.82 in 1998. Family earnings in my sample are slightly larger because young couples are more likely to live in urban areas and residents in metropolitan areas are a bit oversampled. In my sample, about 30% of households live in Seoul and about 25% live in five big cities other than the capital city, Seoul. According to the 1995 population census, 23% of the population

live in Seoul and 24.9% of the population live in the five other metropolitan cities.

Women's wage rates are lower than men's, and the majority of married women in paid work are employed on a part-time basis.[13] It is very unusual for a wife to earn as much as her husband. The gender earnings gap was the highest of all the OECD member countries during the mid- and late 1990s. Surprisingly, men's weekly working hours are about 60—well above statutory weekly working hours. This seems extraordinarily high. This is partly because the sample includes the self-employed, who usually work longer than wage workers. National statistics show that the average working hours for wage and salary workers were 50 hours per week in 1995.

By contrast, women's working hours are low (on average 15 hours a week), which reflects the low labor force participation of married women. It was about 48% in 1995. The low female labor market participation rate does not seem to arise because of high fertility. The average number of children per household in the sample is about 1.8, which is consistent with other nationally representative statistics (about 1.65 children).[14] Rather, the contrast between men and women in labor market activities seems to reflect a strong degree of specialization and division of labor between spouses.

B. Pocket Money

The most crucial variable is individual spending on pocket money. It should be noted here that pocket money is not a negligible part of household expenditure. It accounts for about 12%–15% of total earnings, only slightly smaller an amount than food and beverages (about 16%–17%) and a similar amount to education (about 11%). In the survey, the question is simply asked "How much do you spend as pocket money in a month?" without the exact definition being provided. This is because the definition is culturally obvious and widely shared among people. In a Korean dictionary, *pocket money* is defined as the amount of money that people can spend at their own will. In everyday life, people frequently use the term to indicate their own spending power.

It is important to note that people in South Korea would not consider household common expenditures, such as food, housing, or expenditure for

[13] The average increase of wives' monthly earnings between 1995 and 1996 seems too large. I examined the distribution of earnings and found that the lower part of the distribution was improved. Since I could not find a good explanation for this increase, I tried to use the subsample without 1995. The results, presented below, change little.

[14] Although fertility is low, parental concerns about child quality, such as educational attainment and future earnings, are generally high in South Korea. As a result, the low female participation rate might reflect the fact that women would invest more time for children as they are more concerned about the quality of children.

TABLE 2
INEQUALITY MEASURES OF POCKET MONEY

	Households (A)	Individuals (B)	Underestimate $(1 - A/B)$ (%)
Mean (10,000 Korean won)	13.53	13.53	
Coefficient of variation (I_1)	.766	1.112	31.12
Gini coefficient (I_2)	.346	.467	25.90
Log variance (I_3)	.642	.927	30.75
Relative mean deviation (I_4)	.247	.349	29.25

Note. Let C_{ift} denote monthly spending of pocket money of spouse i in household f at year t. Observation x is C_{ift} at the individual level and $1/2 \sum_{i=h,w} C_{ift}$ at the household level.

children, as pocket money. Rather pocket money includes the spending for individualistic personal purposes. It is close to the definition of private assignable consumption. According to informal surveys, people usually spend pocket money on private items, such as recreation, a hobby, alcoholic beverages, and tobacco. Also, since it is spent for individualistic purposes, it is documented that spouses sometimes disagree with each other regarding pocket money. The allocation of pocket money is one of the most important issues in household bargaining. The cultural connotations of pocket money explain why the survey asked about this consumption category at the individual level rather than at the household level.

Having some information on private consumption, it is interesting to see how serious the neglect of intrahousehold inequality is for the measurement of general inequality. Following the approach of Haddad and Kanbur (1997), I calculate inequality measures at both the household level and the individual level. At the household level, I pretend to have only the data on total household spending of pocket money and take household averages to measure inequality. Table 2 shows the results. For every measure, inequality is underestimated when we only exploit the household level data. The understatement is substantial, ranging from 26% to 31%. The magnitude is similar to the understatement found by Haddad and Kanbur (1997) when they used data on individual calorie intake.[15]

C. Are Couples Different from Singles?

I first test whether the predictions of the unitary model hold for singles. This is necessary because rejecting the unitary model might be a consequence of a general failure of economic theory (Lundberg and Pollak 1996). Otherwise,

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[15] These measures of inequality using individual consumptions have some limitations for measuring welfare inequality. For example, if women substitute their own private consumption with public consumption and the marginal rate of substitution is greater for women, then the measures should overstate welfare inequality.

by definition, the unitary model must hold for singles. I follow the approach of Browning and Chiappori (1998). Their key idea is that, if the unitary model is correct, then individual earnings should not directly affect private consumption once the latter is conditioned on total expenditure. In other words, when we regress private consumption on earnings variables, there should be no independent effect of individual earnings after controlling for total expenditure. Since income variables such as total income and individual members' earnings are strongly correlated with total expenditure and do not directly affect private consumption, those variables should be valid instruments for total expenditure. The validity of instrumental variables can be tested if there are overidentifying restrictions.

Another useful result can be obtained from testing for overidentifying restrictions for singles and married couples. Suppose that higher-paid jobs or occupations (either higher wage rates or longer working hours) lead to more expenses and therefore require more spending of one's pocket money.[16] Similarly, Browning et al. (1994) test for whether higher-paid jobs require more expensive work clothing. This seems reasonable in our context because pocket money can be considered as socialization costs. The individual earnings will directly enter the expenditure equation for pocket money even if we make it conditional on total expenditure and other individual characteristics. We can check this by comparing married couples with singles because this story applies to both groups. The exclusion restriction of earnings variables should be rejected for both singles and married couples if the components of earnings, that is, wage rate and working hours, directly affect pocket money.

Table 3 shows the results of Hansen's J test for singles and married couples. I regress the natural logarithm of pocket money on total expenditure and a set of control variables. For singles, I include age, education, metropolitan residence, number of other family members, and three yearly dummies. Total expenditure is treated as endogenous and instrumented by income variables: monthly earnings and its squared term. For married couples, I include the spouses' ages, education, number of family members other than spouses, metropolitan residence, and three year dummies. The instruments for total expenditure are the husband's and wife's monthly earnings. There is one overidentifying restriction for both singles and couples.

The results for both married men and women are not consistent with the unitary model. The overidentifying restriction is rejected at any reasonable

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[16] For singles there is no distinction between private and public consumption. Thus pocket money for singles is a generic term for indicating certain consumption items. The categorical definition is the same for singles and married couples.

TABLE 3
SINGLES VERSUS MARRIED COUPLES, TWO-STAGE LEAST SQUARES ESTIMATION

	Single		Married	
	Men	Women	Husbands	Wives
Monthly consumption	.597	.415	.543	.454
	(.141)	(.083)	(.045)	(.042)
Own age	.017	.025	−.003	−.007
	(.008)	(.008)	(.005)	(.006)
Own education	.024	.033	.018	.037
	(.017)	(.016)	(.008)	(.009)
Number of other family members	−.170	−.098	−.057	−.197
	(.037)	(.030)	(.021)	(.024)
Hansen's *J*-statistic	.475	.227	9.410	24.00
p-value	.491	.634	.002	.000
N	896	800	4,588	4,588

Note. Robust standard errors are in parentheses, corrected for multiple observations by clustering. Yearly dummies and metropolitan residence are included for both singles and married couples. Spouse age and education are included for married couples. Other family members include children. Instrumental variables are own earnings and its squared term for singles and own earnings and spousal earnings for couples. Monthly consumption is missing for 23 couples.

significance level. This implies that individual earnings directly affect couples' expenditure on pocket money. However, we cannot reject the overidentifying restriction for singles (*p*-value is 0.49 for men and 0.63 for women). We conclude that the data for singles are consistent with the unitary model.[17]

V. Empirical Results
A. Fixed-Effect Estimation
Table 4 presents main results. The OLS estimates in columns 1 and 2 show that pocket money significantly increases in one's own earnings as well as in the partner's earnings. The effects are highly asymmetric. One's consumption of pocket money is more responsive to his or her own earnings than to the spouse's earnings. A husband's pocket money increases by about 67,000 won (about 33% of the average) in response to a unit increase (1 million won, which amounts to 60% of the average monthly labor income) in his own earnings, while it only increases by 27,000 won in response to the same increase in the wife's earnings. The equality between α_h and β_h is strongly rejected (*p*-value < 0.01), which puts in question the hypothesis that spouses pool their incomes. Likewise, the wife's pocket money is more sensitive to her own earnings than to her partner's earnings. Also, the equality between α_w and β_w is rejected at any significance level.

The next two columns (3 and 4) show results from the full specification

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[17] It is interesting that the presence of other family members decreases private consumption for both single men and women. However, for married couples, it decreases only women's private consumption.

TABLE 4
FIXED-EFFECT MODELS AND BETWEEN-SPOUSE DIFFERENCE EQUATIONS

	Husbands (1)	Wives (2)	Husbands (3)	Wives (4)	Husbands − Wives (5)	Husbands − Wives (6)
Husband's earnings	6.666	1.221	3.876	.828	5.646	3.047
	(.626)	(.212)	(.364)	(.141)	(.611)	(.375)
Husband's age	−.007	.101				
	(.094)	(.034)				
Husband's education	.159	.095				
	(.110)	(.046)				
Wife's earnings	2.785	3.844	2.021	2.042	−.961	−.020
	(.521)	(.441)	(.674)	(.260)	(.636)	(.693)
Wife's age	.069	.014				
	(.114)	(.038)				
Wife's education	.696	.379				
	(.133)	(.059)				
Number of children	.364	−1.053	−.603	−1.218	1.045	.615
	(.347)	(.148)	(.844)	(.326)	(.305)	(.868)
Metropolitan residence	2.091	.040	.549	.143	1.973	.405
	(.501)	(.183)	(2.376)	(.917)	(.486)	(.443)
Year 1996	−.347	.164	.425	.555	−.577	−.130
	(.701)	(.242)	(.570)	(.220)	(.699)	(.586)
Year 1997	−.856	.323	.739	1.062	−1.272	−.323
	(.732)	(.245)	(.604)	(.233)	(.720)	(.621)
Year 1998	−3.457	−.817	−2.083	−.107	−2.717	−1.976
	(.595)	(.244)	(.655)	(.253)	(.582)	(.674)
Constant	−5.865	−3.897	13.445	6.958	.853	6.487
	(2.582)	(1.141)	(2.107)	(.813)	(1.275)	(2.166)
Household FE	No	No	Yes	Yes	Yes	Yes
Spouse FE	No	No	Yes	Yes	No	Yes
R^2	.175	.175	.160	.136	.113	.027
Income pooling	.000	.000	.046	.057		
$\partial\phi/\partial\theta$	.229		.180			
$\partial\phi/\partial Y$	.558		.573			

Note. Robust standard errors are in parentheses. For the income pooling hypothesis, p-values are presented. $\partial\phi/\partial\theta$ and $\partial\phi/\partial Y$ are identified under the assumption of $\theta = y_h - y_w$.

(eq. [11]). The effects of education are removed by the within transformation, and the effects of age are subsumed to the constant term. After controlling for the household- and spouse-specific fixed effects, the effects of earnings on pocket money expenditure are substantially weaker than what we found from the OLS regressions. I still find that pocket money is more responsive to one's own earnings than to the partner's earnings. However, the income pooling hypothesis is only marginally rejected (p-value is 0.046 for husbands and 0.057 for wives).

Table 4 also presents results for the between-spouse difference equation (eqq. [12] and [13]). Only the household-specific fixed effect is removed in column 5, and both the household-and spouse-specific fixed effects are removed in column 6. The Hausman test strongly rejects the consistency of the estimates

in column 5 (p-value < 0.01). This is consistent with the hypothesis that the husband's unobserved bargaining power plays a significant role in determining private consumption and that the marital balance of power is quite stable within a marriage, although there could be an alternative explanation based on correlations between earnings and unobserved individual preferences.

As explained, any difference in the estimates between the two columns must be ascribed to the existence of the husband's unobserved relative power. The estimates show that unobserved bargaining power is positively correlated with the husband's earnings and negatively correlated with the wife's earnings. This implies that the husband's relative power that favors his private consumption would depress the wife's earnings (perhaps her labor market activities). This finding is consistent with the fact that a man considers his pride hurt if his wife goes out to work, particularly in developing countries (Basu 2006) or that men in Asian countries prefer the traditional sexual division of labor between housework and work outside the home (Antecol 2003). Browning et al. (1994) note that the balance of power might as well be determined by social norms such as prohibitions on women working outside the home, particularly in developing countries. The 1998 Korean General Social Survey also shows that about 76% of adult men disagree that women can continue to have a job once they are married. People would sort themselves into marriages based on attitudes toward the spousal division of labor and their (in particular, the woman's) preferences for labor market activities.

Other findings are consistent with prior expectations. I find that having children decreases parents' private consumption. This negative effect is reasonable since children not only divert household resources from private to public consumption but also make the household budget tighter. However, it is interesting to see that such a negative effect is apparent only for women. There is no effect on the father's pocket money. This is in accord with the previous finding that women are more concerned about children's education or health than are men (Thomas 1990). Second, pocket money expenditure significantly decreased in 1998 with the financial crisis that started in December 1997. This seems reasonable when we consider that household total earnings decreased on average by 15% in 1998.

I identified the partial derivative of the sharing rule with respect to relative earnings using (5a)–(5d). With the estimates for the coefficients (α_i's and β_i's), the system of equations can be solved under weak regularity conditions. As mentioned, we have to restrict the functional form of θ. In this article, I experiment with two measures of relative earnings: $\theta = y_h - y_w$ and $\theta = y_h/Y$. I find, after controlling for unobserved bargaining power, that relative spousal earnings only weakly affect the sharing rule. It is interesting that we

end up with the same result for both measures of relative earnings: a 50% increase in the husband's contribution to total earnings induces about 18% of budget transfer to his own share of total consumption. That is, ϕ/Y increases by 0.18. Using the OLS estimates, the effect is larger (23%) and statistically significant. The effect using the fixed-effects estimates is, however, not statistically significant since the income pooling hypothesis is not rejected. This finding is quite consistent with that of Browning et al. (1994). For Canadian full-time working couples, Browning et al. found that a 50% increase in the wife's relative earnings raised her share of consumption by only 2.3%.

I also identified the partial derivative of the sharing rule with respect to total earnings. I find that an increase in total earnings favors the husband's share. Using y_h/Y as a measure of relative earnings, we find that a 1 dollar increase in total earnings, holding relative earnings constant, increases the husband's share by about 71 cents. Using $y_h - y_w$, the magnitude gets smaller, to 57 cents, but it still favors the husband. Other things being equal, women in low-income households should control a larger share of total household income than those in high-income households. This finding is in contrast to the findings of Browning et al. (1994). Using total expenditure rather than total earnings, Browning et al. found a favorable effect of total expenditure on the wife's share. In South Korea, unlike in Canada, gender inequality within households seems to be worse among high-income households.

As noted above, we explicitly estimate the husband's unobserved relative bargaining power, differentiated from unobserved heterogeneity at the household level from the difference equation. To check whether the fixed effect mainly captures the unobserved power as shown in the model, I examine the relationships between the fixed effects and some variables that might constitute the husband's relative bargaining power as suggested in previous research. One thing to be noted here is that, because the estimated unobserved bargaining power is constant within marriage, we can exploit only cross-sectional variation across households. Keeping that caveat in mind, I find in table 5 that the sex ratio in the local marriage market decreases men's power in marriage. The sex ratio is the number of men per 100 women between age 25 and age 49; in the literature, this has often been used as a distribution factor. The sex ratio, however, matters only if the divorce rate is high enough. Also, a high divorce rate favors wives only if the sex ratio is not too low. The findings suggest that women are better off if their alternative opportunities outside of marriage are negatively correlated with the husband's relative bargaining power. This is consistent with the cooperative bargaining model in which extrahousehold environmental parameters affect the balance of bargaining power within marriages (McElroy and Horney 1981; Chiappori et al. 2002).

TABLE 5
HUSBANDS' RELATIVE BARGAINING POWER

	Mean	(1)	(2)	(3)	(4)
Sex ratio	104.8	−.193	.273	−.187	.386
	[3.597]	(.101)	(.358)	(.105)	(.366)
Divorce rate	1.864	−1.081	25.94	−1.164	32.09
	[.413]	(.450)	(18.07)	(.520)	(18.57)
Sex ratio × divorce rate			−.257		−.317
			(.174)		(.179)
Age gap	3.404			−.128	−.125
	[2.724]			(.143)	(.142)
Average age	35.87			.084	.080
	[4.458]			(.112)	(.111)
Education gap	.817			−.118	−.108
	[2.098]			(.151)	(.151)
Average education	12.21			.610	.615
	[2.250]			(.161)	(.161)
Living with husband's parents	.090			1.536	1.527
	[.286]			(1.277)	(1.274)
Living with wife's parents	.005			−3.360	−3.204
	[.067]			(1.596)	(1.625)
Children under age 7	.585			.760	.774
	[.493]			(.842)	(.842)
Constant		22.29	−26.73	11.382	−48.83
		(10.64)	(37.30)	(12.801)	(39.45)
R^2		.004	.004	.018	.018

Note. Robust standard errors are in parentheses, corrected for multiple observations by clustering. Standard deviations are in brackets. Divorce rate is defined as the number of divorces per 1,000 people (the crude divorce rate). Sex ratio is the number of men per 100 women.

Other individual characteristics also affect unobserved power. I find, for example, that women are relatively stronger in bargaining power among higher-educated couples, while the spousal gap in education does not matter. Interestingly, living with the wife's parents is negatively correlated with the husband's power. This seems reasonable since parents might support their daughter more monetarily and emotionally when they live together. Also, it is consistent with the fact that married couples live with the wife's parents in Korea mostly when the husband is economically incapable of providing adequate support.[18] In contrast, living with the husband's parents does not change the balance of power significantly. This is because supporting the husband's old parents is socially required for the eldest son rather than an outcome of bargaining between spouses. Spouses' age and the presence of young children do not affect the unobserved time-constant power.

[18] The residential choice is likely to be endogenous. The results here cannot be interpreted as being causal.

B. Robustness Checks

Until now I have assumed that individual earnings are exogenous with regard to pocket money spending after controlling for the household- and spouse-specific fixed effects. In this subsection, I check the validity of this assumption and also the robustness of my previous results.

First, I exploit exogenous variation in individual earnings due to a macroeconomic crisis. As is well known, the financial crisis that erupted in Thailand in July 1997 developed into a regional financial distress in Asia. After the exchange rate collapse of December 1997, the South Korean economy experienced its most severe recession in 30 years. Output growth plunged to -5.8%, and unemployment more than tripled. This macroeconomic crisis changed relative earnings within households as people, particularly men, were laid off or accepted wage decreases. In the sample, husbands' earnings on average decreased by 16%, while wives' earnings dropped by about 7%. The gender asymmetry occurred in part due to low female labor force participation before the crisis and in part because male-dominant industries, such as manufacturing, were most affected by the crisis. Since the impacts of the crisis were unanticipated as well as severe, it seems reasonable to assume that variation in earnings between 1997 and 1998 is exogenous to individual households.[19]

I ran the same regressions on the 2-year subsample of couples in 1997 and 1998.[20] For this time period, any within-marriage variation in earnings comes from changes in earnings before and after the crisis. The results in table 6 are similar to those I obtained before. The OLS estimates overestimate the marginal effects of own earnings on pocket money. The omission of unobserved bargaining power severely biases the estimates. The results from the difference equation confirm that the husband's unobserved bargaining power is positively correlated with his own earnings and negatively correlated with the wife's earnings. The results are surprising in that there exists a stable balance of power robust to transitory changes in relative earnings even if they are unanticipated. The specification without the spouse-specific fixed effect is strongly rejected against the full specification.

As before, I recovered the partial derivatives of the sharing rule. Using the OLS estimates, I find that the marginal effect of the husband's relative earnings on his relative share is significantly positive. A 50% increase in the husband's

[19] This empirical strategy is motivated by Wolpin (1982) using random weather (rainfall) to measure unexpected transitory changes in income.

[20] This article focuses on the short-run impacts of the crisis. To be precise, I estimate the effects of unexpected changes in relative earnings on intrahousehold allocations given a long-term structure of bargaining power. However, in the long run, the crisis could change the structure of bargaining power itself, for example, by changing the dynamics of the marriage market.

TABLE 6
ROBUSTNESS CHECKS

	Husband (1)	Wife (2)	Husband (3)	Wife (4)	Husband − Wife (5)	Husband − Wife (6)
	A. Natural Experiment of the Asian Financial Crisis					
Husband's earnings	5.550	1.525	2.390	1.000	4.346	1.391
	(.731)	(.429)	(.629)	(.288)	(.740)	(.662)
Wife's earnings	1.972	4.241	2.301	2.021	−2.072	.280
	(.658)	(.709)	(1.159)	(.530)	(.895)	(1.220)
Household FE	No	No	Yes	Yes	Yes	Yes
Spouse FE	No	No	Yes	Yes	No	Yes
R^2	.176	.201	.138	.079	.093	.037
Income pooling	.000	.000	.942	.070		
$\partial\phi/\partial\theta$		.237		.018		
$\partial\phi/\partial Y$		.497		.947		
	B. Full-Time Working Couples					
Husband's earnings	5.144	1.219	2.488	.300	3.924	2.188
	(.845)	(.285)	(1.124)	(.490)	(.844)	(1.124)
Wife's earnings	2.649	3.807	2.449	.340	−1.158	2.108
	(.625)	(.738)	(1.145)	(1.213)	(.936)	(1.580)
Household FE	No	No	Yes	Yes	Yes	Yes
Spouse FE	No	No	Yes	Yes	No	Yes
R^2	.151	.195	.108	.077	.081	.032
Income pooling	.023	.000	.976	.972		
$\partial\phi/\partial\theta$		.197		.007		
$\partial\phi/\partial Y$		.617		.888		

Note. Spouses' education, age, number of children, metropolitan residence, and yearly trend dummies are included. Robust standard errors are in parentheses. For the income pooling hypothesis, *p*-values are presented. $\partial\phi/\partial\theta$ and $\partial\phi/\partial Y$ are identified under the assumption of $\theta = y_h - y_w$.

contribution to total earnings induces 23.6% of budget transfer to his share. However, after controlling for the spouse-specific fixed effect, the effect dramatically decreases to only 1.8% (and is insignificant). The income pooling hypothesis is not rejected for both spouses. The effects of total income on the husband's share are greater than 0.5 no matter which measure we use for relative earnings, which rejects the hypothesis of equal division.

Second, Lundberg and Pollak (1996) criticize the use of relative spousal earnings as a distribution factor because consumption and leisure are likely to be correlated in preferences.[21] To address this concern, I restricted the sample into those households in which both spouses work full time, that is, 44 hours a week (statutory weekly working hours) or longer. Their labor supply is likely to be legally constrained. I also assume that the selection into this group is

[21] I already showed in Sec. IV.C, where I compared singles and married couples, that this is unlikely to be the case here. If the effects of earnings on pocket money reflected correlation in preferences between consumption and leisure, then earnings should have directly affected pocket money for singles even after it was conditioned on total expenditure.

exogenous for intrahousehold allocations. The same empirical strategy has been employed in Bourguignon et al. (1993) and Browning et al. (1994). Above all, by this restriction, we can remove the endogeneity problem of earnings variables with regard to married women's labor force participation.

Table 6 presents my results. Again the OLS estimates reject the income pooling hypothesis. However, that hypothesis is no longer rejected for both spouses after controlling for unobserved bargaining power. There is no effect of within-marriage changes in relative earnings on the sharing rule. However, the husband's unobserved bargaining power still plays a significant role in intrahousehold allocations. Estimating the difference equation, I find that the husband's unobserved bargaining power is negatively correlated with the wife's earnings. The Hausman test rejects the consistency of the estimates from the regression without the spouse-specific fixed effect. Again, the effect of the husband's relative earnings on his own share is negligible after accounting for the unobserved power; a 50% increase in the husband's contribution to total earnings induces 0.7% of budget transfer to his share of consumption, which is substantially smaller than the 19.7% that we find using the OLS estimates. Regardless of the definition of θ, the effect of total earnings on the husband's share is larger than 0.5.

Overall, the results from robustness checks in this section confirm my previous findings. First, spouses' time-constant unobserved bargaining power is significant, and there exists a dynamically stable balance of power between spouses. Second, the husband's unobserved bargaining power is negatively correlated with the wife's earnings. Third, the income pooling hypothesis is not rejected after controlling for unobserved bargaining power, while it is rejected for both spouses in the OLS regression. There is no causal effect of within-marriage changes in relative earnings on the sharing rule.

VI. Conclusion

Using longitudinal data on assignable private consumption, this article examines the marital balance of power between spouses in a dynamic setting. The unique data allow us to account for unobserved heterogeneity at the household level and time-constant unobserved bargaining power. A comprehensive framework of marriage and intrahousehold resource allocation suggests that the balance of power is endogenously chosen by spousal matching and that it should be robust over time as long as the marriage is sustained. These predictions are supported by the findings in this article.

The income pooling hypothesis is strongly rejected in the OLS regressions. However, it is not rejected after accounting for unobserved bargaining power. This suggests that relative earnings may be a good proxy for the long-term

balance of power to an extent that cross-sectional variation in relative earnings across households reflects the pattern of endogenous spousal matching. However, temporal changes in relative earnings within a marriage do not induce any significant resource transfer between spouses. Balance of power is constant within a marriage, which implies that commitment to maintaining the initial balance of power plays a significant role in marriage.

This article suggests that the study of the dynamics of the marriage market should shed more light not only on the assignment of partners but also on the household's decision-making process. As individuals sort themselves into marriages, the balance of power is largely shaped at that moment, and it continues to affect intrahousehold allocations. This implies that stable spousal characteristics are important in influencing the marital balance of power.

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