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ABSTRACT

Is it money or brains? The determinants of intra-family decision power*

We empirically study the determinants of intra-household decision power with respect to economic and financial choices using a suitable direct measure provided in the 1989-2010 Bank of Italy Survey of Household Income and Wealth. Focusing on a sample of couples, we evaluate the effect of each spouse's characteristics, household characteristics, and background variables. We find that the probability that the wife is in charge is affected by household characteristics such as family size and total income and wealth, but more importantly that it increases with the difference between hers and her husband's characteristics in terms of age, education, and income. The main conclusion is that decision-making power over family economics is not only determined by strictly economic differences, as suggested by previous studies, but also by differences in human capital and experience. Finally, exploiting the time dimension of our dataset, we show that this pattern is increasing over time.

JEL Classification: D13, E21, G11 and J12
Keywords: family economics, gender differences and intra-household decision power

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1. Introduction

The goal of this paper is to investigate the determinants of intra-household decision-making power with respect to economic and financial choices. Using a direct measure of actual decision-making power, we study its main determinants, taking into account individual characteristics of each spouse, household characteristics, and aggregate background factors. To identify the drivers of bargaining power has crucial implications for understanding how resources are distributed within the family, how household decisions are made in a variety of economic and non-economic realms, and how gender-based development initiatives should be designed.

Direct measures of bargaining power are however very rare. Our measure is provided by a repeated cross-sectional survey conducted by the Bank of Italy - the Survey of Household Income and Wealth (SHIW) - that reports who, within the household, is declared as the head, i.e., the person who is responsible for the financial and economic choices. Since the dataset now includes eleven waves, covering a 22 years period from 1989 to 2010, it represents a unique tool for the analysis of decision power, its evolution, and its determinants.

Previous theoretical research has developed models of household bargaining improving over the implications of a unitary approach to family economics. At the empirical level the search for the determinants of power has considered various factors such as each spouse's relative income, age, education, health, and also cultural factors involving race and religion. The main conclusion from the empirical literature is that economic factors, captured mainly by differences in earnings but also in occupational status, are the decisive ones in determining which spouse is in a position of prominence within the household.

In this paper we are able to uncover that, beside strictly economic differentials, other sorts of marriage heterogamy, such as age and education, emerge as equally important determinants of power, suggesting that knowledge, human capital accumulation, experience, seniority, and savviness can play an independent role. Since during the period we consider female educational achievements relative to those of males, as well as the demographics of marriage, have evolved at least as much as the economic position of women, it is not surprising that the parallel large increase of female empowerment can be linked to broader societal trends.

We first document these trends. We show how our measure of female empowerment, which is captured by the proportion of households headed by the wife, has increased through time. We also illustrate the evolution of the factors that are more likely to be responsible for

the observed changes in the intra-household balance of power. For individual characteristics such as age, education, income, and occupational status, we document how intra-family gender differentials have changed. We also report trends for aggregate indicators, such as female labor market participation to account for the evolution of womenôs economic condition and the incidence of divorce to understand the evolution of family structure.

Italy provides an ideal setting for our investigation. On the one hand, the sample period witnesses significant developments, along the gender dimension, in the economic and financial behavior of Italian households, with a substantial increase in the number of females in charge of decisions. At the same time, the Italian society experiences a particularly fast evolution, with a pronounced transformation of its family structure: while divorce became legal in Italy only in 1974, divorce figures boost in the most recent years of our sample. Moreover, womenôs participation in the labor market has been slowly increasing since the early post-war period. Even though it remains limited in an international comparison, its expansion has profoundly altered the role of women within family and society. The educational attainment of Italian women, particularly at the higher education level, is quickly catching up relative to that of men, a tendency which is common to other countries. Furthermore, marriage markets and matching patterns have also evolved in association with the described tendencies. As a consequence, our sample can fully capture the joint evolution of economic, social, and demographic factors.

Our next step is to study the empirical determinants of bargaining power by modeling the probability that the wife is in charge of economic and financial decisions as a function of individual characteristics of both spouses, household variables, and aggregate background factors. The hypothesis we test is that bargaining power is increasing with within-couple differentials in terms of age, education and income. Our findings confirm that the probability that the wife is in charge increases with the difference between her years of age, her level of education, her individual income, and the corresponding husbandôs characteristics. In other words, the balance of power between husband and wife is not just a question of money, but also of brains. Moreover, we show that bargaining power is also affected by household characteristics such as family size and total income and wealth, while aggregate background factors do not add further explanatory power. These results represent an important step forward with respect to the available literature, especially in light of the fact that womenôs educational attainment is converging to that of men much faster than earnings.

In a series of robustness checks we also show that our results hold even after controlling for the type of choices households face, distinguished between simple and sophisticated

economic and financial decisions. Similarly, using finer definitions of occupational status carries additional explanatory power but does not alter our conclusion. Finally, we check the sensitiveness of our findings to alternative samples. For a sample of non-married couples, we find somewhat different results which confirm the practical relevance of the institution of marriage. For a sub-sample of middle-age couples, we find that age no longer matters, in line with a stream of literature based on surveys exclusively administered to older couples.

Finally, our results carry important implications also with respect to another literature that, in the absence of a direct measure of bargaining power, tries to estimate its impact on a variety of decisions by using proxies often defined as dummy variables capturing the fact that the wife is older or more educated. We show that these proxies are poor predictors of actual bargaining power, both because they measure intra-family differences in a coarser fashion, if compared to our differentials, and because they fail to account for the fact that bargaining power is simultaneously determined by individual and household variables which are often omitted.

The rest of the paper is organized as follows. Section 2 summarizes the related literature. Section 3 describes our dataset and reports stylized facts. Section 4 presents our empirical findings and Section 5 performs robustness checks. Section 6 concludes and suggests directions for future research.

2. Related literature

The relevance of gender within the literature on household decisions is well established for a variety of economic and non-economic issues, ranging from political choices (Edlund and Pande, 2002) and preferences toward the size of government (Lott and Kenny, 1999) to wealth accumulation and saving behavior. Examples within the financial literature are Jianakoplos and Bernasek (1998), Sundén and Surette (1998), Barber and Odean (2001), Lusardi and Mitchell (2008), and Croson and Gneezy (2009). The prevailing conclusion from these studies is that women reveal a higher degree of risk aversion, so that households where decisions are made by women tend to select less risky investments. For Italian SHIW data, these results are confirmed by Guiso and Jappelli (2002) and Bertocchi, Brunetti and Torricelli (2011).

A deeper question behind these results is what determines which spouse is in control of family decisions. There is a relatively small empirical literature on the determinants of the intra-household decision-making process that focuses, as we do, on direct measures of

bargaining power. One reason why the literature is small is that such measures are rare. A number of papers are based on data collected by the Health and Retirement Study (HRS), which is one of the few surveys that provides specific information about this issue. In particular, couples are asked to report which spouse has the ñfinal sayò in making major economic and financial decisions for the household. The question was asked in the first two waves, i.e., 1992 and 1994, with comparable answers. Subsequently, it was only asked of the much smaller sample of new entrants. Therefore, most studies only use the first wave. Since the HRS is sponsored by the National Institute on Aging, the survey initially included only individuals between the age of 51 and 61 in 1991, plus their partners (who may have been older or younger). Therefore, the sample reflects a narrow share of the population. Another distinctive feature of the HRS survey is that the same question is answered independently by both the husband and the wife, so that they may well disagree on the answer. It turns out that indeed in the first wave only 63.5% of the partners agreed.

Based on the 1992 wave, Elder and Rudolph (2003) find that decisions are more likely to be made by the spouse with more financial knowledge, more education, and a higher wage, irrespective of gender. They interpret this evidence as supportive of a bargaining approach to decision making, rather than a unitary approach. The conclusions they reach hold true both for the husbandsôand the wivesôopinions and over both the entire sample and the sub-sample consisting of those households where the partners agree. Based on the same data, Friedberg and Webb (2006) find that decision-making power depends on relative earnings, even though the magnitudes of the estimated effects are moderate. Lührmann and Maurer (2007) use data from the 2003 wave of the Mexican Health and Aging Study (MHS). The survey is similar in design to the US HRS and covers the Mexican population over 50 years of age (and their partners). They find that for this sample education and employment status are associated with more individual decision power, especially for women. Health, income, and the level of urbanity of the area in which the household lives also matter.[1] Woolley (2003) focuses on a small sample of 300 Canadian interviewed in 1995 about a number of specific financial tasks (cash withdrawals, writing checks, etc.) and finds that higher income is associated with more decision power both for males and females, while male education also matters. Across the contributions reported above, income emerges as the most robust determinant of intra-household bargaining power. There is also some evidence that education may matter as well.

[1] The UK Household Panel Survey also contains a ófinal sayô question and in addition it collects information about the allocation of minor financial management duties. See Dobbelsteen and Kooreman (1997).

A parallel research line has tried to estimate the consequences of the distribution of bargaining power within the family on a variety of economic and non-economic decisions. In the absence of direct measures of bargaining power, this literature typically relies on the use of proxies, often constructed as dummies measuring various dimensions of heterogamy, such as income, education, age, but also race and religion. For instance, Lundberg, Startz and Stillman (2003) focus on dummies for age differences to explain the decline in household consumption after retirement. Lundberg and Ward-Batts (2000) show that a larger gap in the educational level (which in this case is measured not as a dummy but in actual number of years of difference), with the husband being more educated than the wife, is associated with lower household wealth. Thomas (1994) finds that a dummy identifying wives that are more educated than their husbands is indicative of power in asserting preferences in the allocation of household resources in Ghana. Similarly, research on the determinants of marital instability shows the importance of socio-demographic disparity within the couple as a factor determining marital dissolution. Heaton (2002) and Teachman (2002) find that couples are more likely to divorce when they do not share the same education background, particularly when it is the wife who is more educated, and that this effect is stable, or even increasing, over time. Within an empirical investigation of households' investment decisions, Bertocchi, Brunetti and Torricelli (2011) employ dummy variables capturing the fact that the wife is more educated, older, or earning more as proxies for marital instability.

With respect to the datasets used in previous contributions the SHIW data we employ present several advantages. First of all, they include households of all ages. Second, eleven waves are currently available, so that they cover the 1989-2010 period. Third, the way the survey is administered does not give partners the option to disagree, since they can only report a joint single answer when asked to indicate who the economic and financial head is. In other words, our data directly and unambiguously reflect the final outcome of any potential process of convergence of initial disagreement. Finally, our dataset presents the additional advantage of supplying information both on direct measures of bargaining power and on their potential determinants, including detailed individual characteristics of both spouses, household characteristics, and aggregate background variables. Therefore, we are able to assess whether or not the proxies commonly employed can be validated as indirect but accurate measures of bargaining power, taking into account how within-couples heterogeneities, but also additional covariates, are in fact associated with such power.

Another stream of empirical research which is relevant for our perspective is the one that has documented and analyzed the patterns of assortative mating (see Lam, 1988, Kalmijn,

1991, Mare, 1991, and Lewis and Oppenheimer, 2000) and how they are interrelated with husbandsô and wivesô educational and occupational achievements, as well as their change. While a general finding in this literature is the existence of positive assortative mating, trends in marital homogamy actually differ across traits, which underscores the importance of considering multiple dimensions of within-couple differentials.[2]

At the theoretical level, Browning, Chiappori and Weiss (2011) offer an up-to-date, exhaustive review of the literature that has modeled the decision-making process within the household, from the unitary model to cooperative and non cooperative bargaining models. Some bargaining models also allow to integrate the analysis of distribution within the couple with a matching model of the marriage market, thus accounting for assortative mating patterns. In a context where assortative mating patterns evolve, and do so in multiple dimensions, it is crucial to understand how this evolution affects bargaining after a couple is formed. Iyigun and Walsh (2007) incorporate pre-marital investment in education and spousal matching into a collective household model, to show that sharing rules depend on education. We view our results as supportive of this prediction.

3. Data and stylized facts

Our dataset spans over the 1989-2010 period and draws from the Bank of Italy Survey on Household Income and Wealth (SHIW) and from Istat (the Italian National Institute of Statistics). The SHIW is a repeated, biennial cross-sectional survey which provides over that period eleven waves (1989, 1991, 1993, 1995, 1998, 2000, 2002, 2004, 2006, 2008 and 2010). In each wave, data are collected for around 8,000 households, out of which we select those where a married couple is present, for a total of 59,389 observations. [3]

The SHIW basic sample unit is the household defined as ña group of cohabiting people who, regardless for their relationships, satisfy their needs by pooling all or part of their incomesò. In contrast with household surveys conducted in other countries, where the household head is defined on the basis of different attributes (e.g., highest income, or male gender), a distinctive feature of the Italian survey is to introduce the ñdeclaredò definition: accordingly, a household head is identified as the person who is responsible for the financial and economic choices of the household. This definition can be interpreted as an objective, joint evaluation

[2] See Fernandez, Guner and Knowles (2005) for a model of sorting.

[3] In Section 5.3, we also construct an alternative sample of non-married couples, including 811 observations. For more details on the SHIW see http://www.bancaditalia.it/statistiche/indcamp/bilfait.

of the actual balance of power, or else as the outcome of the process of convergence of any potential initial disagreement. Therefore, the survey provides a direct and unambiguous measure of bargaining power regarding economic and financial decisions. This is the measure that we employ in this paper to capture decision power within the couple.

The SHIW also provides plenty of demographic information for the household as a whole and for each household member. As for the former, we use the number of household components, household income, and household net wealth (the latter including real and financial assets net of financial liabilities). For each partner, we consider age, education, occupational status, and individual income.[4] Since the 2000 wave, the SHIW provides additional information on the occupational status (i.e., having a tenure contract or a part-time job) and on the type of banking services used by the household (ranging from paying the bills to financial assets trading), which we also include.

We supplement our dataset with aggregate variables based on data provided by Istat.[5] These variables are the divorce hazard and the female employment rate, both at the regional level. The divorce hazard is the ratio of the number of divorces over the number of marriages.[6] The female employment rate is the ratio between women employed over the total female working-age population.

Table 1 reports summary statistics for all the variables used (see Table A.1 in the Appendix for a detailed description of the same) for our sample of married couples. Only 14.23% of the couples report the wife as the household head.[7] The average age is 53.13 for husbands, 49.48 for wives. Their education level is relatively close, at 3.08 and 2.99 respectively, with a slightly larger standard variation for women: on average, the individuals in the sample have a secondary school degree. We find a marked difference in average individual income with husbands at around ú13.737 and wives at around ú4.358. This difference is reflected in the proportion of husbands and wives that work, which is 62.32% and 35.26%, respectively. Table 1 also reports information about differences within the couples in all the above dimensions, as well as a set of dummies recording the fact that the wife is older, more educated and earning more, respectively. The latter confirm that wives are older than their husbands only in 11% of the cases, while they earn more in 9% of the cases despite being more educated in 18% of the cases.

[4] All monetary amounts are expressed in real terms using the 1989 CPI provided by ISTAT.
[5] Data are downloadable from http://www.istat.it.
[6] We employ the divorce hazard since, contrary to the crude divorce rate (divorces over every 1000 residents), it takes into account both the increasing dynamics of divorce and the decreasing dynamics of marriage.
[7] While it is true that some misreporting may be present, if anything we would expect under-reporting, rather than over-reporting, of the fraction of women that are declared as household head.

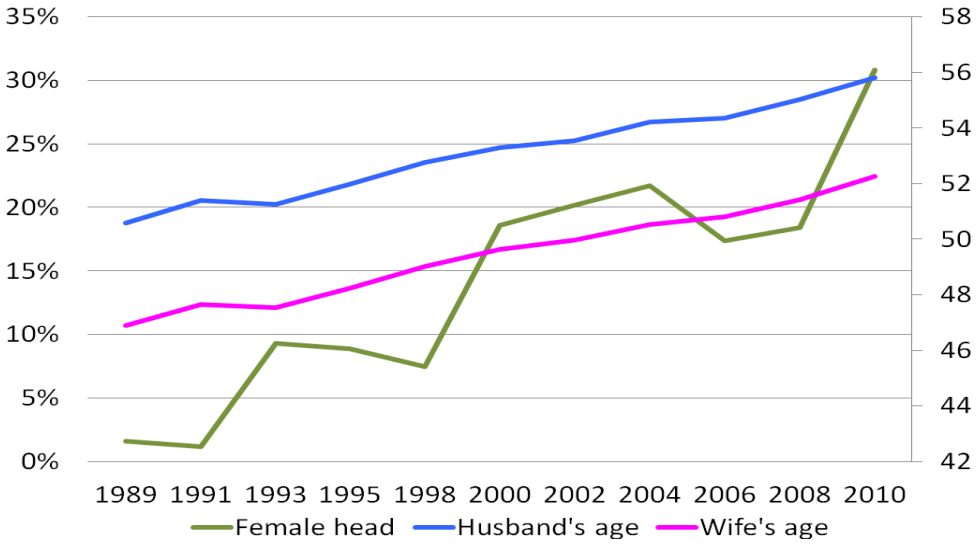
Table 1. Descriptive Statistics

Variables	Mean	St. Dev.	Min	Max
Female head	0.1423	0.3494	0	1
Household characteristics				
Family size	3.2636	1.1006	2	12
Income	20.1018	15.1416	-27.5	614.4
Wealth	133.0929	247.2230	-445.0	15743.7
Only wife works	0.0444	0.2061	0	1
Only husband works	0.3150	0.4645	0	1
None works	0.3324	0.4711	0	1
Simple choices	0.7865	0.4098	0	1
Wifeôs characteristics				
Age	49.4754	14.1399	16	96
Education	2.9900	1.0559	1	6
Income	4.3581	5.6219	-11.1	165.4
Working	0.3526	0.4778	0	1
Employee	0.2666	0.4422	0	1
Self-employed	0.0860	0.2804	0	1
Tenured	0.3898	0.4877	0	1
Part-time	0.0126	0.1116	0	1
Housewife	0.4200	0.4936	0	1
Retired	0.2000	0.4000	0	1
Husbandôs characteristics				
Age	53.1335	14.3895	19	98
Education	3.0832	1.0364	1	6
Income	13.7369	12.0236	-67.3	607.0
Working	0.6232	0.4846	0	1
Employee	0.4273	0.4947	0	1
Self-employed	0.1959	0.3969	0	1
Tenured	0.2522	0.4343	0	1
Part-time	0.0698	0.2548		
Retired	0.3451	0.4754	0	1
Within-couples differentials				
Age differential	-3.6581	4.0816	-57	48
Education differential	-0.0932	0.7701	-4	3
Income differential	-9.3789	12.2156	-599.7	100.9
Dummies for within-couples differences				
Wife older	0.1099	0.3127	0	1
Wife more educated	0.1755	0.3804	0	1
Wife earns more	0.0928	0.2901	0	1
Background variables				
Divorce hazard	0.1540	0.0907	0.0186	0.4537
Female employment rate	0.3090	0.0850	0.1309	0.4549

Note: Statistics computed using sampling weights (pesofl2).

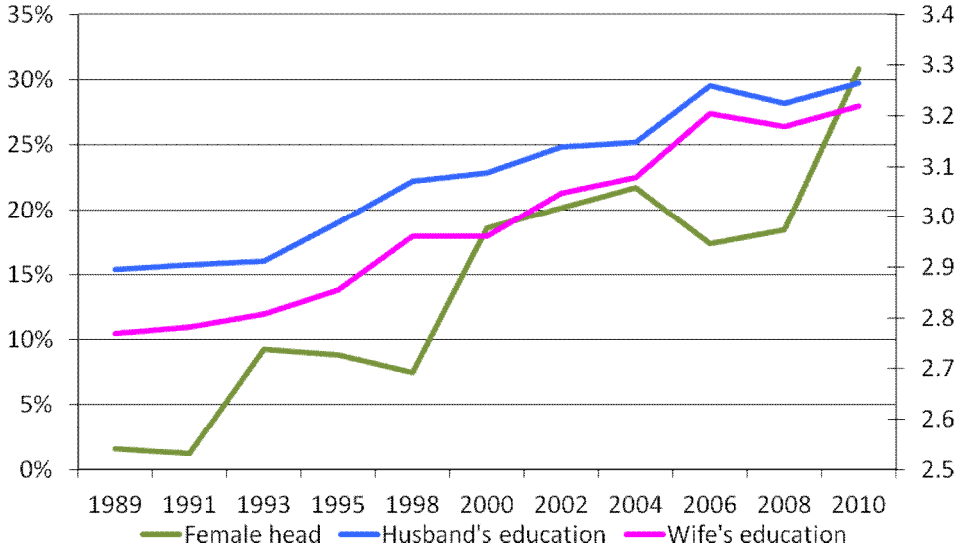
The above descriptive statistics for the pooled sample can be supplemented by information about the time evolution within the sample period. First of all, the proportion of households reporting the wife as the economic decision maker has greatly increased from 1.6% in 1989 to 30.8% in 2010. This trend is illustrated in Figure 1. Over the same period, the average age of both partners has increased: from 50.58 to 55.82 for husbands and from 46.89 to 52.27 for wives. This trend reflects both the general ageing in the population and the decline of marriage (the latter force tends to exclude younger generations from our sample of married couples). The average age difference has narrowed from 3.69 to 3.55 years (see again Figure 1). The average level of education has increased from 2.90 to 3.27 and from 2.77 to 3.22, respectively, which means that the differential between genders has nearly disappeared as of 2010 (Figure 2). The income differential (conditional on being working) has instead remained more stable (Figure 3). The proportion of working husbands was 69.83% in 1989 and declines to 58.65% in 2010. The corresponding figures for women (31.85% and 37.72%) provide evidence of convergence but also at the same time of persistence of a marked gender difference (Figure 4).

Figure 1. Female head proportion and husbandôs and wifeôs average age



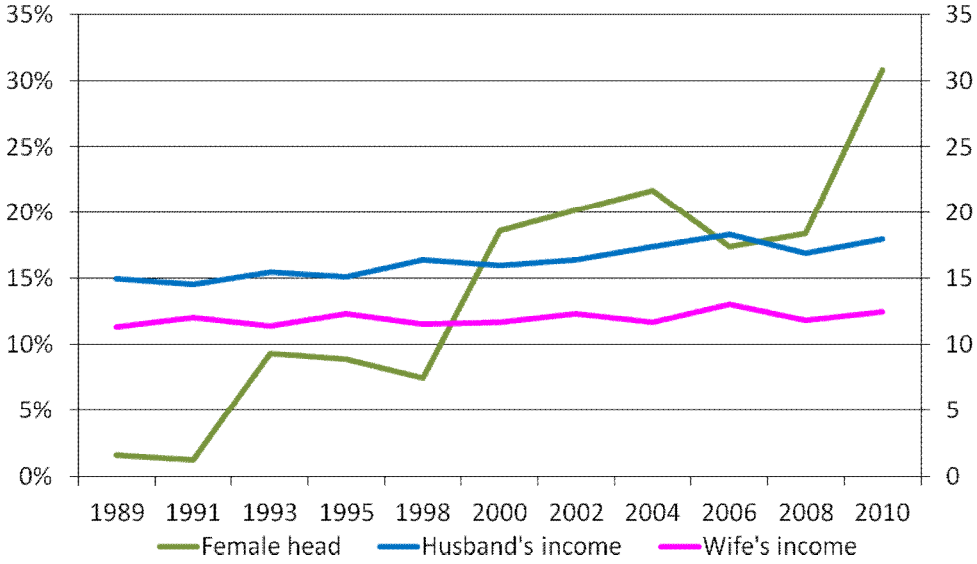
Note: Authorsô elaborations on SHIW data. Female head proportion on left scale and husbandôs and wifeôs age on right scale.

Figure 2. Female head proportion and husbandôs and wifeôs average education level



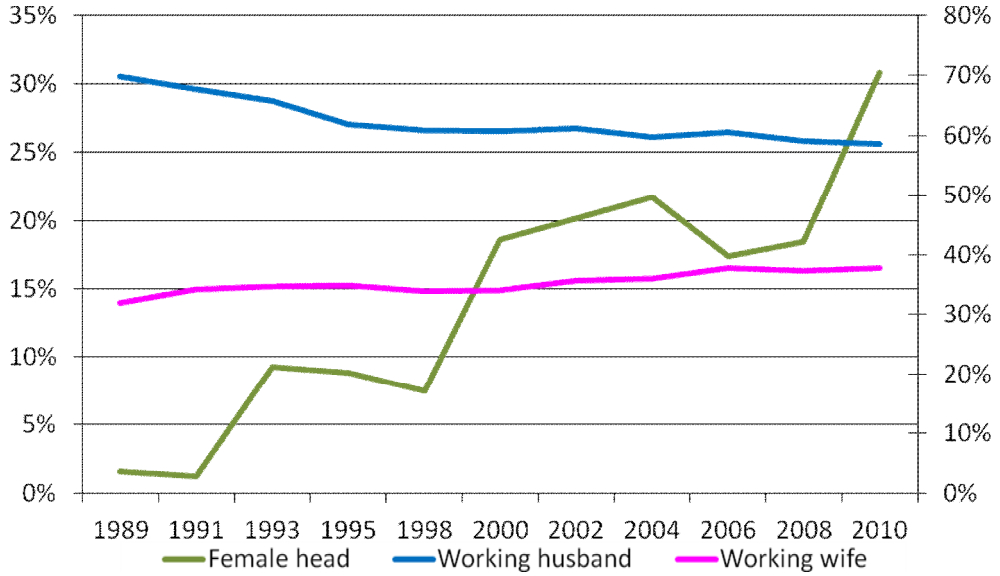
Note: Authorsô elaborations on SHIW data. Female head proportion on left scale and husbandôs and wifeôs education on right scale.

Figure 3. Female head proportion and husbandôs and wifeôs average income



Note: Authorsô elaborations on SHIW data. Female head proportion on left scale and husbandôs and wifeôs income on right scale.

Figure 4. Female head and proportions of working husbands and wives

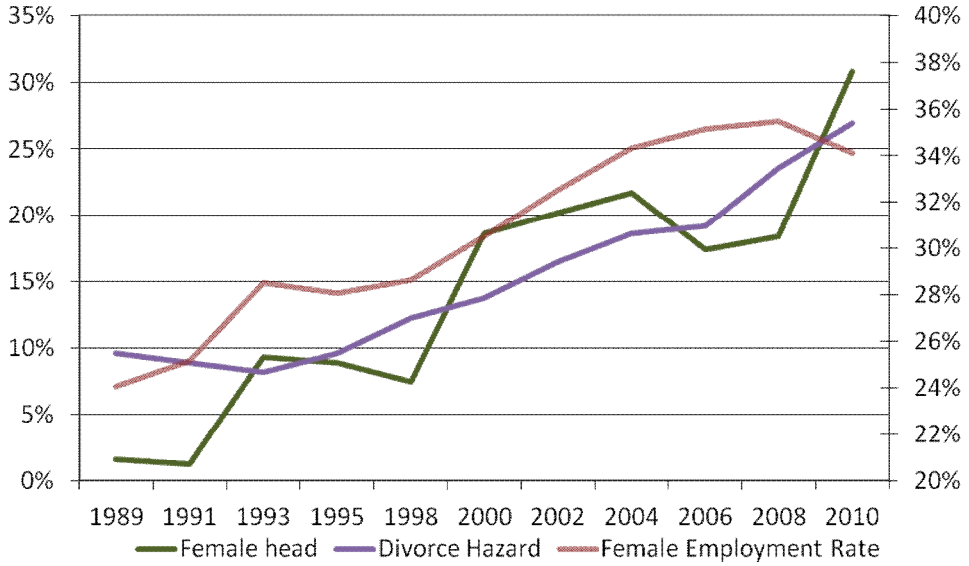


Note: Authorsô elaborations on SHIW data. Proportions of female head on left scale and of working husbands and wives on right scale.

It is useful to compare the evolution of the individual variables with those of aggregate indicators such as the divorce hazard and the female employment rate, measured at the regional level, as we do in Figure 5. The divorce hazard jumps from 9.62 to 26.92 over the period under consideration. While the decline of marriage and the increasing diffusion of divorce represent a common tendency in industrialized countries, in this dimension the Italian society has experienced a particularly fast evolution. The initial decline shown in the figure can be explained as follows. Up to the 1974 divorce was illegal and Italy was still exhibiting a very traditional family structure, if compared to other Western countries. The original form of the legislation was very conservative and allowed couples to obtain a divorce only five years after their legal separation. However, in 1987 the waiting period was reduced to three years, thus provoking a sudden jump of the divorce hazard, which is partially reversed in the early 1990s. Female employment increases from 24.05% to 34.11%,[8] even though women's labor market participation has historically been lower than in most industrialized countries.[9]

[8] See Del Boca and Pasqua (2003) on the employment patterns of husbands and wives in Italy.
[9] See Fernandez and Fogli (2009) for an international comparison of female labor force participation rates and for their link with a country's culture.

Figure 5. Female head proportion, divorce hazard and female employment rate



Note: Authorsô elaborations on SHIW and Istat data. Female head proportion and divorce hazard*100 on left scale and female employment rate on right scale.

Overall, these figures document a marked evolution of Italian economy and society, with a profound transformation of family structure and an increasing participation of women into the labor market, factors that are likely to affect the balance of power within households.

4. Results

To test our hypotheses, we estimate a probit model for the probability that the wife is the household head, i.e., the primary economic and financial decision maker as declared by the couple. For this model, we run a set of pooled regressions with robust standard errors clustered at the regional level. All regressions include a set of time and regional dummies, with the initial year and Piedmont taken as reference categories. All tables report marginal effects.

We start in Table 2 by inserting the individual characteristics of the wife and the husband separately. Next, in Table 3, we will exploit the same information in the form of differentials.

Table 2. The determinants of decision-making power

Dependent variable: Female head		
Variables	*(1)*	*(2)*
Household characteristics		
Family size	0.0183***	0.0224***
	(2.917)	*(3.444)*
Family size ^{2}	-0.0017**	-0.0020***
	(2.257)	*(2.676)*
Income ï 2nd quartile	0.0172**	0.0043
	(2.496)	*(1.006)*
Income ï 3rd quartile	0.0116	-0.0137***
	(1.252)	*(2.863)*
Income ï 4th quartile	0.0115	-0.0291***
	(0.727)	*(4.243)*
Wealth ï 2nd quartile	-0.0013	-0.0055*
	(0.373)	*(1.832)*
Wealth ï 3rd quartile	-0.0043	-0.0099***
	(1.272)	*(3.798)*
Wealth ï 4th quartile	-0.0069	-0.0167***
	(1.524)	*(5.547)*
Wifeôs characteristics		
Age	-0.0019***	0.0057***
	(4.570)	*(6.014)*
Age^2		-0.0077***
		(8.710)
Education	0.0008	0.0283***
	(0.579)	*(3.730)*
Education^2		-0.5187***
		(4.476)
Income	0.0155***	0.0230***
	(27.693)	*(18.934)*
Income^2		-0.0191***
		(5.476)
Working wife	-0.0849***	-0.1000***
	(14.594)	*(20.094)*
Husbandôs characteristics		
Age	0.0007*	-0.0049***
	(1.737)	*(4.287)*
Age^2		0.0052***
		(4.729)
Education	-0.003	-0.0353***
	(1.219)	*(5.476)*

Education^2		0.5077***
		(4.541)
Income	-0.0104***	-0.0087***
	(5.671)	*(9.069)*
Income^2		0.0015***
		(9.120)
Working husband	0.0411***	0.0399***
	(6.920)	*(9.483)*
Background variables		
Divorce hazard	-0.0869	-0.0833
	(1.047)	*(1.116)*
Female employment rate	0.0715	0.0541
	(0.351)	*(0.281)*
Observations	59,389	59,389
Pseudo R^2	0.3413	0.3651

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes time and regional dummies.* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2 presents as a benchmark a basic specification including four sets of variables (Column 1). The first set includes standard household characteristics, namely the number of household components and its squared term as well as household income and wealth quartiles. The second and third set include individual characteristics of the wife and the husband, respectively, namely each spouseôs age, level of education, income, and occupational status (the latter as a dummy taking value 1 if the individual is working, 0 otherwise). The last set controls for aggregate background variables which are meant to capture the evolution of gender roles in the family and society: namely, the increasing incidence of divorce and the expansion of female labor market participation. These variables are the divorce hazard and the female employment rate, computed at the regional level.

Column 1 shows that the probability that the wife is in charge increases with the size of the family in a concave fashion. Standard economic characteristics such as household income and wealth do not appear to matter except for the positive effect of the second quartile for income. Once we turn to individual characteristics, we find that age matters negatively for the wife, while it has a positive but barely significant effect for the husband: according to the estimates on average every additional year of age reduces the wife's probability to be in charge by 0.0019, while it reduces the corresponding husband's probability by 0.0007. Education is not significant, both for the wife and the husband. When entered separately,

each spouse's earning power appears to matter in the expected direction: the wifeôs decision power increases with her income and decreases with that of the husband. More specifically, an increase of a thousand euro in the wifeôs income substantially increases the probability for her of being in charge by 0.0155, while the same amount added to the income of her husband reduces this probability by 0.0104. Each spouseôs occupational status is also relevant: a working husband implies a larger probability that the wife is in charge, while a working wife decreases such probability, suggesting that after controlling for everything else there may be a division of tasks operating within the family, with certain chores being allocated to the spouse who has more time to spare. Finally, whether the family lives in a region affected by a large divorce hazard has a negative but insignificant effect, while the effect of the regional female occupational level is positively associated with womenôs empowerment but again insignificantly so.

In Column 2 of Table 2 we investigate the hypothesis that the effect of individual characteristics involving age, education and income may have a non-linear influence on the dependent variable. Therefore we add squared terms for all the three variables, both for the wife and the husband. The resulting picture is profoundly altered, not only with respect to each of these variables, but also with respect to the variables capturing household characteristics. Namely, starting with individual variables, we find that the impact of the wifeôs age is confirmed, but its influence is non-linear, with wives of intermediate age (at around age 37) more likely to find themselves in a position of power, rather than older ones as suggested by the linear specification. The non-linear specification reveals that the husbandôs age also has a highly significant non-linear influence, with womenôs power being lower when the husband is middle-aged (48 years of age). In other words, very young and very old husbands (possibly for very different reasons having to do with culture and health respectively) are more likely to let their wives decide. Turning to education, we again find that for wives its effect is not linear, with maximum women's power reached at the high school level. The exact opposite is true for husbands, since it is at an intermediate level (between high school and college) that they are more likely to abdicate. The impact of individual income is also modified in the non-linear specification: for the wifeôs income the positive effect of the linear term is confirmed, but is accompanied by a negative effect of the square, which suggests that wives with a large income may actually prefer to delegate. Similarly, we find a non-linear, specular effect of the husbandsô income. Interestingly, accounting for the non-linear effect of individual characteristics also modifies previous conclusions regarding household variables: while the influence of family size is confirmed,

Column 2 reveals that womenôs empowerment is decreasing in income and wealth, a feature which was obscured in Column 1.[10] To sum up, the comparison between Columns 1 and 2 shows that not only individual characteristics concerning age, education, income, and occupational status matter, but also that their effect is non-linear and that household income and wealth do play a role, suggesting that the first model is misspecified. Since the two models in Table 2 are nested, we statistically test for the joint significance of the added terms: the evidence supports the hypothesis that the two models are statistically different from each other. Similarly, a test for the joint significance of the set of controls for each spouseôs characteristics confirms that both the husbandsô and wivesô characteristics retain independent roles in determining which partner holds the decision power.

In sum, in Table 2 we have replicated (Column 1) and extended (Column 2) the benchmark model stemming from the relatively small literature (see Elder and Rudolph, 2003, Friedberg and Webb, 2006, Lührmann and Maurer, 2007, and Woolley, 2003) that has tried to investigate, as we do, the determinants of intra-household bargaining power when it can be measured by a directly-observed sort of dependent variable.

As mentioned in Section 2, however, there is a larger literature that has tried to assess the influence of bargaining power on a variety of economic and non-economic decisions and, in the absence of any direct measure, has relied on proxies of each spouseôs relative power. These proxies are often dummies capturing the fact that a spouse may or may not have a higher age, education, or income level. Exploiting the fact that we do have a direct measure of empowerment, what we do in Table 3 is to verify if any dimension of marriage heterogamy, such as age, education, or income, is really significantly associated with the probability that the wife is in charge. Since we have precise information about individual characteristics, we capture marriage heterogamy along these three dimensions not simply as dummies but as differentials. Namely, we first introduce as a regressor a variable which measures the difference in years between the age of the wife and that of the husband. The second regressor is the difference between the wifeôs and the husbandôs level of education, the third is similarly defined for their income. Summary statistics for each kind of differential

[10] Total household income is the sum of the incomes of all the household members, so that it differs from the sum of husband and wife incomes only in the presence of additional working members in the household. As a result, the difference is in most cases not that large and this might well explain why in the first specification total income is not statistically significant. Introducing the quadratic term for the individual levels contributes to make such difference no longer negligible, allowing total income to retain an independent role with respect to the spousesô individual incomes. Our main results persist also under different model specifications concerning income and wealth, i.e., considering their linear and quadratic terms or their logs (which reduce the impact of possible outliers).

are presented in Table 1. We regress our binary dependent variable for the wife being in charge on these differentials. We start by reporting the results of simple regressions involving each differential, one by one, and then we estimate a fourth regression including the three differentials together.

Table 3. Within-couple differentials

Dependent variable: Female head					
Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Proxies for bargaining power					
Age differential	0.00004			-0.0004	0.0049***
	(0.084)			*(0.809)*	*(4.287)*
Education differential		0.0306***		0.0043***	0.0353***
		(13.040)		*(2.952)*	*(5.476)*
Income differential			0.0102***	0.0101***	0.0087***
			(9.906)	*(9.795)*	*(9.069)*
Household characteristics					
Family size					0.0224***
					(3.444)
Family size^2					-0.0020***
					(2.676)
Income ï 2nd quartile					0.0043
					(1.006)
Income ï 3rd quartile					-0.0137***
					(2.863)
Income ï 4th quartile					-0.0291***
					(4.243)
Wealth ï 2nd quartile					-0.0055*
					(1.832)
Wealth ï 3rd quartile					-0.0099***
					(3.798)
Wealth ï 4th quartile					-0.0167***
					(5.547)
Wifeôs characteristics					
Age					0.0008
					(1.394)
Age^2					-0.0077***
					(8.710)
Education					-0.007
					(1.164)
Education^2					-0.5187***
					(4.476)
Income					0.0143***
					(12.810)
Income^2					-0.0191***
					(5.476)

Working wife					-0.1000***
					(20.094)
Husbandôs characteristics					
Age^2					0.0052***
					(4.729)
$Education^2$					0.5077***
					(4.541)
$Income^2$					0.0015***
					(9.120)
Working husband					0.0399***
					(9.483)
Background variables					
Divorce hazard					-0.0833
					(1.116)
Female employment rate					0.0541
					(0.281)
Observations	59,389	59,389	59,389	59,389	59,389
Pseudo R^2	0.1177	0.1255	0.285	0.2852	0.3651

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes time and regional dummies.* significant at 10%; ** significant at 5%; *** significant at 1%.

In Column 1 of Table 3 we find that the age differential is not significantly associated with power, even though the sign of the effect is positive as one might expect, since the older is the wife relative to the husband, the more likely is that she is regarded as more experienced and savvy, and thus a more reliable decision maker. A similar story is instead validated by Column 2, where the education differential is positively associated with power: the larger is the wifeôs level of education relative to the husband, the more likely is that she decides. The same occurs for their income differential in Column 3, while Column 4 shows that the relevance of both the education and the income differentials is confirmed when accounting for the three dimensions together, even though the size of the effect of education is smaller once income is accounted for, which signals that the two types of differences are correlated. The effect of the age differential is reversed but remains insignificant. While at first glance the conclusion that can be drawn from Columns 1-4 is that the use of proxies for bargaining power is a reasonable approach, at least as far as education and income differentials are concerned, we are interested in combining this evidence with what we know from Table 2 about a broader set of potential determinants of decision power.

These preliminary considerations are those behind our preferred specification, which we introduce in Column 5 of Table 3, where we simply rearrange the covariates introduced in the non-linear specification in Column 2 of Table 2 in such a way that differentials within the

couples, with respect to age, education, and income, are emphasized. [11] The purpose of the exercise is two-fold. First of all, in comparison with the previous specification, we can now fully capture the effect of heterogeneities within the couple. Second, we can evaluate how the relationship between differentials and our observed measure of bargaining is affected by the additional covariates.

Interestingly, now all the three dimensions of the within-couple differentials are highly significant and with the expected sign, suggesting that the relative bargaining power within the household is determined by a position of dominance which is not simply associated with earning power but also with education as well as age. Table 3 highlights that additional empowerment for wives does not come from their individual characteristics per se, but from the relative distance from the husbands' corresponding characteristics.

Finally, in order to test the determinants of decision power along the time dimension, in Table 4 we report an extended specification of Column 5 of Table 3 where each within-couple differential is interacted with a full set of time dummies, taking 1989 as reference year. The marginal effects of the other regressors are omitted for brevity. The three dimensions of the within-couple differentials are all highly significant. The age differential does not show any time variability since all the interactions with the time dummies are not significant. As for the education differential, all interactions but 2008 are significant with a negative sign and decreasing magnitude, indicating that the total effect of the education differential is increasing over time. The interactions between the income differential and the time dummies are all significantly negative starting from 1993 but their relatively stable magnitude suggests that the overall effect of this differential is not revealing a clear trend.

To conclude, decision-making within the family appears to be affected by each of the factors that may determine a position of dominance for any of the spouse. Strictly economic factors are important, but education and age also matter. Furthermore, while the effects of the age and income differentials do not show any clear time variability, the importance of the education differential appears to have increased over time. In other words, the intra-household balance of power appears to be not just a question of money, but also of brains, and this is increasingly so.

[11] The probit estimated in Table 2, $P(Y_{ij}=1|\mathbf{X}_{ij})=\phi\left(\mathbf{W}_{ij}+\mathbf{H}_{ij}+\mathbf{W}_{ij}^2+\mathbf{H}_{ij}^2+\mathbf{Hhold}_{ij}+\mathbf{C}_j\right)+\varepsilon_{ij}$ is rearranged as $P(Y_{ij}=1|\mathbf{X}_{ij})=\phi\left(\left(\mathbf{W}_{ij}-\mathbf{H}_{ij}\right)+\mathbf{W}_{ij}^2+\mathbf{H}_{ij}^2+\mathbf{Hhold}_{ij}+\mathbf{C}_j\right)+\varepsilon_{ij}$, , where **W**, **H**, and **Hhold** represent the wife's, husband's and household's characteristics respectively and **C** the remaining controls.

Table 4. Within-couple differentials and their interactions with time

Dependent variable: Female head			
Variables	***Age differential***	***Education differential***	***Income differential***
Differential	0.0038***	0.0361***	0.0122***
	(4.185)	*(5.963)*	*(9.299)*
1991*Differential	0.0014	-0.0232***	0.0028
	(0.814)	*(2.819)*	*(1.102)*
1993*Differential	-0.0003	-0.0117*	-0.0060***
	(0.275)	(1.882)	(4.585)
1995*Differential	-0.0007	-0.0142***	-0.0053***
	(0.554)	*(2.636)*	*(4.330)*
1998*Differential	-0.0019	-0.0124**	-0.0060***
	(1.304)	*(2.381)*	*(4.127)*
2000*Differential	-0.0002	-0.0120**	-0.0077***
	(0.224)	*(2.242)*	*(5.549)*
2002*Differential	-0.0001	-0.0096**	-0.0065***
	(0.047)	*(2.096)*	*(4.464)*
2004*Differential	-0.0003	-0.0089**	-0.0064***
	(0.217)	*(2.173)*	*(4.093)*
2006*Differential	-0.0006	-0.0125**	-0.0059***
	(0.517)	*(2.354)*	*(5.126)*
2008*Differential	0.0003	-0.0095	-0.0065***
	(0.277)	*(1.571)*	*(4.268)*
2010*Differential	0.0004	-0.0101*	-0.0055***
	(0.368)	*(1.656)*	*(4.029)*
Household characteristics		*YES*	
Wifeôs characteristics		*YES*	
Husbandôs characteristics		*YES*	
Background variables		*YES*	
Observations		59,389	
Pseudo R^2		0.3697	

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes time and regional dummies.* significant at 10%; ** significant at 5%; *** significant at 1%.

5. Robustness checks

In this section we consider a number of variations and extensions of the previous analysis in order to check its robustness. We will consider as a reference Column 5 of Table 3, i.e., the specification that emphasizes within-household differences and at the same time allows for a non-linear impact of individual characteristics.

5.1. Type of choices

Financial and economic decisions of the households range from simple chores such as paying bills to more complex choices such as the asset allocation of the household's portfolio. In this section we test whether the probability of the wife being in charge is higher when financial and economic decisions reduce to very simple tasks. To this end, we use the information provided by the SHIW since the 2000 wave and define the dummy "simple choices", taking value 1 if the household declares to use banking services only for paying bills (including housing rent and mortgages) and/or for wage crediting and 0 otherwise. This implies that tasks such as securities management or trading, asset administration or insurances management are excluded. As shown in Table 1, 78.65% of the households in our sample are confined to simple choices. The results of the regression, reported in Table 5, do not change substantially in the presence of the dummy, whose effect is positive but not significant. Therefore we cannot conclude that wives are more likely to be in charge if only simple tasks are at issue.

Table 5. Simple financial tasks

Dependent variable: Female Head	
Variables	*(1)*
Proxies for bargaining power	
Age differential	0.0107***
	(2.927)
Education differential	0.0800***
	(3.346)
Income differential	0.0213***
	(8.58)
Household characteristics	
Family size	0.0654***
	(3.158)
Family size^2	-0.0064***
	(2.628)

Income ï 2nd quartile	-0.0047
	(0.349)
Income ï 3rd quartile	-0.0464***
	(3.134)
Income ï 4th quartile	-0.0860***
	(3.988)
Wealth ï 2nd quartile	-0.0012
	(0.109)
Wealth ï 3rd quartile	-0.008
	(0.857)
Wealth ï 4th quartile	-0.0267*
	(1.93)
Simple choices	0.0057
	(0.79)
Wifeôs characteristics	
Age	0.0061**
	(2.193)
Age^2	-0.0208***
	(10.79)
Education	-0.0265
	(0.99)
$Education^2$	-0.9638***
	(2.895)
Income	0.0292***
	(9.132)
$Income^2$	-0.0412***
	(12.779)
Working wife	-0.2367***
	(19.221)
Husbandôs characteristics	
Age^2	0.0112***
	(3.535)
$Education^2$	1.0761***
	(2.644)
$Income^2$	0.0062***
	(6.871)
Working husband	0.1182***
	(9.284)
Background variables	
Divorce hazard	0.2079*
	(1.834)
Female employment rate	0.528
	(0.728)
Observations	19,400
Pseudo R-squared	(0.3271)

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes time and regional dummies.* significant at 10%; ** significant at 5%; *** significant at 1%.

5.2. Occupational status

In this sub-section we evaluate the implications of a more detailed description of the individual positions in the labor market. So far we have considered two dummy variables capturing the fact that the wife and the husband are employed and we have found a negative influence for the first and a positive one for the second. However, this specification does not highlight within-family differences in occupational status. Therefore in Table 6, Column 1 we introduce three separate dummies. The first one captures the case when the wife is the only one who is employed. The second captures the case when the husband is the only one who is employed. The third captures the case when both spouses do not work, uncovering the potential presence of an interaction between their respective status. The effect of the first two dummies confirm what previously found, while the positive effect of the third adds that when both spouses do not work the probability that the wife is in charge increases. In Column 2 we evaluate more explicitly the working condition of each spouse, including dummies for being employee, self-employed, or retired. We also control for the status of housewife. The results suggest that for both spouses being an employee rather than self-employed does not modify the effect of being at work on the dependent variable, while being a housewife has no significant effect. Being retired has a negative effect for the wife and a non-significant one for the husband, possibly because of the older age of the couples in this status. Starting from the 2000 wave the SHIW also provides information about job tenure and part-time occupation. For this restricted sample, in Column 3 we find that being tenured confirms for both wives and husbands the general impact of the original dummy for being at work, while having a part-time position shows opposite signs, suggesting that both wives and husbands in this intermediate status tend to behave more like non working rather than working ones. The main conclusion regarding the impact of within-couple differentials is not affected, as their marginal effects remain remarkably stable in terms of size and significance across all specifications. However, it should be noticed that when the sample is restricted to the 2000-2010 period their size nearly doubles, suggesting that their influence might be increasing over time.

Table 6. Finer measures of occupational status.

Dependent variable: Female head			
Variables	*(1)*	*(2)*	*(3)*
Proxies for bargaining power			
Age differential	0.0052***	0.0051***	0.0103***
	(4.44)	*(4.728)*	*(3.81)*
Education differential	0.0361***	0.0382***	0.0723***
	(5.66)	*(6.260)*	*(3.84)*
Income differential	0.0086***	0.0089***	0.0169***
	(9.13)	*(8.998)*	*(7.25)*
Household characteristics			
Family size	0.0210***	0.0146***	0.0605***
	(3.32)	*(2.728)*	*(3.81)*
Family size^2	-0.0019**	-0.0013**	-0.0055***
	(2.57)	*(2.020)*	*(3.05)*
Income ï 2nd quartile	0.0046	0.0113***	-0.0115
	(1.11)	*(3.294)*	*(1.31)*
Income ï 3rd quartile	-0.0122**	-0.0057	-0.0461***
	(2.56)	*(1.447)*	*(3.90)*
Income ï 4th quartile	-0.0279***	-0.0272***	-0.0799***
	(4.07)	*(4.337)*	*(4.39)*
Wealth ï 2nd quartile	-0.0052*	-0.0062**	-0.0049
	(1.73)	*(2.291)*	*(0.55)*
Wealth ï 3rd quartile	-0.0101***	-0.0109***	-0.0124*
	(3.92)	*(4.290)*	*(1.88)*
Wealth ï 4th quartile	-0.0171***	-0.0187***	-0.0340***
	(5.73)	*(6.364)*	*(3.91)*
Only wife works	-0.0162***		
	(4.08)		
Only husband works	0.2109***		
	(19.05)		
None works	0.1032***		
	(13.14)		
Wifeôs characteristics			
Age	0.0003	-0.0011**	0.0023
	(0.59)	*(2.284)*	*(1.40)*
Age^2	-0.0075***	-0.0048***	-0.0155***
	(8.51)	*(5.245)*	*(7.78)*
Education	-0.0102*	-0.0121*	-0.007
	(1.65)	*(1.748)*	*(0.41)*
Education^2	-0.4839***	-0.4828***	-1.1261***
	(4.13)	*(3.854)*	*(3.86)*
Income	0.0143***	0.0178***	0.0257***
	(13.02)	*(10.452)*	*(9.26)*
Income^2	-0.0193***	-0.0239***	-0.0334***
	(5.49)	*(4.752)*	*(5.40)*

Employee wife		-0.1088***	
		(12.570)	
Self-employed wife		-0.0555***	
		(10.265)	
Housewife		-0.0016	
		(0.234)	
Retired wife		-0.0657***	
		(8.408)	
Tenured wife			-0.1688***
			(17.67)
Part-time wife			0.0818***
			(6.47)
Husbandôs characteristics			
Age^2	0.0054***	0.0051***	0.0098***
	(4.85)	*(5.096)*	*(3.91)*
$Education^2$	0.5203***	0.5373***	0.9702***
	(4.70)	*(5.080)*	*(2.90)*
$Income^2$	0.0015***	0.0015***	0.0030***
	(9.13)	*(9.332)*	*(7.24)*
Employee husband		0.0435***	
		(6.495)	
Self-employed husband		0.0525***	
		(5.031)	
Retired husband		0.0116	
		(1.639)	
Tenured husband			0.0674***
			(8.22)
Part-time husband			-0.0730***
			(6.30)
Background variables			
Divorce hazard	-0.086	-0.0662	0.0489
	(1.16)	*(0.942)*	*(0.35)*
Female employment rate	0.058	0.042	0.4324
	(0.30)	*(0.232)*	*(0.78)*
Observations	59,389	59,389	30,345
Pseudo R-squared	0.3662	0.3953	0.2800

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes time and regional dummies.* significant at 10%; ** significant at 5%; *** significant at 1%.

5.3. Marriage vs. cohabitation

So far our sample included only legally married couples. Over time, however, cohabitation has become a more and more widespread phenomenon. Exploiting the fact that the SHIW also surveys cohabiting couples that are not married, we repeat our estimation for a sample of

non-married couples. While the number of observations is greatly reduced, the evidence presented in the data section suggests that this living arrangement will be expanding in the future, so it is important to understand if it matters for the economic power balance.[12] The fact that the sample presents a much larger proportion of female heads, 41.8%, suggests that it does.

From the first column of Table 7 we can see that results are strikingly different from those obtained for married couples. The differentials within the couple are very significant, but the education differential now shows a negative sign, suggesting that for this sample women that have more education than their partners are less likely to make decisions. The effect of the wivesô education and income also tends to differ from the case of married couples. Moreover, family income is no longer significant. While the latter finding could indicate that non-married couples do not pool their earnings, at the same time their joint wealth is still playing a clear role. Another novel feature is that the divorce hazard in the region of residence exerts a marginally significant negative effect. However, since cohabitation is a relatively new tendency, cohort effects may be at work, as shown by the lower average ages in the sample (43.24 and 39.99 for husbands and wives respectively). To sum up, despite the small size of the sample involved, it is clear that the institution of marriage exerts a decisive influence on intra-family decision processes. One issue that deserves further exploration is whether or not the decision itself to tie the knot, and the clear time evolution of its frequency, may itself reflect the changing nature of the battle of the sexes.

Table 7. Alternative samples: Unmarried couples and older couples

Dependent variable: Female head			
Variables	Cohabiting	Age 51-61	Age 50+
Proxies for bargaining power			
Age differential	0.0462***	0.0026	0.0088***
	(3.584)	*(0.690)*	*(4.164)*
Education differential	-0.3471***	0.0255**	0.0274***
	(3.356)	*(2.432)*	*(4.238)*
Income differential	0.0499***	0.0077***	0.0088***
	(6.674)	*(8.307)*	*(10.057)*
Household characteristics			
Family size	0.2959*	0.0178**	0.0238***
	(1.795)	*(2.125)*	*(3.089)*
Family size^2	-0.0269	-0.0017*	-0.0024***

[12] The number of cohabiting couples surveyed has increased from zero in 1989 to 146 (around 3% of the couples) in 2010. Yet, the cohabiting households surveyed over the total period are only 811, so that under-sampling and under-reporting may be serious issues regarding these data.

	(1.120)	*(1.871)*	*(2.834)*
Income ï 2nd quartile	0.0962	-0.0018	0.0007
	(1.429)	*(0.327)*	*(0.125)*
Income ï 3rd quartile	0.1053	-0.0134*	-0.0120*
	(1.536)	*(1.753)*	*(1.830)*
Income ï 4th quartile	0.1073	-0.0237**	-0.0190**
	(0.841)	*(2.396)*	*(2.199)*
Wealth ï 2nd quartile	-0.1058**	-0.0022	-0.0055
	(2.096)	*(0.494)*	*(1.569)*
Wealth ï 3rd quartile	-0.1454**	-0.0076**	-0.0089***
	(2.229)	*(2.109)*	*(3.084)*
Wealth ï 4th quartile	-0.2220***	-0.0150***	-0.0137***
	(3.515)	*(2.795)*	*(3.453)*
Wifeôs characteristics			
Age	0.011	0.0148***	-0.0080***
	(1.169)	*(2.717)*	*(5.690)*
Age^2	-0.0625***	-0.0194***	-0.0032**
	(3.340)	*(4.195)*	*(2.028)*
Education	0.0846	0.0072	0.0078
	(0.963)	*(0.748)*	*(1.124)*
$Education^2$	4.4547***	-0.6514***	-0.7255***
	(3.003)	*(4.461)*	*(8.160)*
Income	0.0609***	0.0124***	0.0105***
	(4.119)	*(9.519)*	*(11.165)*
$Income^2$	-0.1892***	-0.0190***	-0.0160***
	(7.083)	*(7.318)*	*(15.517)*
Working wife	-0.5081***	-0.0861***	-0.0625***
	(9.031)	*(23.413)*	*(27.415)*
Husbandôs characteristics			
Age^2	0.0424***	0.0025	0.0076***
	(3.100)	*(0.769)*	*(4.699)*
$Education^2$	-6.4699***	0.3627**	0.4594***
	(3.990)	*(2.112)*	*(3.820)*
$Income^2$	0.0488***	0.0024***	0.0027***
	(6.249)	*(7.265)*	*(7.466)*
Working husband	0.2088***	0.0300***	0.0386***
	(2.867)	*(5.403)*	*(5.855)*
Background variables			
Divorce hazard	-1.0669*	-0.0525	-0.05
	(1.737)	*(0.854)*	*(0.879)*
Female employment rate	-1.3075	0.0238	0.0707
	(0.741)	*(0.145)*	*(0.544)*
Observations	808	20,906	33,917
Pseudo R^2	0.3687	0.3901	0.3899

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes time and regional dummies.* significant at 10%; ** significant at 5%; *** significant at 1%.

5.4. Two older samples

Most of the existing studies on the determinants of bargaining power are conducted within restricted samples including only older couples. This is the case for studies based both on the US HRS and the Mexican MHS. For instance, the 1992 wave of the HRS only includes individuals in the 51-61 age range, while in most recent waves all over-50 individuals are in. It is therefore not surprising that age differentials are hardly ever a significant factor within these studies. For the sake of comparison, we replicate our analysis first for a 51-61 age-range sub-sample, and then for a sub-sample of over-50 (however, it has to be kept in mind that our Italian sample includes eleven waves covering 22 years, rather than a single wave as in the other cases). The second column of Table 7 shows that, for the 51-61 year-old, the age differential remains positive but loses its significance, while it retains it for the over-50 year-old. To be noticed is that the latter sample is quite large relative to the former (33,917 observations vs. 20,906) and naturally involves more variability along the age dimension. The impact of education and income differentials resembles that of the complete sample and the same holds for family size, income and wealth. Overall, our results are consistent with those obtained by others over older samples. At the same time, however, they reveal how crucial the inclusion of individuals of all ages into the investigation is in order to capture the impact of all dimensions of couplesô heterogamy.

5.5. Dummy measures for within-household heterogeneity

In Table 8 we start by replicating the set of regressions presented in Table 3 using alternative measures for within-household heterogeneity, defined as three dummies capturing the fact that the wife is older, more educated, and earning more income than her husband. While these dichotomous measures are of course coarser than the ones used so far, they are often employed in the literature (by Elder and Rudolf, 2003, for a similar dependent variable reflecting within-couple decision power, and for instance by Lundberg, Startz and Stillman, 2003, Lundberg and Ward-Batts, 2000, Thomas, 1994, Heaton, 2002, Teachman, 2002, and Bertocchi, Brunetti and Torricelli, 2011, for a variety of alternative ones).

Columns 1-3 show that the fact that the wife is in a position of dominance, along each dimension taken one by one, increases her bargaining power. In Column 4 the dummies are entered together with the wife's characteristics (as in most of the previously cited references) at the expense of some significance for the first but, when in Column 5 we retain our full

specification we find that the dummy for the wife being older is never significant. This exercise questions the ability of the dummies for age and education to proxy for degrees of bargaining power when the regression is correctly specified. Moreover, it implies that adding dummies and female individual variables in regressions not including variables such as household income and wealth may induce misspecification.

By comparing these results with those obtained in the previous section, we can conclude that measuring the degree of heterogamy within couples with precise differential measures, rather than with dummies for the wife being in a position of predominance, leads to more clear-cut and powerful conclusions.

Table 8. Dummy measures of within-couple differences

Dependent variable: Female head					
Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Dichotomous proxies for bargaining power					
Wife older	0.0133***			0.0086**	0.0023
	(2.898)			*(2.075)*	*(0.597)*
Wife more educated		0.0487***		0.0304***	0.0153***
		(10.410)		*(4.433)*	*(2.631)*
Wife earns more			0.4945***	0.3687***	0.2659***
			(23.044)	*(19.722)*	*(13.445)*
Wifeôs characteristics					
Age				-0.0016**	0.0012**
				(2.195)	*(2.239)*
Age^2				-0.0020***	-0.0036***
				(2.903)	*(6.362)*
Education				-0.0044	0.0074
				(0.547)	*(1.067)*
$Education^2$				-0.3936***	-0.3588***
				(2.663)	*(2.983)*
Income				0.0167***	0.0218***
				(13.022)	*(12.190)*
$Income^2$				-0.0171***	-0.0215***
				(6.568)	*(6.413)*
Working wife				-0.1124***	-0.1080***
				(22.645)	*(20.701)*
Household characteristics					
Family size					0.0323***
					(3.956)
$Family\ size^2$					-0.0027***
					(2.913)
Income ï 2^{nd} quartile					-0.0148***
					(4.161)

Income ï 3rd quartile					-0.0398***
					(8.769)
Income ï 4th quartile					-0.0740***
					(11.758)
Wealth ï 2nd quartile					-0.0127***
					(3.960)
Wealth ï 3rd quartile					-0.0214***
					(9.198)
Wealth ï 4th quartile					-0.0422***
					(14.286)
Background variables					
Divorce hazard					-0.1374
					(1.463)
Female employment rate					0.0628
					(0.260)
Observations	59,389	59,389	59,389	59,389	59,389
Pseudo R-squared	0.1179	0.1219	0.2684	0.3285	0.3524

Notes: Marginal effects of probit estimates with robust standard errors clustered at the regional level. Each regression includes time and regional dummies.* significant at 10%; ** significant at 5%; *** significant at 1%.

6. Conclusion

Based on a dataset drawn from the Bank of Italy SHIW we empirically study the determinants of the economic and financial power balance within households on the basis of a unique, repeatedly-collected direct measure of actual decision-making power. Our main findings are that the probability that the wife is in charge of economic and financial decisions increases with the difference between her years of age, her level of education, her individual income, and the corresponding husbandôs characteristics. At the same time, her bargaining power is also affected by household characteristics such as family size and total income and wealth. The main implication of these findings is that the decision-making power over family economics is not only determined by strictly economic factors: differences in age and education, by making individuals more knowledgeable, more experienced, and savvier, are also shown to matter. Furthermore, exploiting the time dimension of our dataset, we show that this pattern has progressively strengthened over the 20-year sample period under consideration. In other words, the intra-household balance of power appears to be not just a question of money, but also of brains, and this is increasingly so.

These results represent an important step forward with respect to the available literature, especially in light of the fact that social trends may prove faster than purely economic ones.

To recognize all the determinants of bargaining power is crucial to understand how the latter affects a wide variety of economic and non-economic decisions, and how gender-based policies should be designed.

Following a generalized trend within Europe, the Italian society is quickly changing its ethnic and religious composition because of immigration. This is introducing yet another source of heterogamy within marriages that may constitute another potential driver of power allocation. We plan to evaluate these factors in future work.

References

Barber, B.M., Odean, T., 2001. Boys will be boys: Gender, overconfidence and common stock investments. Quarterly Journal of Economics 116, 261-289.

Bertocchi, G., Brunetti, M., Torricelli, C., 2011. Marriage and other risky assets: A portfolio approach. Journal of Banking and Finance 35, 2902-2915.

Browning, M., Chiappori, P.-A.,Weiss, Y., 2011. Family economics. Mimeo.

Croson, R., Gneezy, U., 2009. Gender differences in preferences. Journal of Economic Literature 47, 448-474.

Del Boca, D., Pasqua, S., 2003. Employment patterns of husbands and wives and family income distribution in Italy (1977-98). Review of Income and Wealth 49, 221-245.

Dobbelsteen, S., Kooreman, P., 1997. Financial management, bargaining and efficiency within the household: An empirical analysis. De Economist 145, 345-366.

Edlund, L., Pande, R., 2002. Why have women become more left-wing? The political gender gap and the decline in marriage. Quarterly Journal of Economics 117, 917-961.

Elder, H.W., Rudolph, P.M., 2003. Who makes the financial decisions in the households of older Americans? Financial Services Review 12, 293-308.

Fernandez, R., Fogli, A., 2009. Culture: An empirical investigation of beliefs, work and fertility. American Economic Journal: Macroeconomics 1, 146-177.

Fernandez, R., Guner, N., Knowles, J., 2005. Love and money: A theoretical and empirical analysis of household sorting and inequality. Quarterly Journal of Economics 120, 273-344.

Friedberg, L., Webb, A., 2006. Determinants and consequences of bargaining power in households. Mimeo. University of Virginia.

Guiso, L., Jappelli, T., 2002. Household portfolios in Italy. In Guiso, L., Haliassos, M., Jappelli, T. (Eds.), Household Portfolios. MIT Press: Cambridge.

Heaton, T.B., 2002. Factors contributing to increasing marital stability in the United States. Journal of Family Issues 23, 392-409.

Iyigun, M., Walsh, R.P., 2007. Building the family nest: Pre-marital investments, marriage markets, and spousal allocations. Review of Economic Studies 74, 507-535.

Jianakopolos, N.A., Bernasek A., 1998. Are women more risk averse? Economic Inquiry 36, 620-630.

Kalmijn, M., 1991. Shifting boundaries: Trends in religious and educational homogamy. American Sociological Review 56, 786-800.

Lam, D., 1988. Marriage markets and assortative mating with household public goods: Theoretical results and empirical implications. Journal of Human Resources 23, 462-487.

Lewis, S.K., Oppenheimer, V.K., 2000. Educational assortative mating across marriage markets: Non-hispanic whites in the United States. Demography 37, 29-40.

Lott, J.R., Kenny, L.W., 1999. Did womenôs suffrage change the size and scope of government? Journal of Political Economy 107, 1163-1198.

Lührmann, M., Maurer, J., 2007. Who wears the trousers? A semiparametric analysis of decision power in couples. CeMMAP Working Paper CWP25/07.

Lundberg, S.J., Startz, R., Stillman, S., 2003. The retirement-consumption puzzle: A marital bargaining approach. Journal of Public Economics 87, 1199-1218.

Lundberg, S.J., Ward-Batts, J., 2000. Saving for retirement: Household bargaining and household net worth. Michigan Retirement Research Center Working Paper 2000-004.

Lusardi, A., Mitchell, O.S., 2008. Planning and financial literacy: How do women fare? American Economic Review 98, 413-417.

Mare, R.D., 1991. Five decades of educational assortative mating. American Journal of Sociology 56, 15-32.

Sundén, A.E., Surette, B.J., 1998. Gender differences in the allocation of assets in retirement savings plans. American Economic Review 88, 207-211.

Teachman, J.D., 2002. Stability across cohorts in divorce risk factors. Demography 39, 331-351.

Thomas, D., 1994. Like father, like son; like mother, like daughter: Parental resources and child height. Journal of Human Resources 29, 950-988.

Woolley, F., 2003. Control over money in marriage. In Grossbard-Shechtman, S.A. (Ed.), Marriage and the economy: Theory and evidence from advanced industrial societies. Cambridge University Press: New York.

APPENDIX

Table A.1. Description of variables

VARIABLE	DESCRIPTION
SHIW DATA Source: http://www.bancaditalia.it/statistiche/indcamp/bilfait	
Female head	Binary variable assuming value 1 if the wife is in charge of the economic and financial decisions of the household, 0 otherwise.
Age differential	Variable representing the difference between wife and husband age, ranging between -57 and 48.
Education differential	Variable representing the difference between wife and husband highest education level, ranging between -4 and 3.
Income differential	Variable representing the difference between wife and husband individual income, ranging between -600 and 101.
Wife older	Binary variable assuming value 1 if within the couple the wife is older than the husband, 0 otherwise.
Wife more educated	Binary variable assuming value 1 if within the couple the wife is more educated than the husband, 0 otherwise.
Wife earns more	Binary variable assuming value 1 if within the couple the wife earns a higher income than the husband, 0 otherwise.
Family size	Number of household components ranging between 2 and 12.
Income	Continuous variable representing household income at 1989 constant values expressed in thousand ú.
Wealth	Continuous variable representing household net wealth at 1989 constant values expressed in thousand ú.
Only wife works	Binary variable assuming value 1 if within the couple the wife works and the husband does not, 0 otherwise.
Only husband works	Binary variable assuming value 1 if within the couple the husband works and the wife does not, 0 otherwise.
None works	Binary variable assuming value 1 if within the couple neither the wife nor the husband work, 0 otherwise.
Simple choices	Binary variable assuming value 1 if the household declares to use the banking services only to pay bills, housing rent and mortgage installments or to have wages credited, 0 otherwise.
Wifeôs age, Husbandôs age	Integer variables representing the age of the wife (ranging between 16 and 96) and of the husband (ranging between 19 and 98).
Wifeôs education, Husbandôs education	Categorical variables representing the highest education level among the following achieved respectively by the wife and the husband: 1 = no education 2 = primary school

	3 = secondary school 4 = college 5= graduate level 6 = post-graduate level.
Wifeôs income, Husbandôs income	Continuous variables representing the individual incomes of the wife and of the husband respectively, both expressed at 1989 constant values in thousand ú.
Working wife, Working husband	Binary variables assuming value 1 if wife and husband respectively are working, 0 otherwise.
Employee wife, Employee husband	Binary variables assuming value 1 if wife and husband respectively are working as an employee, 0 otherwise.
Self-employed wife, Self-employed husband	Binary variables assuming value 1 if wife and husband respectively are working as a self-employed, 0 otherwise.
Tenured wife, Tenured husband	Binary variable assuming value 1 if wife and husband respectively hold a tenured working position, 0 otherwise (i.e., if they hold a temporary job).
Part-time job wife, Part-time job husband	Binary variable assuming value 1 if wife and husband respectively hold a part-time job, 0 otherwise.
Housewife	Binary variable assuming value 1 if the wife is housewife, 0 otherwise.
Retired wife, Retired husband	Binary variable assuming value 1 if wife and husband respectively are retired, 0 otherwise.
Istat DATA Source: http://www.istat.it/	
Divorce hazard	Number of divorces over number of marriages at the regional level. Ranging between 2% and 45%.
Female employment rate	Female employment rate at the regional level, computed as the ratio of women employed over total female working-age (15-64) population in the region. Ranging between 13% and 45%.