

Family Public Goods and Intra-Household Decision-Making by South African Couples¹

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Abstract

Intra-household decision-making and its link to welfare outcomes of families is a fundamental development issue. This is particularly so for the less privileged households in developing countries. The current study aims to: (i) examine different sources of bargaining power which inform financial decision-making processes within couples and (ii) examine whether bargaining power and decision making power impact on family public goods expenditure. The South African National Income Dynamic Study (NIDS) data offer a direct measure of financial decision making responsibility by asking a question about who makes decisions about day-to-day household expenditures. The multiple probit models are used to establish key economic and non-economic determinants of decision-making power for female partners in couples. The OLS models are in turn applied to determine the extent to which bargaining power sources and financial decision-making power influence family public goods expenditure. The issues addressed here have considerable theoretical and policy relevance. If differences in bargaining power influence the expenditure outcomes, then the unitary model is discarded, paving way for the contemporary intra-household models. On the policy front, the influence of bargaining power emphasises the significance of gender empowerment. The South African evidence suggests relevance of economic factors in decision-making. Furthermore, results show the influence of individual characteristics and marriage heterogamy. Unitary model is unsubstantiated, highlighting the importance of gender-based development policies.

JEL Codes: D13; D19

Key words: Couples; Family Public Goods; Intra-household decision-making; South Africa

¹ The authors acknowledge financial support from the Programme to Support Pro-Poor Policy Development II (PSPPD II), a partnership between the Presidency, Republic of South Africa and the European Union. The contents of this paper are the sole responsibility of the authors and can in no way be taken to reflect the views of the Presidency, Republic of South Africa and the European Union.



1. Introduction

Modelling intra-household decision-making and its welfare outcomes are fundamental development issues in the branch of family economics. Intra-household decision-making modelling is particularly important for the less privileged households in developing countries. A wide array of crucial decisions are made in households, such as decisions on day to day expenditures (Maitra and Ray, 2006), where to live, who to live with, who should work and how to raise income (Kusago and Barham, 2001; Quisumbing and Maluccio, 2000), where children should school and how to spend the available income (Sawada and Lokshin, 1999). Intra-household dynamics on resource related decisions have a great impact on basic financial outcomes particularly where resource constraints are more pronounced (Haddad, Hoddinotti and Alderman, 1997). Situations where households have low wealth, limited access to the labour market, and belong to extended families call for investigation to understand how these circumstances shape decision-making processes and impact on decision-making outcomes inclusive of provision of goods and services within the household.

In the literature, the household is suggested to be a critical decision-making and consumption unit. This argument dates back to the work of Samuelson (1956), whose remarks pointed to the fact that in most of the cultures studied by modern economists, the fundamental unit on the demand side is clearly the “family” which consists of a single individual in but a fraction of the total cases. Converse, Huegy and Mitchell (1958) dismissed the argument of the wife being the principal consumer and described the family as the “most important business conference in America” (in Davis, 1976 p 242). The use of a household, a human institution with its myriad variations, is thus applied on a number of analyses. Davis (1976) provided a number of references to the household as the relevant unit for studying consumer behaviour. Kebede et al (2013) pointed out the use of a household as a unit of account for economic and policy analyses in, for instance, poverty, inequality and labour supply. Browning et al (2011) produced an entire book mainly focusing on family economics and covering models of household behaviour and marriage markets. Bertocchi et al (2014) produced a manuscript focusing on determinants of intra-family decision-making on economic and financial choices.

Nevertheless, the subject of decision-making within the household remains topical for a number of reasons. The first and most important one is that there is joint consumption of a number of goods and these jointly consumed goods compete for the same resources with goods that satisfy the private utility of individual household members. Davis (1976), for instance, identified items of consumer spending such as food, shelter, and transportation as often jointly consumed. Consumption of such family public goods is critical in determining the welfare of family members and as a key development issue (Couprie, Peluso and Trannoy, 2010; Mok, Maclean and Dalziel, 2011). Secondly, family resources are limited and yet have to meet an unlimited list of demands by the family members. The decision-making processes are perceived to influence the expenditures of families and family members, and the consumption outcomes. The third aspect is that household members enjoy different levels of access to financial, physical, human and social capital, factors that determine their decision-making position and capacity to influence household consumption.

The final aspect related to intra-household decision-making is that the link between decision-making processes and decision-making outcomes within households remain arcane in most cases. In other words, a question is raised about what theories explain the decision-making processes. Do households follow unitary models, collective models, cooperative bargaining models or non-cooperative bargaining models when making financial decisions? Part of answering this question includes interrogating different decision-making strategies such as role structure, budgets, problem solving, persuasion and bargaining. Identification of the determinants of intra-family decision-making play a critical role in understanding decision-making outcomes (Bertocchi et al., 2014) taking cognisance of the fact that, unlike other group decision-making, family decision-making is affected by such factors as the environment, maintenance needs, and interrelatedness of the family decisions (Davis, 1976).

The paper aims to initially describe the financial decision-making status of partners in a couple. Further intention is to examine in detail, the sources of bargaining power and investigate whether the identified sources of bargaining power explain the financial decision-making power of partners within couples in South Africa. The other goal of the study is to establish the extent to which the partner's bargaining power and financial decision-making power impact on the expenditure on family public goods. There is a

relatively small amount of literature on the determinants of intra-household decision-making processes that focuses on the direct measures of the allocation of responsibilities over a number of decisions basically because of the rarity of such measures (Bertocchi et al., 2014). The South African Income Dynamic Study (NIDS) data fills the gap by offering the variables that capture the determinants, measures of decision-making responsibility and family public goods expenditures, all from one survey.

The study fits in the economic decisions category of frequently purchased goods or services as it mainly focuses on the question of day-to-day expenditures. This economic decision category deserves attention for, unlike durable goods purchases of which the casual observation indicates that such important and one-time purchases are likely to involve more than one household member, the decision-making processes about frequently purchases are somewhat unknown (Davis, 1976). Nondurable goods purchases are occasionally preceded by a progression of interrelated decisions and activities through time. This may make such factors as 'being an income recipient' or specialisation and division of labour (Bertocchi et al., 2014) or 'being of a specific gender', of a major determining influence for the purchase of such nondurable goods.

While the actual meaning of day-to-day expenditures such as groceries may differ between families, and so does the meaning of husband-wife involvement (Davis, 1976), the NIDS data provide five different spheres of decision-making as a way of clarifying the meaning of each decision sphere. Such categorisation of decision-making spheres establishes the importance of determining the relevant universe of decisions and decision-related tasks before family-member involvement. In other words, there is a distinction between decisions requiring strategic choices and those simply requiring routine day-to-day management of family matters. Investigation per decision sphere becomes more nuanced.

The paper is structured as follows: section 2 reviews both theoretical and empirical literature on intra-household decision-making. Section 3 discusses the application of couples in analysis. Section 4 describes the dataset and provides detail on how key variables in the study were identified and coded. Section 5 provides the estimation procedures followed in the study. In section 6, we present our results and section 7 concludes.

2. Literature Review

In this section, key theories of economic intra-household decision-making, together with the related empirical work, are discussed. In order for us to set ground on testing the unitary model and studying the applicability of the collective and bargaining-type of approaches to intra-household economic decision-making, understanding the key fundamentals of these models and their development up to so far is a requisite. Related empirical literature provide efforts to explain the theories and identifying key determinants of intra-household decision-making on household expenditures using some survey data sets.

2.1 Theory

Economic models of intra-household decision-making have shown a traceable development since they were first conceptualised by Samuelson (1956) and Becker (1981). The key and well developed economic intra-household decision-making models can be categorised as unitary models, collective models, cooperative models and non-cooperative models. As the first proponents of the unitary models, Samuelson (1956) and Becker (1981) treated the household as a unit of account that is assumed to maximise a joint welfare function and where the marginal rate of substitution is equal across all pairs of goods (Becker, 1981, 1991; Samuelson, 1956). The unitary model thus analyses household decisions under the hypothesis that the household is a single and monolithic decision unit that somehow maximises the welfare of its members (Attanasio and Lechene, 2002; Carter and Katz, 1997; Chiappori, Fortin and Lacroix, 2002; Vermeulen, 2005). Within the unitary model framework, decisions within the household are run by a benevolent dictator whose preferences depicts those of the household members to such an extent that the dictator knows and can satisfy all household members preferences. Considering income as the sole and direct measure of financial bargaining power, the unitary model claims that household members pool their incomes and leave the spending decisions entirely to the benevolent dictator.

The unitary model, however, came under heavy criticism for not being able to explain differences in individual welfare within a household, which are exhibited systematically by gender, age, or relation to the household head (Alderman et al., 1995; Browning et al., 2011). The unitary model is hence largely debunked. The model is aggregated and its naivety

is in assuming (i) an aggregate household utility function as compared to different and often competing preferences of individual household members, (ii) a unified production decision as compared to individuals making separate production decisions, (iii) a single household endowment of labour and other inputs as compared to individuals exercising independent control over their endowments (Alderman et al., 1995; Bergstrom, 1997; Doss, 1996). In addition, assuming that consumption decisions are made on the basis of a single budget constraint seems to enjoy less support than a situation where household members have separate incomes and face individual budget constraints (Carter and Katz, 1997; Doss, 1996; Haddad et al., 1994). Nevertheless, the model still plays a critical role as the comparative baseline in intra-household analyses (Browning et al., 2011; Doss, 1996; Ward-Batts, 2008).

As a response to the criticisms of the unitary model, the collective and bargaining-type models of intra-household decision-making emerged. The collective models and bargaining-type models are driven by, among other things, individualism of preferences; interdependence within the household economy; property rights, information and autonomy within the household; exit options, and the voice within the household (Carter and Katz, 1997). Collective models focus on the individuality of household members and how individual preferences lead to a collective choice, and make the key assumption that the household reaches a Pareto efficient outcome (Alderman et al., 1995; Attanasio and Lechene, 2002; Chiappori, 1988; Doss, 1996). However, no theoretical claims are made on how exactly such efficiency is achieved within the household. Browning et al (1994) and Browning et al (2011) pointed out that the focus in research on the collective model of intra-household decision-making is on recovering the implicit or explicit rule by which the household shares resources (sharing rule) among individual members from household-level data, including data on household expenditure.

One attractive feature of the collective model of intra-household decision-making is that of taking into consideration distributional factors. Bourguignon, Browning and Chiappori (2009) viewed distribution factors as variables that affect household economic decisions even though they do not directly impact on preferences nor on budgets. Examples of distributional factors include relative income, relative wages, the “marriage market” environment, and the control of land as well as factors that explain marriage heterogamy,

social capital, and race (Bertocchi et al., 2014; Browning et al., 2011; Maitra and Ray, 2006). The advantages of the collective model are that it is general and easy to work with.

Collective models also suggest that household members reconcile their different preferences in a cooperative or in a non-cooperative manner, which led to the bargaining-type models of intra-household decision-making. The cooperative bargaining model in general assumes that household decisions are always efficient in the sense that no one household member can be made better off without someone being made worse off – Pareto optimality. In McElroy and Horney's cooperative bargaining model, household decisions are made through a cooperative Nash game, with two people in a marriage pooling and jointly allocating resources, each receiving utility from a pure public good, and both valuing leisure and consumption of private goods (Alderman et al., 1995; Browning et al., 2011). The Nash bargaining problem is solved by considering an exit option or threat point as each individual's utility outside marriage, i.e. the utility that each would obtain in case of dissolution of marriage. Such an exit condition, according to Carter and Katz (1997), is a social and economic phenomenon. Further development of the model shows that the threat point can be shifted by some extra-household environmental parameters such as institutional, demographic, and legal factors, and that these parameters may lead to non-cooperative outcomes in the cooperative models (Doss, 1996).

Among the cooperative bargaining models is the separate spheres model which allows for the default equilibrium to be reached and maintained as a result of the social prescription of primary responsibilities, by say gender roles, without any negotiations (Carter and Katz, 1997; Lundberg and Pollak, 1993). In other words, partners within marriage cannot always divorce or dissolve their marriage as a result of a minor disagreement. There are cultural role expectations which, from the sociological point of view, explain power and task responsibility as built into the roles of husband and wife on the basis of cultural norms and controls (Davis, 1976). There is legitimate power vested in a spouse such that her/his authority is based on the belief that s/he should make a decision or carry out a task irrespective of the actual skills or interest that may be present. Power resides in the position rather than in the person (Davis, 1976; French and Raven, 2001). Such arguments point to the fact that the exit option can only be considered as the last resort. The cooperative

bargaining models moreover rest on the strong assumptions of perfect information and enforcement of contracts.

Non-cooperative models of intra-household decision-making include such models as the voluntary contributions model (Browning et al., 2011); the conjugal contract model (Carter and Katz, 1997) and the Cournot-Nash framework (Chen and Woolley, 2001). The non-cooperative approaches make an assumption that individuals cannot enter into binding and enforceable contracts with each other (Alderman et al., 1995; Browning et al., 2011; Carter and Katz, 1997; Lundberg and Pollak, 1993). Notable in the non-cooperative models in their original form is the assumption that income is not pooled. The models are also explicit on how the levels of shared goods are chosen. Doss (1996) and Browning et al (2011) pointed out that the non-cooperative models not only allow for individuals to have different preferences, but also allow for individuals to make consumption and production decisions based on their own labour and access to resources. As such, both Pareto efficient and non-Pareto efficient outcomes are consistent with non-cooperative models. The bargaining process informs the expenditure by each household member on family public goods and on private goods, making the level of public goods endogenous (Doss, 1996). The common notion across all non-cooperative models of intra-household decision-making is that of household members making independent but interrelated consumption and production decisions. Carter and Katz (1997) characterised the household economy as a site of independent preferences and resource allocation decisions bound together by various forms of interdependence. In Sen's (1987) words, "households display cooperative conflicts and that makes a household, both a playground and a battleground."

In non-cooperative models, the distribution of income among household members, for instance, matters for household commodity demands such that the recipient of income is hypothesized to have an upper hand. Non-cooperative models however, are least restrictive as a class of intra-household decision-making models. Estimation of non-cooperative models would require much more detailed data such as individual earnings and resources and transfers among household members (Browning et al., 2011; Doss, 1996).

2.2 Empirical research

Empirical work on intra-household decision-making mainly focuses on testing various models, identifying factors that explain the models, as well as explaining the impact of different models on household expenditure. When testing the unitary model, income pooling has been widely used. However, testing and assessing the applicability of collective and bargaining-type models involve identification of distributional factors as determinants of bargaining power. According to Bertocchi et al (2014), a deeper question asks what determines which spouse to be in control of family decisions. Situations where bargaining power is established allow further assessment of the impact of the distribution of power on the levels of household expenditures. This section highlights some empirical work focusing on the above intra-household decision-making models.

Resource pooling as a way of testing the unitary model was instigated by Thomas (1990) and Schultz (1990). The argument being put forward is that the source of a resource or recipient of a resource does not influence the way in which the resource is being spent within the household. Income and wealth are usually the key instruments used in this analysis. Dosman and Adamowicz (2006) used some data from Canada and their results supported resource pooling in households. Maitra and Ray (2006) found evidence in favour of resource pooling in South Africa using two data sets of the 1993 South Africa Integrated Household Survey and the 1998 Kwazulu-Natal Income Dynamics Survey. According to Bertocchi et al (2014), a number of papers used data collected by the US Health and Retirement Study (HRS), a common survey that provides information about intra-household decision-making. Some results from the HRS refute pooling (Elder and Rudolph, 2003).

The results on resource pooling are constantly questioned especially considering that a couple, as an integral part of the household, is bound to disagree in more cases than when it agrees. Sprey (1969) maintains that treating the family as though the normal states were one of agreement and stability is inadequate, since decisions are frequently an on-going confrontation between members having interests in a common situation. Schultz (1990) and Lundberg et al (1997) pointed out the lumping together of all non-labour income as a key limitation of resource pooling. By lumping together all non-labour income under “unearned income” and conducting pooling tests based on this heterogeneous item, the literature

overlook the fact that unearned income consists of different components that have different sets of determinants and recipients, with different behavioural and welfare implications (Maitra and Ray, 2006).

Bertocchi et al (2014) adopted two approaches to explaining different sources of decision making status using the data from the Survey of Household Income and Wealth collected by the Bank of Italy and the Italian National Institute of Statistics. In one case, the bargaining approach explained by such factors as income, age and education is investigated. In another case, the household production approach that is explained by either the employment status or by distinguishing degrees of complexity of economic and financial decisions is used. According to Bertocchi et al (2014), factors such as age, education and income explain the probability of a wife being a decision maker in as much as the wife's characteristics in terms of these factors become closer or even higher than that of the husband. These results were interpreted by Bertocchi et al (2014) as indicating the importance of not only the strict economic characteristics that are measured in monetary terms, but also other factors such as knowledge, human capital accumulation, experience, seniority, and savviness. Regarding the household production approach, the probability that the wife is responsible for decision-making is lower when she is employed (Bertocchi et al., 2014), a clear suggestion of division of tasks within the household.

Davis (1976) argued against the use of survey data with questions such as who "really decided", "had the most say", or "most often buys" in a given consumption category (p. 242), as being shallow and neglecting issues of group decision-making. However, a wide literature has established the influence of a number of individual factors as drivers of decision-making responsibility such as spouse's relative income, age, education, health, occupational status, and cultural factors like race and religion (Allendorf, 2007; Beegle et al., 2001; Bertocchi et al., 2014; Doss, 2013; Maitra and Ray, 2006). From the intra-household models development front, research has shown an improvement from the unitary model to bargaining-type models, where resources within an individual's control play a fundamental role in positioning him/her in the household decision-making processes.

In as much as the empirical research outlined in this section forms a strong base for the study especially for comparison purposes, a number of reasons make this study especially

important and valuable. First, results on whether the unitary model or the collective and bargaining-type models explain intra-household decision-making are inconclusive. Second, no study within the South African context has interrogated economic intra-household decision-making at couple level using within-couple differentials and applying a nationally representative dataset. Third, decisions on day to day expenditures form part of a five-decision sphere section within the NIDS questionnaire. The explicit presentation of decision spheres in the NIDS data assists the respondents to make clear choices on who actually make decisions regarding the given sphere. Fourth, an extended economic and non-economic list of distributional factors such as asset ownership, social capital, gender of first born (Li and Wu, 2011), and presence of spouse's parents within the household (Lee, 2007) are considered and may better explain the decision-making situation of couples in South Africa. Such additional distributional factors are important in the South African context where asset ownership, gender of kids, social capital, and extended families play a role. Finally, income is disaggregated by source (labour income, grant income and other income) to explain marriage heterogamy.

3. Couple Application

The use of couples in various studies is noted focusing on male versus female influence on product purchase (Davis, 1976), on spousal control and intra-household decision-making (Ashraf, 2009), identifying women's bargaining power (Bertocchi et al., 2014; Doss, 2013), estimating models in which the weights of power attached to individual household members are endogenously determined (Lancaster, Maitra and Ray, 2006), and examining the implications of the regional contrast in female autonomy for the efficiency of family decision-making (Munro et al., 2014). Such a two-parent set up, although it oversimplifies the situation, provides a good starting platform to assess intra-family decision-making. In case where there are children in the household, ideally, they are more like family (as in husband and wife's) public goods as they pose both positive and negative externalities to the partners (Folbre, 1994). In most cases, children do not make independent decisions while each parent contributes to the well-being of and derives psychological benefits from children (Welling and Bearance, 2002). Bargaining within couples has significant

intergenerational implications on education, health for children as well as bequest motives. The couple bargaining process consequently influences the intergenerational transmission of poverty as well as the potential for upward mobility on the quality of life ladder across generations (Deaton, 1998). Thus, the couple is an integral part of the decision-making processes within households.

There is a need therefore, to open the black box of how couples function, focusing on financial decision-making processes and considering family public goods as sources or conduit of family well-being. According to Bertocchi et al (2014), identification of the drivers of decision-making responsibilities 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 household-based and gender-related development initiatives should be designed. Unpacking drivers of decision-making within households thus provide answers to such policy questions relating to who gets what within households, who decides and what makes him or her decide, and whether the processes in the decision-making are mono-type or joint-type. Although the focus on husband-wife dyad as the relevant decision-making unit (the family) oversimplifies the situation, the current study interrogates the influence of other household members such as children and couple's parents by treating their presence or absence within the household realm as some covariates.

4. Data

The analyses in this study are done using the 2008 NIDS dataset (wave 1). The main instrument used in the survey consists of a set of comprehensive questionnaires covering a wide range of topics at household and at individual level. Individual level questionnaires are for adults (adult questionnaire) and for those below fifteen years of age (child questionnaire). The dataset is ideal for analysis of intra-household decision-making due to a number of reasons: the data offers a unique section of questions regarding who the main decision maker and the joint decision maker are in the household, for five decision spheres including the day-to-day expenditures; the data provide us with gender disaggregated information on all possible determinants of bargaining power including incomes, wealth and

social factors; the data enable the matching of partners in a couple thereby creating a subset of two-person households; data regarding household expenditures are disaggregated and so can identify specific expenses for family public goods. In addition, data regarding decision-making processes, especially identification of the main and joint decision makers are generally very rare, which makes this a unique opportunity especially in the African context and for South Africa in particular. Finally, NIDS' identification of the decision maker (and joint decision maker) further gains strength in that all the adults within the household were expected to report who hold such powers, including self-proclamation.

For the first wave of the NIDS project, out of a total 15,633 South African adults who were interviewed in 7,305 unique households, 2055 couples could be identified. Out of the identified couples, only 60 (2.92%) did not have any financial decision maker and so were excluded to remain with 1995 couples. There were six situations of polygyny and no cases of polyandry. The polygyny cases were handled by including only the wife identified by the man involved as the first wife. This was done specifically to allow the computation of differentials on some key variables. Since the focus of this paper is not necessarily on how power is distributed within a polygamy, exclusion of the six half partners is thought not to have a big impact. In the first wave NIDS survey, there were no reported cases of same sex couples. After identification of the couples, variables which represent household characteristics were constructed. Furthermore, variables regarding individual characteristics as well as within couple differentials were computed. The coded variables are summarised in Table A1 in the annexure.

The most critical on the list of variables given in Table A1 is the set of dependent variables, which identify the decision-making status of partners within couples. Using the question 'Who makes decisions about day-to-day household expenditures?', the data were used to (i) distinguish between a decision maker (=1) versus a none decision maker (=0) among adults, and (ii) classify adults as either main (=3) or joint (=2) decision makers or none-decision makers (=1). Cases of situations where both partners within a couple are identified as decision makers irrespective of whether joint or main (=1) versus a single decision maker in the couple (=0), are also captured as a dummy. These decision-making variables are categorical in nature and allow application of probit analysis.

In order to measure financial bargaining power comprehensively, a number of variables were selected, which are incomes (labour income, grant income and other incomes) and asset ownership (measured as asset index). Measuring financial bargaining power using share of assets controlled by the mothers and fathers is also discussed in the work of Doss (1997, 1996), Quisumbing and Maluccio (2000), and Kusago and Barham (2001). Financial bargaining power is thus one of the key independent variables that are hypothesized to explain decision-making status. Social capital (measured as social capital/association index), gender of first born and the presence of a spouse's parents are considered key social variables that potentially determine the decision-making propensity of a spouse. In choosing which variables to consider as key covariates, stability over time relative to accumulation is important. Thus, grant income, assets and social capital are more stable over time and may play a role in explaining decision-making status between spouses.

The wealth, asset and social capital indices were computed using Multiple Correspondence Analysis (MCA). The wealth and asset indices are potential indicators of expenditure-based economic status. The wealth and asset indices are believed to be able to effectively discriminate between economically well-off and worse-off households and/or individuals. Asset-based measures depict an individual or household's long-run economic status and therefore do not necessarily account for short-term fluctuations in economic well-being or economic shocks. Córdova (2008) argued that these expenditure-based economic status indicators are more reliable than income-based indices. The income-based indices are prone to high non-response rate and over or under-reporting in income items. However, non-response rates to household and personal asset items in questionnaires are lower (Córdova, 2008). Kim et al (2007) defined empowerment as the process of increasing the capacity of individuals or groups to make choices and to transform those into desired actions and outcomes. Asset ownership and social capital are among the key potential sources of empowerment and ideally, should play a pivotal role in decision-making processes within households. Tables A1 (for asset and social capital) and A2 (for wealth) in the annexure provide detail of variables used in the construction of the indices.

The MCA methodology is applied so as to make the weights of the items considered non-arbitrary and replicable. The three indices are calculated from variables that are categorical and/or ordinal in nature. Before the application of the MCA, cronbach's alphas were

calculated to measure the reliability of the variables used in the calculation of the index. Some variables were excluded if their inclusion were pulling down the cronbach's alpha considerably. The MCA command that was applied used the Burt method and indices were constructed on dimension one. After the index is constructed, a related variable "index quintile" is constructed. This variable puts the index values into five groups (quintiles) by distributing the values equally into 5 groups after ranking the values first.

The second step of the data preparation calculates the household expenditure budget for selected family public goods. The NIDS dataset uses ten classifications of expenditures, including miscellaneous category. Categories that are argued to represent expenditure on family public goods are food; transport costs; energy, water and municipal rates (utilities); insurance; household items; health care, and education. As family public goods are goods that in one way or the other, are enjoyed by all family members, their provision is thus, more often than not, expected to contribute to the welfare of all the household members. The selection of family public goods that is followed here is also informed by the work of Lancaster et al (2006) whose results confirmed such goods categories as necessities and highly demanded when the share of income by couples is close to equal.

5. Method

Descriptive statistical analyses are employed to investigate associations between selected economic factors such as different types of income, working status and asset ownership (financial bargaining power), and non-economic factors such as social capital, couples' parents residing with the couple and gender of first born (partner's social positioning), as potential determinants of financial decision-making status. Chi², t-tests and F-tests are used in this descriptive analysis. Multiple probit regression models are used to investigate the relative importance of financial bargaining power and social factors in explaining the female partner's financial decision-making power. Specifically, the multiple probit models applied here investigate determinants of [1] whether the female partner takes decisions on day-to-day expenditures or not, and [2] whether both partners make decisions on day-to-day expenditures or not. For these two categories, the determinants of decision making are presented firstly as wife's and husband's characteristics, secondly as within-couple

differentials and lastly as within-couple differential dummies. Bertocchi et al (2014) argued that the univariate preliminary exercise of introducing the differentials one by one, which we also followed here, facilitates the exposition of the intuition behind the underlying links of marriage heterogamy and decision-making processes. In situations where the average differentials are negative, results interpretation have to capture the reasoning that an increase in the differential means that the wife's characteristics are catching up or getting higher than that of the husband.

The second set of the probit models use the disaggregated income sources together with extended list of partners' characteristics, to explain whether the female partner makes financial decisions. Differentials for the disaggregated sources are also handled using the univariate preliminary exercise. For each of the probit regressions, the reported results are for the marginal effects.

The second component of the analysis considers multiple linear ordinary least squares (OLS) regression models. The linear OLS models investigate how partners' decision-making power and financial bargaining power, separately and jointly, impact household expenditure on family public goods. The conjecture here is that possessing financial bargaining power and social positioning of partners (as determined by the social factors discussed above) will influence females' decision making power, which in turn influence the household expenditures on family public goods.

The various multivariate regression models were specified as follows:

A. Dependent variable: Female's decision making status

- I. Probit regression models for determining how wife's and husband's characteristics influence decision making status of the female partner:

$$\text{Female decision maker} = \Phi (\text{wife characteristics; husband characteristics; household characteristics}) \dots \dots \dots (i),$$

where female decision maker is a binary variable assuming value 1 if affirmative and 0 otherwise; wife and husband characteristics are age, years of education, earned income and whether working or not. The second version of the model includes the squared variables of age, years of education and earned income.

- II. Probit regression models for determining how within-couple differentials influence decision-making status of the female partner:
 Female decision maker = ϕ (within-couple differentials; wife characteristics; husband characteristics; household characteristics).....(ii),
 where the model's variations have each of the within-couple differentials of age, education and earned income assessed separately; included in one model, and included together with wife's, husband's and household characteristics.
- III. Probit regression models for determining how within-couple differential dummies influence decision-making status of the female partner:
 Female decision maker = ϕ (within-couple differential dummies; wife characteristics; husband characteristics; household characteristics).....(iii),
 where the differentials dummies are assessed separately; included in one model and included together with wife's, husband's and household characteristics.
- IV. Probit regression models for determining how separate sources of income influence decision-making status of the female partner:
 Female decision maker = ϕ (earned income; grant income; other income; total income; asset index; social capital index; firstborn male; parents residence; age; years of education; working status; household characteristics).....(iv),
 where the model's variations include income by source separately in the model and together in one model. (Asset index, social capital index, firstborn male and parents residence) are all included in one model that includes total income, wife characteristics, husband characteristics and household characteristics.
- V. Probit regression models for determining how differentials of separate sources of income influence decision-making status of the female partner:
 Female decision maker = ϕ (within-couple differentials for different income sources, age, education, social capital count).....(v),
 where the other specifications of this model include wife's, husband's and household characteristics.

B. Dependent variable: Both partners versus single partner making financial decisions

VI. The model specifications followed here are similar to those in I, II and III above, except that the dependent variable is whether within the couple, we have both partners participating in the financial decision-making or not.

C. Dependent variable: household expenditures for family public goods

VII. OLS regression models determining how partner's financial decision-making status impact household expenditure budgets for family public goods:

Household expenditure on family public good = ϕ (partner financial decision-making status; household size; household size squared; per capita household income)(vii),

where family public goods are food, transport, utilities, insurance, household items, health care and education; Specification 1 of these models uses the variable 'partner financial decision-making status' that takes value 1 if partner's status is yes and 0 otherwise. Specification 2 of the models uses the variable 'partner financial decision making status' that assumes the following categories: main (=3), joint (=2) and none decision maker (=1).

VIII. OLS regression models determining the joint impact of decision-making status and partner's working status on household expenditure on family public goods:

Household expenditure on family public good = ϕ (partner financial decision making status * working status; household size; household size squared; per capita household income).....(viii),

where specification 1 of these models uses the variable 'partner financial decision making status' that takes value 1 if partner's status is yes and 0 otherwise. Specification 2 of the models uses the variable 'partner financial decision-making status' that assumes the following categories: main (=3), joint (=2) and none decision maker (=1). In each case, the decision-making variables are interacted with employment status

IX. OLS regression models determining the joint impact of decision-making status and partner's total income on household expenditure on family public goods:

Household expenditure on family public good = ϕ (partner financial decision making status * total income; household size; household size squared; per capita household income).....(ix),
 where specification 1 of these models uses the variable ‘partner financial decision making status’ that takes value 1 if partner’s status is yes and 0 otherwise. Specification 2 of the models uses the variable ‘partner financial decision-making status’ that assumes the following categories: main (=3), joint (=2) and none decision maker (=1). Decision-making status in each case is interacted with individual monthly income.

- X. OLS regression models investigating whether having both partners involved in financial decision-making matters for the expenditure levels of family public goods.

Household expenditure on family public good = ϕ (both partners make financial decision; household size; household size squared; per capita household income).....(x),
 where the binary variable “both partners make financial decision” assumes the value 1 if both partners participate in the financial decision-making and 0 otherwise.

There are three key stages of the analysis. The first stage focuses on the association between key variables. The second stage assesses the explanatory power of economic and non-economic factors as determinants of financial decision making status. The last stage investigates the influence of decision-making status individually, and jointly with financial bargaining power, on the household expenditures on family public goods. Stage two informs stage three in as much as one assesses and selects the economic and non-economic factors of the decision-making that impact on the expenditures on family public goods. The whole set of regressions is run with robust standard errors clustered at the household level. In the next section, results are discussed.

6. Results:

The summary of the descriptive statistics for the variables used in this analysis are presented in Table A3 in the annexure. The first component of the table summarises the couples' household characteristics. The second and third component of the table capture the wife's and husband's characteristics respectively. The fourth part summarises the within-couples differentials and the last part of the table represent the within-couples differentials in the form of dummies. On average, household size is 4.28 persons. Although the average household income is R8815.47, the median value is just R3547.57 which reflects that household income is positively skewed. The same trend of lower median values for the incomes is seen when considering the wife and husband's total as well as separate incomes. The average incomes are pulled up by few seemingly unrealistic high values and so the median gives a better picture. As expected, husbands do have higher earned as well as non-grant and non-employment income whereas wives, as expected, receive more in terms of social grants. Average monthly total income differential is reported as -R2881.04. On average, husbands are older than wives with the average difference of 4.6 years. By years of education, wives slightly beat their husbands by 0.12 years on average.

Categorising decision making status as main, joint and none, the NIDS 2008 (wave 1) couple data shows in Table 1 that males are mostly identified as main financial decision makers (69.37%) as compared to females (48.48%). Females dominate the joint financial decision making category at 41.95% compared to males at 22.04%. There are very rare cases where partners within a couple do not give an input in financial decisions as shown by 8.59% of male none decision makers and 9.57% of female none decision makers. Applying a chi2 test to check the significance of differences in the main, joint and none decision making by gender, results show that the differences are highly significant. The binary variable of decision making versus none-decision making shows an insignificant differences by gender. Of the 1995 couples analysed, 81.84% reported that both partners participate in financial decision making whereas 18.16% reported a single partner being a decision maker.

[Table 1 about here]

Assessing the association of income by source and decision making status, females who are decision makers have on average higher incomes from all sources than females who are

none decision makers. Differences between main and joint female decision makers are narrow. For females, therefore, income on aggregate may play a role as a determinant of financial decision-making. On the other hand, males who are not decision makers seem to possess similar incomes on average, to decision makers, especially from earned sources. For those that receive income from other sources, male none decision makers receive higher level of income on average than decision makers. The same picture is portrayed with an inclination of higher income for male none decision makers when we aggregate income. This is perhaps due to the fact that affluent working men delegate the duties related to day-to-day expenditures to their partners because they are too busy to participate in day-to-day decision-making. The trend points to the fact that an increase in husband's income may increase the wife's decision making propensity. With regard to grant income, variations by decision-making status are very minimal across gender. This is probably confirming the obvious that grant values are mandated and so may not vary much by decision-making status. Although the variations in the education level is narrow for both females and males, the results show that more educated females do make decisions more than their less educated counterparts. Possible explanations are that of more trust with finances by their male spouses or such group of females spending from their own incomes. However, with males, decision makers seems to have less education than none decision makers. This may not be a surprise if one considers that the more educated males are likely to be employed and busy working for the family and so voluntarily delegate their decision-making responsibility, especially for the day-to-day expenditures, to their partners.

[Table 2 about here]

According to the results reported in Table 3, for a given decision-making status, percentages were computed for those that fall in the employed, unemployed and not economically active categories. The results show that being employed boosts the chances of participating in decision-making for the females but not necessarily for males. A substantial percentage of the male none decision makers are employed. This is in line with variations in income by decision-making status for males, which show affluent working men delegating tasks of day-to-day expenditure as working probably brings more income to the family. For females, it is reasonable to see employment status playing a role in decision-making as their income

relative to male partners is low across all the sources. The state of being employed may become relevant than the income from that employment for females.

[Table 3 about here]

Analysing the determinants of the wife's decision-making responsibility, the models in Table 4a serve as the baseline analysis for the binary dependent variable 'wife is a financial decision maker. Table 4a shows that the household characteristics (household size, income quintiles and wealth quintiles) are of no significance in explaining the probability of female spouses being decision makers. Turning to the spouses' characteristics that are included separately, the wife's age matters in explaining her decision-making status. On average, every additional year of age of the wife increases the dependent variable by 0.0018. However, the husband's age seems not to matter.

The results in column 1 of Table 4a also show that while the wife's earned income does not matter, the earned income of the husband positively impact the wife's decision-making responsibility. Increasing the husband's income by a thousand Rands would increase the dependent variable by 0.0068. Such results reinforce the argument that affluent men are delegating the financial day-to-day expenditure responsibilities to their partners. While the earned income of the wife seems not to matter in the model, her working status matter and in the expected positive direction. Being an employed wife increases the dependent variable by 0.0659 while the husband's status in this regard is not important. This is supporting the pattern we see in Table 3. A probable explanation for the impact of wives' employment status is that working wives do accumulate decision-making power by virtue of being exposed to the working field where they are probably decision makers in other issues. It is not the income per se that they earn that will give them power, but implicit social capital that they accumulate as and when they interact with colleagues outside the house.

The next model analyses how, in a non-linear sense, the wife's and husband's characteristics may influence the dependent variable. The results of the model specification show that only the wife's age, age squared and working status are significant, whereas the other variables are not. Actually, adding the husband's squared earned income makes the earned income itself not significant. Thus the second model represented by column 2 does not

differ much from the benchmark model results and so there may not be any misspecification problems.

[Table 4a about here]²

As argued and applied by Bertocchi et al (2014), to verify if the dimensions of marriage heterogamy do matter in explaining the probability that the wife is the decision maker, the spouses' differentials of age, education and income are used as regressors in a similar model that uses the 'wife is a financial decision maker' as the dependent variable. These within-couple differentials are first introduced individually and then all simultaneously entered into one regression function, exclusive and inclusive of household, wife and husband characteristics.

As expected, and similar to the results in the literature discussed in section 2 of this paper, the age differential (column 1 of Table 4b) shows that when the wife is older than the husband, the wife is likely to make financial decisions and the influence is significant. Literature suggests that such may be a result of an increase in the wife's experience, savviness and reliability (Bertocchi et al, 2014). The same results are shown when the earned income differential is introduced individually. When we introduce all the differentials, age and income maintain their significance giving very similar coefficients as in models where the differentials are introduced individually. Closing the income differential by a thousand Rand impacts positively on the dependent variable and by 0.0028. This impact is highly significant. However, the education differential remains insignificant.

When introducing the within-couple differentials in the specification where household characteristics, wife characteristics and husband characteristics are all included, both the age and income differentials lose their significance, while the age and working status of the wife show their usual significance. Such results may be a confirmation of correlation between differentials and separate partners' characteristics and so the inclusive regression

² Checking for endogeneity, running regression functions where we separate the household wealth and household income did not improve the results of the two variables. However, the regression function that excludes the working status of the partners improves the earned income results of both the wife and the husband whereas the function that excludes earned income for partners give similar results as those in table 4a.

function clouds the potential significant impact of marriage heterogamy variables.³ Alternatively, the case could be that an increase in the propensity to make financial decisions does not come from their relative distance from the husband's corresponding characteristics, but rather, from their individual characteristics. In the parsimonious regression functions, age and income differentials are significant and that matters.

The picture we see for the characteristics differentials is similar when we express these differentials as dummies, which are wife is older, wife more educated and wife earns more. The dummies lose significance when they are all put in one regression function that includes wife and husband characteristics as well as in the comprehensive function with household characteristics. Results of these dummies are presented in Table 4c. The differentials perform better than their dummy counterparts and this is in support of the argument in literature that dummies are a coarse measurement of the within-couple differentials (Bertocchi et al., 2011; Elder and Rudolph, 2003; Lundberg and Pollak, 1993)

[Table 4b - c about here]

The investigation now shifts to the analysis of the role of alternative income sources and other potential determinants of decision-making power. Additional determinants include the difference in number of associations a spouse belong to, an individual asset index; an individual social capital index, parents being resident and the wife having a male first-born. Similarly, the investigation uses "wife is a financial decision maker" as a dependent variable. The results show that when the spouses' income from different sources were individually considered in the model which includes other control variables such as age; years of education and working status, only the husband's earned income positively impact on the dependent variable. The husband's earned income impact becomes highly significant with a slightly higher value (0.0084 compared to 0.0068) in the model that includes all the sources of income with other income being marginally significant too. These significant sources of income for the husband bear a positive sign in both cases. The aggregate income for the husband remains significant and with a positive sign, even in the comprehensive regression model that includes all other additional variables. The results for income by source which

³ An inclusive regression function that excludes earned income variables for the partners show that the income differential becomes relevant at 10% level of significance.

are presented in Table 5b show that the significance of these variables do not improve by expressing these variables as differentials.

Whereas the presence of a wife's parents does not impact significantly on her decision-making responsibility, presence of the husband's parents in the household significantly reduces the wife's propensity to make financial decisions. These results confirm the findings by Lee (2007) who showed that living with husband's parents significantly raised the bargaining power of the husband while living with wife's parents reduces the husband's bargaining power. When the husband's parents are present in the household, the female partner may play a 'good wife' who is submissive to the husband and so willingly or unwillingly surrender the responsibilities of decision-making to the husband. This is most likely in the African context with such norms and values. The social capital index and the 'male first-born' were not found significant in the model. This is in contrast to the findings of Li and Wu (2011) who argued that having first-born son impacts positively in women's role in decisions. In the South African context, the first-born son is not an influential factor in the decision-making status. However, some reason why this measure is distorted as an explanatory power of decision-making is that we could not establish if and in which cases the first-born is for the couple or just for the woman but with another man. Another notable trend in the set of models that considers the income by source variables as wife's and husband's characteristics is the highly significance of the wife's working status, with the expected positive sign in all the whole set of these models.

[Table 5a-b about here]⁴

In a similar fashion as of the models presented in Tables 4a-c, a new dependent variable that captures a binary situation where both partners make financial decision versus a single partner being the sole financial decision maker was used in a set of probit regression models. This set of regression models includes exactly the same explanatory variables as in Tables 4a-c. Column 1 of Table 6a shows that household size, household size squared, wife's income and husband's age are the only significant explanatory variables. Specifically, the results show that the greater the household size and the greater the wife's income, the more likely that both partners will be involved in financial decision-making. Such results may

⁴ Specific notes for variations of the models presented in each column checking the influence of endogeneity are presented in Table 5a in the last row.

indirectly imply that giving the wife some financial bargaining power promotes syncretic as opposed to autonomic decision-making processes within couples. The more comprehensive model of this type in column 2 of Table 6a, which includes the squared variables of age, years of education and earned income, maintains the significance of household size and its squared. The wife's employment status, age and its squared as well as the income and its squared value become significant as well. While the wife's squared earned income carries the positive sign, the earned income changes sign to negative. However, representing the key determinants of decision making in the form of differentials or dummies of these differentials as shown in Tables 6b and 6c do not show a different or improved story compared to the results in Table 6a. Within-couple differentials are not significant predictors of joint decision-making.

[Table 6a-c about here]

The two different forms of our dependent variable point to the fact that only two key economic variables in form of total income and employment status of the spouses do matter in explaining the decision-making power for the South African couples sample. The next step of our analysis focuses on how the decision-making status of the partners within a couple would influence expenditures in family public goods. This is particularly important given the potential impact on household welfare. At this stage, we ask the question about how the expenditure on each of the family public good category will vary when the decision making power, as represented by the binary variable: financial decision maker versus none financial decision maker, is with the wife as compared to the husband. In separate OLS regression models, we also interact decision-making power with the identified sources of decision-making power, which are total income and employment status.

The results presented in Table 7 show that when financial decision-making power is vested in the wife, expenditures in food (p-value < 0.01), utilities (p-value < 0.01), health care (p-value < 0.05) and education (p-value < 0.05) significantly increase. Decision-making power held by the husband does not give any significant increase in any of the family public goods expenditure categories presented here. This finding is quite critical in as much as provision of family public goods impacts on the welfare of the whole household, including children. Interacting decision making power with employment status in this case does keep the

significance of increase in expenditure on food (p-value < 0.05) and utilities (p-value < 0.01) but losing significance of health care and education for the wife. A kind of trade-off in wife's influence is seen instead, as expenditures on transport (p-value < 0.01) and insurance (p-value < 0.05) become significant. The same interaction seems to give credence to the increase in expenditures on food (p-value < 0.01), transport (p-value < 0.01), insurance (p-value < 0.01) and household items (p-value < 0.10) when the husband is given financial bargaining power in form of employment.

Surprisingly, an interaction of decision making power by total income only gives the increase in transport expenditure (p-value < 0.01) as significant when such financial bargaining power is given to a financial decision-making wife. When such financial bargaining power is awarded to a financial decision-making husband, expenditures on food (p-value < 0.05), transport (p-value < 0.01) and insurance (p-value < 0.01) increase. Unlike a decision-making wife, a decision-making husband's influence on expenditure on family public goods is almost consistent whether bargaining power is given in form of income or employment. Considering that the decision-making for husbands is not significant on its own, but gives consistent results when interacted separately with the two sources of financial bargaining power, results show and confirm some responsibility among the working husbands. In the case of a decision-making wife, being employed is not synonymous to having more income. An employed decision-making wife is most likely to need transport and insurance. This could be the reason why these expenditure categories increase significantly when the decision-making is interacted with employment for a wife. In addition, wives need not be employed or earn income so as to demand the good health and good education for their children, who in a greater sense are family public goods in as much as partners draw psychological satisfaction from children. Whether employed or not, wives tend to push for the provision of these goods by their husbands. This could be the reason why, before interaction, health and education categories have increases that are significant but not after interactions.

[Table 7 about here]

The results in Table 1 show that variation in decision-making status defined as decision maker versus none-decision maker does not vary significantly by gender. It is therefore ideal to use the categorical decision-making status variable with main, joint and none decision-

making categories in this analysis. Three separate OLS regression models was estimated, one where the categorical variable enters as the independent variable together with household characteristics and a second and third model interacting decision-making status with employment and income. Compared to the base outcome of none decision-making, when the wife is a main decision maker, significant increases in expenditures on food (p-value < 0.01), utilities (p-value < 0.01), health care (p-value < 0.05) and education (p-value < 0.10) are realised. When the wife is a joint decision maker, significant increases in food (p-value < 0.01) and utilities (p-value < 0.01) expenditures are realised. Overall, main and joint decision-making by the wife favours expenditure on family public goods more than when such power is with the husband, a situation where only food (p-value < 0.01) and transport (p-value < 0.05) are significant for the decision-making husband.

When the main and joint decision-making are interacted with employment, the results show that expenditures increases on food (p-value < 0.05), transport (p-value < 0.01), utilities (p-value < 0.10), insurance (p-value < 0.10), and education (p-value < 0.10) are significant for the main decision-making wife. In the case of a wife who is a joint decision maker, awarding her affirmative working status promotes expenditures in food (p-value < 0.05), transport (p-value < 0.01) and utilities (p-value < 0.05). In the case of the husband, a working main decision maker positively influences expenditures on food (p-value < 0.01), transport (p-value < 0.01), insurance (p-value < 0.01) and household items (p-value < 0.01). Interacting income and decision-making status in this case show significance for the main decision-making wife on increases in transport (p-value < 0.01) and insurance (p-value < 0.01) and significance for the joint decision-making wife on transport (p-value < 0.10). Only the main decision-making interacted with income gives significant and positive results on food (p-value < 0.01), transport (p-value < 0.01) and insurance (p-value < 0.01) for the husband.

The results clearly show that main decision-making as opposite to joint or none decision making is critical particularly for the wife if increases on family public goods expenditures are to be realised. Main decision-making husband show significant increases only on two categories, a similar case to the joint decision-making wife. Interacting main and joint decision-making with employment improves on the results for the wife, but also for the main decision making husband. Employment as a financial bargaining power is therefore a

key driver in promotion of family public expenditures across gender. This is not the case with income which shows minimal influence especially for the wife.

[Table 8 about here]

In as much as syncretic as opposed to autonomic decision-making processes may influence spending by couples and in turn, the welfare of household members, an analysis of how expenditures on family public goods depend on whether both partners are involved in decision-making or not is of relevance. The significance of the analysis is even more pronounced in a couple set up, when cooperation should add value not only to tangible goods, but also to intangible benefits in a marriage. Table 9 results indicate that when a regression function that uses a binary variable “both partners making decision” is run on different categories of family public goods expenditures, significant increases are realised for food (p-value < 0.01), utilities (p-value < 0.05) and education (p-value < 0.10). The results are clear that in practical sense, cooperation is realised and good especially for those goods that are more family-public that food, utilities and education. However, in goods that are less family-public such as transport, health care and insurance, we see less cooperation in the decision-making.

[Table 9 about here]

Conclusion

The NIDS data set as a nationally representative survey enables us to, at one stage, empirically study the potential determinants of decision making status of a female partner in a couple within South Africa. At a second stage, we investigated the impact of bargaining power and decision making power on family public goods expenditure.

The major findings of our study are that economic factors in form of income and employment status and age as a social factor, play a critical role in positioning a female partner in the intra-household financial decision-making. Specifically, female partner’s employment status consistently show up as a significant influence of her probability to make day-to-day expenditure decisions. Ironically, but perhaps not surprising, male

partner's employment status, together with his income, came out as positive drivers of the female partner's probability to take responsibility on day-to-day expenditures. Such a revelation supports the conjecture that employed and affluent male partners prefer to delegate responsibilities to the female partners as they focus more on working. The insignificance of the female partner's income and yet her employment status highly increases her probability to make financial decision-making show that it is not her income per se that will give her financial bargaining power. There is implicit social capital that they accumulate as and when they interact with colleagues outside the house and so gain the decision-making power in the house. Employment gives exposure over and above being the source of income. The age factor also persistently play a positive role in increasing the probability of a female partner being a financial decision maker. This aspect is clearer when age differential shows that closing the age gap promotes financial decision making by females. Closing the income gap also promotes decision-making by the female partner.

Turning to the family public goods expenditure, essential findings are that financial decision-making power vested in the female partner significantly increase expenditures on food, utilities, health care and education. Similar results obtain when financial decision-making for the female is interacted with employment status. For the male partner, financial decision-making has to be interacted with financial bargaining power (employment status or income) in order to significantly necessitate increases in food, transport, insurance and household items. The trend of the results on family public goods expenditure persist when we express decision making status as main, joint and none. Main decision-making by wife performs better than joint decision-making whereas, whether the husband is a main or a joint decision maker does not significantly influence family public goods expenditures. The interaction of main and joint decision making with financial bargaining power, especially the employment status, boosts the female's influence on family public goods expenditure. The male's influence also comes into play when interacted with financial bargaining power.

Our results lead us to the conclusion that empowering women not only improves their image in the society, but has the positive ripple effects as and when they get involved more in intra-household decision-making and promotes household welfare through family public goods provision. A key policy consideration also image when smart economics should not just be about closing the gap between females and males e.g. giving females more income

than males. Rather, life uplifting in general is more important as male partners who are better positioned economically have a high propensity to delegate financial decision-making. In the process, the female partner is better positioned as reflected by the impact on family public goods spending.

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Table 1: Financial decision-making for the couple partners (%), by gender

Decision making status:	Male	Female	Total	Chi2 test
Main	69.37	48.48	58.93	318.83***
Joint	22.04	41.95	31.99	
None	8.59	9.57	9.08	
Total	100.00	100.00	100.00	
Sample (n)	1995	1995	3990	
Decision making (yes/no)				
Yes	91.41	90.43	90.92	0.69
No	8.59	9.57	9.08	
Total	100.00	100.00	100.00	
Sample (n)	1995	1995	3990	
Both partners make decision in a couple				
Yes	81.84	81.84	81.84	0.00
No	18.16	18.16	18.16	
Total	100.00	100.00	100.00	
Sample (n)	1995	1995	3990	

Table 2: Socio-economic factor averages by financial decision-making status, by gender

Decision making status								
	Female				Male			
variable	Main	Joint	Any	None	Main	Joint	Any	None
Grant income	642.25	626.20	634.20	560.12	928.09	1166.89	976.07	869.11
Earned income	2368.69	3011.79	2655.80	1327.27	4093.33	5887.84	4436.83	4956.23
Non-grant-non-employed income	1732.00	4011.04	2457.69	566.67	2343.08	4111.81	2817.31	4372.40
Total income	1305.76	1399.03	1351.21	480.34	2739.88	3768.24	2951.35	3740.07
Education (years)	7.47	7.01	7.24	6.70	6.85	7.53	6.99	7.53
Association count	0.55	0.57	0.56	0.48	0.53	0.47	0.52	0.52

Table 3: Financial decision making status (%), by employment status, by gender

Decision making status	Female					Male				
	Employed (%)	Unemployed (%)	Not economically active (%)	Sample (n)	Chi2	Employed (%)	Unemployed (%)	Not economically active (%)	Sample (n)	Chi2
Main	46.25	20.25	33.50	925	41.23***	68.27	9.34	22.39	1422	5.40
Joint	40.22	24.58	35.20	887		65.97	10.66	23.37	366	
Any	43.44	22.27	34.29	1812		67.72	9.66	22.63	1788	
None	25.27	34.53	40.20	170		70.64	11.06	18.31	186	
Total	41.71	23.44	34.85	1982		67.97	9.78	22.25	1974	

Table 4a: Determinants of whether the female partner makes financial decisions or not.

Independent variables	Dependent variable: female is a financial decision maker(yes/no)	
	(1)	(2)
Household characteristics		
Household size	0.0076 (0.95)	0.0060 (0.85)
Household size ²	-0.0006 (1.23)	-0.0005 (1.19)
Income 2 nd quintile	-0.0128 (0.61)	-0.0052 (0.29)
Income 3 rd quintile	-0.0225 (1.01)	-0.0093 (0.48)
Income 4 th quintile	-0.0379 (1.43)	-0.0160 (0.65)
Income 5 th quintile	-0.0169 (0.45)	0.0135 (0.50)
Wealth index 2 nd quintile	0.0126 (0.69)	0.0118 (0.74)
Wealth Index 3 rd quintile	-0.0332 (1.34)	-0.0243 (1.12)
Wealth Index 4 th quintile	-0.0231 (0.89)	-0.0155 (0.69)
Wealth index 5 th quintile	-0.0052 (0.22)	0.0007 (0.04)
Wife's characteristics		
Age	0.0018** (2.11)	0.0106*** (3.27)
Age ²		-0.0000*** (3.16)
Education in years	0.0015 (0.79)	0.0035 (0.85)

Education in years ²		-0.0001 (0.53)
Income (x R1000)	0.0041 (0.73)	-0.0041 (0.30)
Income ²		9.28e-10 (0.71)
Working wife	0.0659*** (4.85)	0.0567*** (3.61)
Husband's characteristics		
Age	0.0002 (0.35)	-0.0028 (1.05)
Age ²		0.0000 (1.20)
Education in years	-0.0010 (0.53)	0.0001 (0.04)
Education in years ²		-0.0000 (0.30)
Income	0.0068** (2.19)	0.0022 (0.32)
Income ²		1.96e-10 (0.57)
Working husband	-0.0064 (0.44)	-0.0062 (0.41)
Observations	1691	1691
Wald chi2	66.67***	94.96***
Pseudo R ²	0.0892	0.1035
Successfully predicted	91.37%	91.37%

Note: Marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis).

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4b: Within-couple differentials as determinants of female partner's financial decision-making

Variables	Dependent variable: Female is a financial decision maker (yes/no)				
	(1)	(2)	(3)	(4)	(5)
Within-couple differential					
Age (wife – husband)	0.0017** (2.19)			0.0019** (2.35)	0.0028 (1.05)
Education (wife – husband)		0.0021 (1.13)		0.0030 (1.63)	-0.0001 (0.04)
Income (xR1000) (wife – husband)			0.0028*** (3.15)	0.0028*** (3.10)	0.0022 (0.32)
Household characteristics					
Household size					0.0060 (0.85)
Household size ²					-0.0005 (1.19)
Income 2 nd quintile					-0.0052 (0.29)
Income 3 rd quintile					-0.0093 (0.48)
Income 4 th quintile					-0.0160 (0.65)
Income 5 th quintile					0.0135 (0.50)
Wealth index 2 nd quintile					0.0118 (0.74)
Wealth Index 3 rd quintile					-0.0243 (1.12)
Wealth Index 4 th quintile					-0.0155 (0.69)
Wealth index 5 th quintile					0.0007 (0.04)

Wife's characteristics					
Age					0.0077*** (3.19)
Age ²					-0.0000*** (3.16)
Education in years					0.0037 (0.80)
Education in years ²					-0.0001 (0.53)
Income (x 1000)					-0.0018 (0.11)
Income ²					9.28e-10 (0.71)
Employed					0.0567*** (3.61)
Husband's characteristics					
Age ²					0.0000 (1.20)
Education in years ²					-0.0000 (0.30)
Income					
Income ²					1.96e-10 (0.57)
Employed					-0.0062 (0.41)
Observations	1976	1984	1995	1967	1691
Wald chi2	4.80**	1.28	10.11***	15.62***	94.96***
Pseudo R ²	0.0035	0.0011	0.0033	0.0014	0.1035
Successfully predicted	91.50%	91.43%	91.43	91.51%	91.37%

Note: marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis).

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4c: Dummy measures of within-couple differences as determinants of female partner's financial making-decision

Variable	Dependent variable: Female is a decision maker (yes/no)				
	(1)	(2)	(3)	(4)	(5)
Dummies for within-couple differences					
Wife older	0.0291* (1.92)			0.0010 (0.07)	0.0023 (0.14)
Wife more educated		0.0211* (1.67)		0.0186 (1.42)	0.0192 (1.27)
Wife earns more			0.0442*** (3.09)	-0.0101 (0.51)	0.0046 (0.22)
Additional controls:					
Working wife				0.0386*** (2.74)	0.0570*** (3.53)
Working husband				0.0005 (0.05)	-0.0065 (0.44)
Household characteristics				No	Yes
Wife's characteristics				Yes	Yes
Husband's characteristics				Yes	Yes
Observations	1976	1984	1995	1936	1691
Wald chi2	2.97*	2.64	6.51**	97.81***	97.04***
Pseudo R ²	0.0027	0.1044	0.0061	0.0968	0.1050
Successfully predicted	91.50%	91.43%	91.43%	91.53%	91.37%

Note: marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis).

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5a: Income sources as determinants of whether the female partner makes financial decisions or not.

	Dependent variable: female is a financial decision maker (yes/no)					
	(1)	(2)	(3)	(4)	(5)	(6)
Wife's characteristics						
Earned income ('000)	0.041 (0.73)			0.0056 (0.97)		
Grant income ('000)		0.0114 (0.69)		0.0168 (1.16)		
Other income ('000)			0.0048 (0.38)	0.0116 (0.77)		
Total income ('000)					0.0074 (1.23)	0.0174** (2.34)
Total income ²						
Asset index						-0.0093 (0.92)
Social capital index						0.0009 (0.12)
Firstborn male						-0.0004 (0.05)
Parents residence						-0.0011 (0.02)
Age	0.0018** (2.11)	0.0018* (1.92)	0.0018** (1.97)	0.0016 (1.93)	0.0017** (2.01)	0.0007 (1.06)
Age ²						
Education (years)	0.0015 (0.79)	0.0017 (0.89)	0.0015 (0.80)	0.0013 (0.77)	0.0014 (0.77)	0.0010 (0.62)
Education (years) ²						

Working wife	0.0659*** (4.85)	0.0731*** (6.09)	0.0715*** (5.97)	0.0624*** (4.60)	0.0614*** (4.62)	0.0472*** (3.32)
Husband characteristics						
Earned income ('000)	0.0068** (2.19)			0.0084*** (2.61)		
Grant income ('000)		-0.0034 (0.43)		0.0014 (0.17)		
Other income ('000)			0.0158 (1.29)	0.0229* (1.72)		
Total income ('000)					0.0082** (2.58)	0.0052* (1.76)
Asset index						0.0018 (0.25)
Social capital index						-0.0032 (0.70)
Parents residence						-0.2797*** (3.25)
Age	0.0002 (0.35)	0.0002 (0.32)	0.0001 (0.23)	0.0002 (0.26)	0.0001 (0.22)	0.00004 (0.06)
Age ²						
Education (years)	-0.0010 (0.53)	-0.0006 (0.34)	-0.0008 (0.42)	-0.0011 (0.63)	-0.0010 (0.56)	-0.0010 (0.65)
Education (years) ²						
Working husband	-0.0064 (0.44)	0.0043 (0.27)	0.0052 (0.34)	-0.0051 (0.36)	-0.0042 (0.30)	-0.0114 (0.92)
Household characteristics	Yes	Yes	Yes	Yes	Yes	Yes

Observations	1691	1691	1690	1690	1691	1488
Wald chi2	66.67***	65.91***	67.89***	67.92***	64.03***	92.29***
Pseudo R ²	0.0892	0.0834	0.0843	0.0933	0.0917	0.1319
Successfully predicted	91.37%	91.37%	91.36%	91.36%	91.37%	91.87%
Specific notes for each of the regressions	Excluding employment, then the wife earned income has coefficient 0.0251(2.86)***; husband earned income has 0.0052 (2.07)** . These coefficients are multiplied by 1000.	Excluding employment, the grant income is still insignificant.	When we exclude employment, still the 'other income' is not significant.	When we exclude employment, earned income by wife [0.0261(3.20)***] and by husband [0.0067(2.53)**], grant income and other income still not significant.	Excluding employment, then earned income by wife [0.0229(3.39)***]; earned income by husband [0.0070(2.54)**]	

NOTES:

- (i) Marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis).
- (ii) Household characteristics: household size, household size², household income quintile, household wealth quintile.
- (iii) * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5b: Determinants of whether the female partner makes financial decisions or not: income sources differentials

	Dependent variable: Female is a decision maker								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Within-couple differential									
Age (wife – husband)	0.0017** (2.19)							0.0019** (2.37)	0.0020 (0.78)
Education (wife – husband)		0.0021 (1.13)						0.0031* (1.65)	0.0001 (0.04)
Total income ('000) (wife – husband)			-0.0027*** (3.21)					-0.0027*** (3.18)	-0.0061 (0.79)
Earned income ('000) (wife – husband)				0.0028*** (3.15)					
Grant income ('000) (wife – husband)					-0.0007 (0.13)				
Other income ('000) (wife – husband)						-0.0025 (1.28)			
Social capital count (wife – husband)							-0.0027 (0.40)	-0.0026 (0.39)	-0.0034 (0.42)
Household characteristics									
Household size									0.0043 (0.62)
Household size ²									-0.0004 (1.08)
Income 2 nd quintile									-0.0059 (0.32)
Income 3 rd quintile									-0.0136 (0.62)
Income 4 th quintile									-0.0286 (0.94)

Income 5 th quintile									-0.0101 (0.28)
Wealth index 2 nd quintile									0.0122 (0.71)
Wealth Index 3 rd quintile									-0.0187 (0.79)
Wealth Index 4 th quintile									-0.0055 (0.24)
Wealth index 5 th quintile									0.0052 (0.24)
Wife's characteristics									
Age									0.0075** (2.32)
Age ² ('000)									-0.0924 (2.30)
Education in years									0.0039 (0.83)
Education in years ²									0.2559 (0.77)
Total income (x 1000)									0.0201 (0.89)
Total income ²									2.35e-10 (0.10)
Employed wife									0.0444*** (2.76)
Asset index									-0.0102 (1.00)
Social capital index									-0.0068 (0.72)

Husband's characteristics									
Age (omitted)									
Age ² ('000)									0.0238 (0.98)
Education in years (omitted)									
Education in years ² ('000)									-0.0604 (0.21)
Income (omitted)									
Income ²									4.85e-11 (0.46)
Employed husband									-0.0040 (0.30)
Asset index									0.0034 (0.46)
Social capital index									0.0025 (0.37)
Observations	1976	1984	1995	1995	1994	1993	1995	1967	1625
Wald chi2	4.80**	1.28	11.10***	10.11***	0.02	1.65	0.16	16.86***	92.36***
Pseudo R ²	0.0035	0.0011	0.0035	0.0033	0.0000	0.0005	0.0002	0.0094	0.1095
Successfully predicted	91.50%	91.43%	91.43	91.43%	91.42%	91.42%	91.43%	91.51%	91.20%

Note:

- (i) Marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis).
- (ii) * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6a: Determinants of whether both partners make financial decisions or not.

	Dependent variable: Both partners versus a single partner make financial making decisions	
	(1)	(2)
Household characteristics		
Household size	0.0288** (2.16)	0.0230* (1.82)
Household size ²	-0.0018** (1.99)	-0.0015* (1.78)
Income 2 nd quintile	0.0035 (0.10)	0.0091 (0.29)
Income 3 rd quintile	-0.0329 (0.90)	-0.0204 (0.60)
Income 4 th quintile	-0.0021 (0.06)	0.0114 (0.33)
Income 5 th quintile	-0.0201 (0.37)	0.0028 (0.06)
Wealth index 2 nd quintile	-0.0121 (0.36)	-0.0071 (0.23)
Wealth Index 3 rd quintile	-0.0406 (1.03)	-0.0326 (0.88)
Wealth Index 4 th quintile	-0.0373 (0.89)	-0.0289 (0.74)
Wealth index 5 th quintile	0.0142 (0.35)	0.0181 (0.49)
Wife's characteristics		
Age	-0.0005 (0.39)	0.0096* (1.75)
Age ²		-0.0001** (1.99)
Education in years	0.0011	0.0023

	(0.35)	(0.32)
Education in years ²		-5.88e-05 (0.11)
Income (x R1000)	0.0140*** (2.62)	-0.0370** (1.97)
Income ²		5.52e-09*** (2.73)
Employed	0.0139 (0.62)	0.0449* (1.82)
Husband's characteristics		
Age	0.0026* (1.82)	0.0002 (0.04)
Age ²		2.04e-05 (0.43)
Education in years	-0.0008 (0.25)	0.0028 (0.41)
Education in years ²		-0.0003 (0.67)
Income (x R1000)	0.0010 (0.45)	0.0058 (1.42)
Income ²		-7.82e-11 (1.47)
Employed	0.0010 (0.04)	-0.0164 (0.72)
Observations	1691	1691
Wald chi2	37.48	Not reported
Pseudo R ²	0.0213	0.0310
Successfully predicted	81.49%	81.43%

Note:

- (i) Marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis.
- (ii) * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6b: Within-couple differentials as determinants of whether both partners make financial decisions or not.

Independent variables	Dependent variable: both partner versus a single partner financial make decisions				
	(1)	(2)	(3)	(4)	(5)
Within-couple differential					
Age (wife – husband)	-0.0005 (0.46)			-0.0002 (0.21)	-0.0002 (0.04)
Education (wife – husband)		0.0025 (0.98)		0.0024 (0.93)	-0.0028 (0.41)
Income (wife – husband) (x R1000)			-0.0001 (0.08)	-0.0003 (0.23)	-0.0058 (1.42)
Household characteristics					
Household size					0.0230* (1.82)
Household size ²					-0.0015* (1.78)
Income 2 nd quintile					0.0091 (0.29)
Income 3 rd quintile					-0.0204 (0.60)
Income 4 th quintile					0.0114 (0.33)
Income 5 th quintile					0.0028 (0.06)
Wealth index 2 nd quintile					-0.0071 (0.23)
Wealth Index 3 rd quintile					-0.0326 (0.88)
Wealth Index 4 th quintile					-0.0289 (0.74)
Wealth index 5 th quintile					0.0181 (0.49)

Wife's characteristics					
Age					0.0098** (2.46)
Age ²					-0.0001** (1.99)
Education in years					0.0051 (0.66)
Education in years ²					-5.88e-05 (0.11)
Income					-0.0311 (1.60)
Income ²					5.52e-09*** (2.73)
Employed					0.0449* (1.82)
Husband's characteristics					
Age ²					2.04e-05 (0.43)
Education in years ²					-0.0003 (0.67)
Income ²					-7.82e-11 (1.47)
Employed					-0.0164 (0.72)
Observations	1976	1984	1995	1967	1691
Wald chi2	0.21	0.96	0.01	1.02	Not reported
Pseudo R ²	0.0001	0.0006	0.0000	0.0006	0.0310
Successfully predicted	82.09%	82.16%	82.11%	82.16%	81.43%

Note:

- (i) Marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis.
- (ii) * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6c: Dummy measures of within-couple differentials as determinants of whether both partners make financial decisions or not.

	Dependent variable: single versus both partners make decision				
	(1)	(2)	(3)	(4)	(5)
Dummies for within-couple differences					
Wife older	-0.0028 (0.12)			-0.0055 (0.20)	-0.0153 (0.51)
Wife more educated		0.0053		-0.0171 (0.63)	-0.0242 (0.83)
Wife earns more			0.0250 (1.08)	-0.0058 (0.19)	0.0159 (0.50)
Additional controls:					
Working wife				0.0374 (1.54)	0.0410 (1.56)
Working husband				-0.0123 (0.58)	-0.0142 (0.61)
Household characteristics	No	No	No	No	Yes
Wife's characteristics	No	No	No	Yes	Yes
Husband's characteristics	No	No	No	Yes	Yes
Observations	1976	1984	1995	1936	1691
Wald chi2	0.01	0.09	1.08	Not reported	Not reported
Pseudo R ²	0.0000	0.0000	0.0006	0.0245	0.0317
Successfully predicted	82.09%	82.16%	82.11%	82.02%	81.43

Note:

- (i) Marginal effects of probit estimates with robust errors clustered at household level (robust z-statistics in parenthesis).
- (ii) * significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Partner financial decision making power and financial bargaining power as determinants of family public goods expenditures

	Food	Transport	Utilities	Insurance	Household items	Health care	Education
Financial Decision maker (Comparison: none decision maker)							
Wife	165.83*** (3.69)	-34.03 (0.18)	62.54*** (3.20)	30.77 (0.78)	8.76 (0.17)	59.76** (2.21)	113.73** (2.56)
Husband	90.89 (1.48)	182.54 (1.45)	23.57 (0.86)	-13.93 (0.31)	67.40 (0.76)	-40.59 (0.38)	102.52 (1.18)
Sample(n)	1995	1995	1989	1979	1988	1990	1987
F-test	18.71***	16.73***	18.59***	12.38***	1.55	22.33***	3.17***
R²	0.3162	0.2041	0.2906	0.2331	0.0384	0.2385	0.0188
Decision making * Employed							
Wife	113.09** (2.58)	338.53*** (3.82)	66.16*** (2.65)	64.68** (2.07)	-29.64 (0.35)	45.75 (1.05)	133.53 (1.46)
Husband	172.24*** (5.16)	251.74*** (3.88)	10.01 (0.51)	63.58*** (2.80)	101.89* (1.70)	-8.69 (0.20)	128.67 (1.64)
Sample(n)	1964	1964	1959	1949	1958	1960	1956
F-test	29.03***	30.05***	27.26***	21.74***	2.10*	23.42***	4.36***
R²	0.3307	0.2369	0.3047	0.2399	0.0390	0.2678	0.0209
Decision making * Income							
Wife (‘000)	25.56 (1.45)	136.72*** (2.67)	9.49 (0.83)	15.78 (1.03)	60.95 (0.68)	7.54 (0.46)	19.33 (0.91)
Husband (‘000)	27.65** (2.08)	55.46*** (2.92)	2.32 (0.37)	18.52** (2.33)	10.00 (0.52)	9.76 (0.61)	49.28 (1.24)
Sample(n)	1995	1995	1989	1979	1988	1990	1987
F-test	25.79***	20.48	19.40***	14.79***	1.75	24.60***	4.73***
R²	0.3322	0.2615	0.2920	0.2529	0.0489	0.2401	0.0292

Note: Household characteristics included are household size, household size squared and per capita household income

Table 8: Partner financial decision making status and financial bargaining power as determinants of family public goods expenditures

Decision making status (comparison: none decision making)		Food	Transport	Utilities	Insurance	Household items	Health care	Education
Wife	Joint	119.65** (2.47)	-48.48 (0.25)	58.74** (2.55)	25.71 (0.63)	51.58 (0.73)	40.71 (1.39)	22.14 (0.46)
	Main	246.62*** (4.59)	19.09 (0.10)	70.84*** (3.12)	37.02 (0.80)	-29.97 (0.43)	89.86** (1.96)	224.75* (1.96)
Husband	Joint	11.52 (0.15)	8.85 (0.06)	7.21 (0.23)	-8.74 (0.16)	-56.20 (0.70)	-57.23 (0.50)	211.49 (1.27)
	Main	194.68*** (2.88)	273.87** (2.01)	35.84 (1.20)	-8.04 (0.17)	48.51 (0.54)	-4.27 (0.04)	203.66 (1.39)
Sample(n)		1995	1995	1989	1979	1988	1990	1987
F-test		18.93***	13.59***	14.73***	9.42***	1.45	16.04***	2.50**
R ²		0.3206	0.2068	0.2910	0.2332	0.0403	0.2389	0.0210
Wife	Joint * employed	125.47** (2.36)	358.10*** (3.22)	97.43** (2.32)	55.89 (1.46)	48.89 (0.35)	45.81 (0.97)	83.51 (0.73)
	Main * employed	103.32* (1.88)	323.37*** (2.81)	41.19* (1.73)	71.58* (1.95)	-92.01 (1.07)	45.89 (0.75)	173.25* (1.66)
Husband	Joint * employed	117.45 (1.63)	-50.46 (0.49)	2.75 (0.10)	82.50 (1.39)	-43.13 (0.67)	-68.42 (0.92)	328.15 (1.50)
	Main * employed	183.06*** (5.02)	317.64*** (4.51)	7.65 (0.33)	60.40** (2.52)	124.49* (1.67)	4.76 (0.12)	90.13 (0.99)
Sample(n)		1964	1964	1959	1949	1958	1960	1956
F-test		26.40	21.62***	20.00***	15.69***	1.58	18.61***	4.15***
R ²		0.3313	0.2415	0.3061	0.2401	0.0412	0.2684	0.0225
Wife ('000)	Joint * income	18.91 (1.28)	87.85* (1.81)	8.48 (0.69)	-0.41 (0.03)	87.19 (0.74)	6.07 (0.36)	31.70 (1.37)
	Main * income	20.86 (0.92)	194.31*** (4.03)	4.61 (0.35)	42.98* (1.99)	-34.94 (1.19)	-2.22 (0.08)	25.58 (0.65)

Husband ('000)	Joint * income	7.78 (0.36)	-3.10 (0.13)	-4.39 (0.50)	7.56 (0.68)	-20.52 (1.22)	-2.91 (0.16)	84.12 (1.12)
	Main * income	41.90*** (4.79)	101.54*** (5.57)	6.67 (1.09)	28.15*** (3.28)	27.05 (0.18)	18.48 (0.99)	24.08 (1.45)
Sample(n)		1995	1995	1989	1979	1988	1990	1987
F-test		50.03***	25.81***	26.99***	14.45***	1.79*	19.38***	3.52***
R²		0.3467	0.3034	0.2985	0.2716	0.0781	0.2469	0.0389

Note: Household characteristics included are household size, household size squared and per capita household income

Table 9: 'Both partners versus a single partner making the decision' as a determinant of family public goods expenditures

variable	Food	Transport	Utilities	Insurance	Household items	Health care	Education
Both partners making decision (yes/no)	126.72*** (3.13)	79.00 (0.70)	42.12** (2.25)	7.31 (0.24)	-0.00 (0.63)	7.07 (0.12)	107.90* (1.90)
Sample(n)	1995	1995	1989	1979	1988	1990	1987
F-test	17.39***	20.87***	17.03***	15.44***	2.44**	28.00***	3.69***
R²	0.3159	0.2033	0.2903	0.2329	0.0046	0.2380	0.0188

Note: Household characteristics included are household size, household size squared and per capita household income

Annexure

Table A1: List of variables and their description

Variable	Description
Household head relation	Relationship to household head: Head; Husband/Wife/Partner; Son/Daughter; Father/Mother; Brother/Sister; Grandchild; Other family; Other non-family
Household size	Number of household residents
Age	Age of the respondent in years
Age differential (wife – husband)	Variable representing the difference between wife and husband age (in years), ranging between -55 and 26
Wife older	Binary variable assuming value 1 if within the couple the wife is older than the husband, 0 otherwise
Gender	Binary variable assuming value 1 if the person is a male and 2 if the person is a female
Household income	A continuous variable representing monthly income and with full imputations (in South African Rands)
Household income quintiles	Per capita household income quintiles
Household wealth index	Using Multiple Correspondence Analysis (MCA), an index is calculated from categorical variables which, in some cases, represent the material used or the state of the asset owned by the household. In other instances, binary variables indicate ownership of some asset. The household wealth index for the couples ranges from -2.66 to 1.79. For more information about this index, see table A2.
Household wealth index quintile	Households from which couples were drawn were distributed into quintiles depending on the size of the household wealth index thereby distributing couples into quintiles.
Individual asset index	Using MCA, an asset index for each individual is calculated using binary variables showing whether that person owns the item or not. The assets included are: radio; stereo; sewing machine; private vehicle; commercial vehicle; bicycle; computer; camera. The index ranges from -6.54 to 0.52.

Individual asset index quintile	Individuals are distributed into quintiles depending on the size of the individual asset index.
Social Capital/association Index	Index of association as a measure of social capital. The associations identified and used in the calculations are: stokvel; burial society; community garden; farmers association; sewing group; sports group; study group; singing group; youth group; informal traders group; men association; women association; school committee; water committee; development committee; tribal authority; religious group; other group. The index ranges from -22.80 to 0.29.
Social Capital Index quintile	Participants/spouses were grouped into quintiles using the social capital index
Social capital/association count	Number of associations that an individual belongs to. This is a discrete variable ranging from 0 to 16 and is calculated by adding up the value of each association (which is 0/1) across associations for each individual.
Association count differential	The difference in number of associations that a partner belongs to.
Individual earned income	Continuous variable representing the amount of income that an individual earns from all work related tasks per month (in rands). The values range from 0 to R100 000 and has a mean of R3776.90
Earned income differential (wife – husband)	Within couple differences in earned income calculated from the spouses' earned income values. All missing values are given zeros to allow calculation of the differences. The values range from –R100 000 to R24 833.
Wife earns more	This is a binary variable taking the value 1 if the wife earns more, 0 otherwise
Individual grant income	Amount of income received as social grants by the spouses in South African Rands.
Grant income differential (wife – husband)	Within couple differences in grant income calculated from the spouses' grant income values. Missing values were given zero values to allow the computation. The values range from –R17 000 to R6 000.
Non-grant non-employment income	Total amount of income from other sources which are not grants or employment
Individual income total	Individual's monthly total income from all sources ranging from R0 to R125 000.
Income total differential (wife – husband)	Within couple differences in income calculated from individual monthly total income from all sources and ranging from –R125 000 to R38 175.

Wife has more income	A binary variable taking the value 1 if the wife receives more income than the husband aggregated from different sources, 0 otherwise.
Education attained category	Categorical variable representing the education for spouses. The categories are: no schooling, incomplete primary; complete primary; incomplete secondary; complete secondary; higher education. The codes range from 0 to 5 respectively.
Education attained category differential (wife – husband)	Within couple difference in education calculated using the “education category” variable
Education attained (years)	Number of years of education by individuals. The variable ranges from 0 to 18 years
Education attained years differential (wife – husband)	Within couple differential in years of education ranging from -12 to 14 years
Wife more educated	A binary variable taking the value 1 if the wife is more educated, 0 otherwise
Employed	A binary variable taking the value 1 if the spouse is employed, 0 otherwise
Employment status	Categorical variable taking value 0 if not economically active, 1 if unemployed and 2 if employed
Female employed	A binary variable taking the value 1 if the wife is employed, 0 otherwise
Male employed	A binary variable taking the value 1 if the husband is employed, 0 otherwise
Female and male unemployed	A binary variable taking the value 1 if both the wife and the husband are unemployed, 0 otherwise
Only wife works	A binary variable taking the value 1 if only the wife works, 0 otherwise
Only husband works	A binary variable taking the value 1 if only the husband works, 0 otherwise
Employee	A binary employment status variable taking the value 1 if the spouse is an employee, 0 otherwise
Self-employed	A binary employment status variable taking the value 1 if the spouse is self-employed, 0 otherwise
Casual employee	A binary employment status variable taking the value 1 if an individual is employed on part time basis, 0

	otherwise
Housewife	A binary variable taking the value 1 if the wife identified herself as housewife, 0 otherwise
Retired	A binary variable taking the value 1 if an individual is identified as retired, 0 otherwise
Dependent variables	
Household finance decision-making status	A categorical variable indicating whether a spouse is a main financial decision-maker (= 3), joint decision-maker (=2) or none decision-maker (=1)
Household finance decision-maker	A binary variable assuming a value of 1 if a spouse is a financial decision-maker, 0 otherwise
Household finance main or joint decision-maker	A binary variable assuming a value of 1 if a spouse is a financial main decision-maker or 0 when the spouse is a joint decision maker
Number of decision-makers in a couple	Number of financial decision makers within a couple. A discrete value taking values 0,1,2
Joint decision-making in a couple	A binary variable assuming the value 1 if there is joint decision-making within the couple, 0 otherwise
Both partners are identified financial decision-makers	A binary variable assuming the value 1 when both partners are identified as financial decision makers, 0 otherwise. Cases were both partners could be identified as main decision makers are included. These may mean disagreement in the household.

Table A2: Household wealth index variables

Variable	Code	Narration
Dwelling type	1	informal dwelling/shack/flatlet/caravan
	2	traditional dwelling/hut
	3	Flat/apartment/townhouse/backyard flat
	4	dwelling/house or brick structure on the yard
Dwelling roof type	1	wood/plastic/cardboard/mud bricks/wattle
	2	bricks/mud & cement/stone & rock
	3	Thatching
	4	corrugated iron/zinc
	5	asbestos
	6	Tiles
Dwelling wall type	1	wood/plastic/cardboard/wattle/tile/thatching
	2	corrugated iron/zinc
	3	mixture of mud & cement/mud bricks/stone and rock
	4	cement block and concrete
	5	bricks
Water source	1	rain water/flowing water/dam/well/spring
	2	tanker/borehole on or off site
	3	public tap
	4	pipel(tap) water on site or in yard
	5	pipel (tap) water in dwelling
Toilet facility	1	bucket/none/other
	2	pit latrine without ventilation
	3	chemical toilet/pit latrine with ventilation
	4	flush toilet with offsite disposal
	5	flush toilet with onsite disposal
Energy for cooking	1	animal dung/other
	2	wood/coal
	3	gas/paraffin
	4	electricity from mains/generator/solar

Energy for heating	1	animal dung/other
	2	wood/coal
	3	gas/paraffin
	4	electricity from mains/generator/solar
Energy for lighting	1	other/none
	2	gas/paraffin/candles
	3	Electricity from mains/generator/solar power
Each of the following separately: Electricity in the house; telephone; regular cellphone; radio; stereo; TV; satellite; video; computer; camera; cellphone; electric stove; gas stove; paraffin stove; microwave; fridge; washing machine; sewing machine; lounge suite; private vehicle; commercial vehicle; motorcycle; bicycle; plough; tractor; wheelbarrow; grinding mill; livestock/poultry	0	no
	1	yes

Table A3: Descriptive statistics for the couple data

Variable	Mean	Median	St dev	Min	Max	Sample (n)
Household characteristics:						
Household size (per couple)	4.2863	4	2.3062	2	16	1995
Income (per couple)	8815.47	3547.57	13912.6	0	137443.5	1995
Only wife works	0.0751	0	0.0.2636	0	1	1982
Only husband works	0.3435	0	0.4750	0	1	1974
None works	0.2433	0	0.4291	0	1	1964
Wealth index (per couple)	-0.4521	-0.4062	1.0816	-2.6637	1.7984	1737
Wife characteristics:						
Age	41.8377	39	13.5501	16	93	1982
Education (years)	8.7534	10	4.402	0	18	1991
Income earned	1430.73	0	3997.70	0	40000	1995
Grant income	223.58	0	405.512	0	6000	1994
Non-grant non-employment income	110	0	1655.969	0	50000	1993
Income total	1762.66	420	4302.86	0	55000	1995
Asset index	-0.3870	0.1912	1.3177	-6.5459	0.5297	1985
Association index	-0.0627	0.2937	1.3235	-22.804	0.2937	1961
Association count	0.6048	0	1.1355	0	16	1995
Working/employed	0.4170	0	0.4931	0	1	1982
Employee	0.2792	0	0.4487	0	1	1995
Self-employed	0.0677	0	0.2513	0	1	1995
Casually-employed	0.0304	0	0.1719	0	1	1995
Housewife	0.1423	0	0.3495	0	1	1195
Retired	0.0009	0	0.0313	0	1	1995
Husband characteristics:						
Age	46.4908	45	13.7492	19	99	1987
Education (years)	8.6071	10	4.8238	0	18	1988
Income earned	4083.67	1100	8682.14	0	100000	1995
Grant income	165	0	721.849	0	17000	1995
Non-grant non-employment income	394.47	0	2946.96	0	40000	1995

Income total	4643.70	1470	9995.49	0	125000	1995
Asset index	-0.8468	-0.3758	1.5666	-6.5459	0.5297	1976
Association index	-0.0960	0.2937	1.2684	-15.312	0.2937	1966
Association count	0.5324	0	1.0246	0	9	1995
Working/employed	0.6797	1	0.4666	0	1	1974
Employee	0.4863	0	0.4999	0	1	1993
Self-employed	0.1224	0	0.3278	0	1	1994
Casually-employed	0.0622	0	0.241	0	1	1992
Retired	0.0024	0	0.0498	0	1	1995
Within-couples differentials:						
Age (wife - husband)	-4.6408	-4	6.1966	-55	26	1976
Education years (wife – husband)	0.1232	0	3.3992	-12	14	1984
Education category (wife – husband)	0.6492	0	1.1824	-4	5	1984
Income earned (wife – husband)	-2652.94	-385.97	8357.57	-100000	24833.33	1995
Income total (wife – husband)	-2881.04	-650	9890.61	-125000	38175.16	1995
Grant income (wife – husband)	57.0912	0	778.25	-17000	6000	1994
Association count (wife – husband)	0.0724	0	1.2613	-9	16	1995
Dummies for within-couples differences:						
Wife older	0.1304	0	0.3369	0	1	1976
Wife more educated	0.3523	0	0.4778	0	1	1984
Wife earns more	0.1476	0	0.3548	0	1	1995
Wife has more income	0.2635	0	0.4406	0	1	1995

Note: we round downwards; four decimal places and weights are used (post stratified)

