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Sarah Deschênes
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Sylvie Lambert

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Household Resources and Individual Strategies ^{*}

Sarah Deschênes^a, Christelle Dumas^b, Sylvie Lambert^c

^a*Paris School of Economics, 48 bd Jourdan, 75014 Paris, France, and INED, Campus Condorcet, 9 cours des Humanités, CS50004, 93322 Aubervilliers Cedex, France.*

^b*Corresponding author. University of Fribourg, Bd de Perolles 90, 1700 Fribourg, Switzerland. Email: christelle.dumas@unifr.ch*

^c*Paris School of Economics and INRAE, 48 bd Jourdan, 75014 Paris, France*

Abstract

The question of diverging interests and preferences within couples over the use of household resources and the consequences of these conflictual views has been present for a long time in the development literature, albeit in a somewhat scattered way. This paper selectively reviews the abundant literature that offers insights into the intra-household decision-making process, the strategies put in place by individuals to secure their access to private resources, and the role of the changing economic environment in altering these mechanisms. This paper bridges different strands of the social sciences and exemplifies the complementarities among them. The main features of household organization are described to set the scene for the individual strategies introduced to bypass intra-household negotiations and secure access to private resources. These strategies include efforts to maintain access to income-earning opportunities and secrecy about income and savings. This paper also discusses attempts to maintain or tilt the balance of power within the household through the use of violence, on the one hand, and marital and fertility choices on the other hand. Finally, this paper describes directions for future research aimed at improving the understanding of household behaviour and responses to economic stimuli.

Introduction

Public transfers to households are a common instrument in the fight against poverty. Even when they are intended to benefit several household members, public transfers are usually handed to one particular individual. For instance, mothers are often targeted by a number of conditional cash transfer programs (such as Progresa), while agricultural extension services are generally directed towards the male household head. Properly understanding what occurs in the household when one member is the recipient of such external support and how this depends on the individual member's position in the

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household is essential in efficiently designing relevant social policies. Many questions remain about the organization of households on the African and Asian continents and how this should be factored into development strategies. More broadly, a better knowledge of the flows of resources within households would help in understanding the determinants of individual well-being and contribute to the analysis of marital tensions (including domestic violence).

This paper selectively reviews the abundant literature across various social science disciplines offering insights into the intra-household decision-making process, the strategies put in place by individuals to secure their access to private resources and the role of the changing economic environment in altering these mechanisms. Bridging the different strands of literature is relevant. Sociologists and anthropologists have delved in detail into the question of the social organization of the household and analysed how the historical and cultural contexts shape the household's decision-making processes. For their part, economists have developed quantitative tools to evaluate individual well-being while assuming some specific household organizations but have often based their research on theoretical models that are not designed to take into account the complexities of households in developing countries.

Although the household is a basic unit of analysis, economists have been struggling for a long time to find a way to adequately describe household behaviour. The most common representation of the household is the unitary model, which assumes that the household acts as a single individual. However, such a representation of the household has attracted many criticisms, in particular for failing to take into account the gender power balance within the household (Folbre, 1986). Furthermore, the hypothesis of full income pooling that is required by the unitary model has been proven to be inadequate in both developed (Browning et al., 1994) and developing countries, where the identity of the income earner or transfer beneficiary has been shown to affect household consumption patterns (Duflo, 2003; Hoddinott & Haddad, 1995; Thomas, 1994).

An alternative representation of the household as a set of individuals who make decisions through a bargaining process dispenses with this undesirable assumption. The collective model relies on the hypothesis that households' decisions are Pareto optimal, which is a hypothesis that might sound only weakly restrictive.¹ This model sees decision making as a two-step process, whereby public good con-

¹A situation is said to be Pareto optimal or Pareto efficient if no change in the allocation of resources could lead to improved satisfaction for all parties. "Pareto efficiency" is considered as a minimal notion of efficiency that does not necessarily result in a socially desirable distribution of resources: it makes no statement about equality, or the overall well-being. In a couple, if the allocation of resources is not Pareto optimal, it means that there would be a way to improve the satisfaction of one person without taking anything away from the other one. This would suggest that some resources are wasted rather than being distributed within the couple. A reallocation of resources that reduces this "waste" brings the couple closer to the optimal situation, even if it is not sufficient to attain Pareto efficiency.

sumption is decided and the remaining resources are shared among decision makers (in general, the two members of a couple) for their private consumption. The sharing depends on each household member's bargaining power, which is affected by the distribution factors that determine each member's outside options.² A number of papers that directly test the restrictions imposed by the model in developed countries do not reject them. Nevertheless, the empirical evidence for developing countries suggests that this model might not typically hold. In fact, the Pareto efficiency hypothesis is not always found to be valid in such contexts, which implies that households are wasting resources. Udry (1996) shows that households in Burkina Faso do not reach productive efficiency because labour is not allocated optimally among plots of the same household. De Mel et al. (2009) also detect productive inefficiency with experimental data: when cash grants are offered to micro-entrepreneurs, they find that women either do not invest the grant in their business or do not earn additional profits, while men actually obtain returns from the grant. Assessing how households cope with shocks allows us to evaluate whether the allocation of resources is efficient from the consumption perspective. Duflo & Udry (2004) find in Côte d'Ivoire that household members do not seem to mutually insure against transitory shocks that affect individual incomes, which contradicts efficiency. Dercon & Krishnan (2000) and Robinson (2012) reach a similar conclusion in very different contexts. As a result, it seems difficult to consider that even the Pareto efficiency assumption is generally valid in the context of developing countries. Baland & Ziparo (2018) present a clear overview of the empirical regularities observed in developing countries that suggest strategic decision making. Non-cooperative models of the household have been elaborated to account for this, but a general theoretical framework is still lacking.

Recent evidence suggests that the intra-household resource allocation process might matter for the impact of public policies. Using a sample of rural Mexican households, Angelucci & Garlick (2016) underline the existing variation in the efficiency of intra-household resource allocation across households. They show that Pareto-efficient households reach better outcomes for children than inefficient households (in terms of primary and secondary education) and that their responsiveness to cash transfer treatment is higher. Furthermore, the dynamic impact of interfering with the intra-household balance of power should be considered in policy design. In fact, creating a new income flow towards one member might impact household functioning and even the household structure; for instance, Edmonds et al. (2005) show that the South African pension scheme impacted the family structure. More generally, households react to changes in their economic environment in ways that are likely to affect not only the allocation

²Sen (1990) proposed an early discussion of models of cooperative conflict in the household.

of resources within the household but also the consumption pattern.

In many of the instances where inefficiencies have been identified in the data, a possible immediate cause is individual behaviours aimed at securing personal resources, even if they come at the expense of the total resources available to the household. Although it need not be the case that such strategic behaviours are necessarily a source of inefficiency, they may well be at the heart of a number of sub-optimal outcomes. This paper documents these strategies, whether or not they have been proven to be inefficient. Understanding the web of norms into which their behaviour has to fit is a prerequisite for assessing the types of strategies that each person can implement. Indeed, living in a society imposes conformation to the prevalent social norms that define a constrained set of possibilities and thereby shape acceptable behaviours. We argue that given a set of norms, individuals have access to specific resources and correlatively, have specific duties. The margin of manoeuvring for individuals lies within these constraints, which is why a clear understanding of them is crucial.

There are large variations in norms across space and various social groups. Fully describing these different contexts is not possible here; therefore, we restrict our attention in two ways. First, we concentrate on the functioning of households that consist of conjugal family units, as defined by van de Walle (2006), where a conjugal family unit comprises a man, his wife or wives, and their children. This definition encompasses households organized over multiple residences, which can be particularly important for polygamous households (Ocholla-Ayayo, 1997). However, we do not address the situations that entail non-co-residence due to migration. Second, we focus our analysis on sub-Saharan Africa because the complex household structures and strict prevailing social norms make the question of intra-household allocation especially salient, and there is subsequently a large body of literature about this area. When relevant, we also provide illustrations from other regions, notably South Asia, although the literature on these areas is less abundant than the literature on Africa. In fact, individual strategies to secure personal income exist throughout the world and deserve to also be investigated more thoroughly in non-African contexts.

After presenting a qualitative description of household organization in section 1, we turn to the description of individuals' strategies for securing resources. Section 2 describes strategies to increase individual income and how this leads to inefficiency in the allocation of inputs within the household. Section 3 describes the literature on secrecy related to income and savings, while section 4 discusses the role of violence in decision making. Finally, section 5 quickly highlights how individual strategies occur upstream from the household constitution with strategic behaviour in marriage and fertility decisions.

1. Household functioning

1.1. Household organization

Several challenges arise when modelling household decision making in developing countries. First, the actual structure and organization of the household is not adequately represented by the case of a nuclear household that shares a residence and makes decisions jointly about the consumption of public goods. Second, households can include several autonomous budgetary units. Individual resources are not generally pooled; they are not always known within the household. Third, social norms codify, in large part, who has access to which resources and who is responsible for catering to which needs in the households. These norms are historically determined, but they evolve with changes in the economic environment.³ Married couples have a very clear understanding about their respective rights and duties, and although they might help each other in cases of temporary incapacity to fulfil one's duty, too long a deviation from the norm is, in general, unacceptable. Finally, the structure of households and the decision-making processes within them are also influenced by the absence of formal markets on the one hand and the absence of a public social protection system on the other hand.

A remarkably helpful presentation of the broad determinants of household structure and organization is given in Paulme (1960). Given the exogamy rules prevalent in most social groups, marriage brings people together from different lineages who therefore face competing loyalties to their own lineage and to the lineage of their spouse. According to the author, which lineage "owns" the children largely shapes the relationships between spouses. In matrilineal societies, where children belong to the maternal lineage, the conjugal link is weak, and couples are largely unstable. Cooperation in such a setting might be more difficult to achieve. The fact that the interests of the mother and children, on the one hand, and the interests of the father, on the other hand, are opposed regarding inheritance is a potential source of dissension between spouses.⁴ In a patrilineal, patriarchal society, children belong to the father's lineage, which creates a stronger link between spouses (who have aligned inheritance interests). However, in patrilineal societies, women are in a particularly fragile situation, as divorce might not be a very strong outside option in intra-household negotiations; in fact, upon divorce, a woman loses access to both resources and her children. Furthermore, in the case of widowhood, women might be left with very little access to any resources. As a result, women have an interest in securing personal savings that can act

³Gender norms can have a variety of sources, be they religious, ethnic or local. It is outside the scope of this paper to explain the origin of norms, as well as to assess whether their impact is differentiated by origin.

⁴Matrilineal societies are currently much less frequent than patrilineal societies and have often evolved to adopt patrilineal norms in some dimensions (if only because they belong to states in which patrilineal groups form the majority of the population and where the legal system, notably concerning inheritance laws, is shaped by these descent rules).

as a safety net if they leave their husband's lineage, giving room to a divergence between spouses. For Munachonga (1988), the lack of cooperation within households (in Zambia) might be fostered by a lack of insurance in the case of widowhood.

Regardless of the lineage system, individual responsibilities are clearly defined. The broad rule is that women are in charge of catering to daily needs, which require small expenses, while husbands' obligations include providing lodging and bearing the cost of health and education expenditures and other infrequent but costly purchases, notably of durable goods. Although there are variations in this division of tasks, the general pattern is rather stable across African societies (see Clark (1995) for Ghana, Falen (2011) for Benin, Bikketi et al. (2016) for Kenya, Haider et al. (2018) for Burkina Faso, Munachonga (1988) for Zambia and Guyer (1988) for Cameroon, for example). Most often, men are in charge of securing livelihood for their household, although, at the same time women are generally held responsible for feeding the family. For example, Kevane & Gray (1999) indicate that for some ethnic groups in Burkina Faso, women bear the primary responsibility for feeding themselves and their children.⁵ Maher (1981) signals that in the Berber hamlets of the Moroccan middle-Atlas, men are expected to provide food and lodging, but wives' medical expenses should be paid by her family of origin. The literature on Asian countries does not linger so much on this particular dimension, which perhaps reflects women's lower access to resource management on this continent.

Case studies illustrate the role of the lineage system in shaping household organization. Clark (1995) gives a particularly vivid example of a matrilineal society in her analysis of the female Kumasi market traders (Ghana), while Falen (2011) presents a detailed example of household organization in a patrilineal system, namely, the Fon in Benin. The comparison between the two cases makes salient the greater economic autonomy of women in the matrilineal system, which comes with both costs and benefits for women. The women described by Clark (1995) have shops in a very active market that operates daily. This economic activity can be profitable, provided that one invests sufficient time and capital into it. In this setting, only half of the married women co-reside with their husbands: some women live with some of their matrilineal kin (mother, cousins or siblings). In such cases, the woman is nevertheless in charge of preparing her husband's meals. The woman shares no monetary resources with her co-resident kin or with her husband. Financial arrangements with the husband involve mainly him paying a regular allowance earmarked for the purchase of food, the *chop money*, and possibly some share of the cost of raising children. She is in charge of completing the meal with vegetables that she has to

⁵Arnfred (2007) finds that older women control the distribution of food stocks in northern Mozambique.

purchase. Chop money, *quid pro quo*, means that she prepares meals for her husband and has sex with him.⁶ Living separately is viewed as a positive system, as it prevents quarrels over the use of money and time. Ignorance of the husband's income is not uncommon, and he is more likely to pay his share if he does not know the full extent of his wife's own income. For women, generating their own earnings is even more crucial given that marriages are rather unstable (death, divorce, and polygamy are threats to the financial support from the husband). Falen's description of the Fon in Benin depicts that women are expected to take on cooking, cleaning and childcare. Moreover, as justified by the payment of a bridewealth, men have full control over their wives' labour and sexuality. Women are also expected to obey their husband's commands regarding any type of errand. In addition to the usual duties (paying for the main staples, lodging, health and education), the husband is also obligated to provide his wife with start-up capital for her economic activity. Women concur that a good husband is one who does not shirk these responsibilities.⁷ An additional norm is that women are responsible for managing ceremonial gifts, which are indispensable in maintaining the social network (see Buggenhagen (2012) for Senegal).

Necessity sometimes commands that the general rules be bent. Bikketi et al. (2016) underline that in Kenya, despite clearly defined traditional roles, the necessity of securing their livelihood has led spouses to become flexible about their gendered obligations and to diverge from the original cultural expectations. Hoodfar (1988) also mentions that households in the Cairo neighbourhood have adapted their budget management practices to the needs of city and modern life. In particular, the frequent absence of husbands, partly due to long migration journeys towards Gulf Countries, have led women, even those who were traditionally not allowed to deal with money, to oversee the household budget. Lecarme-Frassy (2000) reports that for fishmongers in the Dakar market (Senegal), women often need to supplement their husbands' earnings to meet their daily needs. Finally, Maboudou Alidou & Niehof (2020) also find that during the cotton crisis, the male income dropped sharply and women's earnings acted as a shock absorber in times of hardship.

That men are viewed as breadwinners does not prevent women from also working and earning some income, which they keep part of for themselves. In fact, separate budgets and secrecy between spouses are two rather general features of households, even in patrilineal societies. In African contexts, as Coquery-Vidrovitch (1994) puts it, women have long had separate purses. As was described by Deane (1949) seven decades ago, spouses often have only imprecise knowledge of each other's resources and expenses.⁸ The

⁶If the husband is away for some days, no chop money is provided during this period.

⁷Such a definition of a good husband is also indicated in Senegal (Hotte & Lambert, 2020).

⁸Deane (1949) concluded that it was necessary to interview every individual independently when collecting data on income and expenditures in Africa, a practice that is still far from general.

literature has many examples of this privacy regarding income. Both Falen (2011) and LeMay-Boucher & Dagnelie (2014) underline that Beninese spouses rarely share access to each other's money, property or other wealth, and they keep their finances completely secret. Women often hide money from their husbands, which they can use in case of financial trouble or marital discord: keeping common finances would be considered risky. Hoodfar (1988) notes that in Cairo, women have no information about how much their husbands earn and spend on themselves, irrespective of the financial arrangement in their household, which varies from situations in which the women are not supposed to even touch money to situations where they fully manage the household budget. In a similar way, spouses' imperfect knowledge of each other's finances is underlined in contexts as varied as Lagos (Fapohuda, 1988), the Beti villages in Cameroon (Guyer, 1988) and urban Zambia (Munachonga, 1988).

The sharing of responsibilities described above is encountered in many different settings and not only across the African continent. Similar patterns of household organization are described for the Hmong and Yao in Vietnam (Bonnin & Turner, 2014), with the women generally being responsible for all household reproductive activities, notably maintaining families' daily food supply through household gardens, while the men assume the same key roles as men on the African continent. The description of northern Indian households by Singh & Bhandari (2012) also points to a dominant situation of men who control the money and property in the family, with budget management being, in general, in women's hands, at least in terms of the housekeeping allowance.

In South Asia, where the joint family household (two adult generations) is a common living arrangement, the sharing of budget management between generations is a central concern. Divides between both genders and generations play a role. In general, the older generation is the one in control. Younger women have little information about household money beyond the level of the allowance that their husbands give them. In some instances, they do not even have a regular allowance but have to ask for money for each specific need that they might have (Singh & Bhandari, 2012). Hypergamy in marriages, which is common in the patrilineal system prevalent in north India, tends to reinforce this domination over daughters-in-law in their marital household, since they come from families with lower social status (Parry, 1979). In Bangladesh, the tradition of marrying outside the home village, which isolates the new bride from her kin, contributes to young women's subordination to both their husband and the older women among their in-laws (Kibria, 1995). In this context, women have hardly any control over economic resources. Gram et al. (2018) emphasises the power struggles between daughters-in-law and mothers-in-law in this type of household. In southern India, women's position and access to resources

appear to be more favourable, but again, the financial spheres of the husband and wife remain fairly separate (Nishimura, 1998).

1.2. Division of labour and income-earning opportunities

Women often lack proper control over assets and inputs. For Africa, Doss et al. (2015) show that the relative ownership of land by gender varies considerably: men individually own, on average, 22 times as much land area as women own in Nigeria and between 1.1 and 6.9 times as much land area as women own in the other countries with available data, namely, Niger, Tanzania, Uganda, Ethiopia and Malawi.⁹ Fafchamps & Qisumbing (2002) document wide heterogeneity in the sharing of assets even within a given country, namely Ethiopia. Doss et al. (2014) provide a cross-continent picture by examining three countries and show that the ownership of wealth and land in Asia (Karnataka) is extremely imbalanced between genders, less so in Ghana and not at all in Ecuador. Peterman et al. (2011a) discuss access to other agricultural inputs and technology. They conclude that there are mixed results in terms of the differential access of women to variable inputs. These differences may lead to a lower technical efficiency on women's plots. Women's generally low access to extension services might contribute to this gender gap. In addition, Peterman et al. (2011b) suggest that the inputs' quality (in particular, soil quality) may also be lower on women's plots and that the crop choice may differ. However, very few papers make within-household assessments but rather compare female-headed with male-headed households. The results may therefore be largely irrelevant for the issues discussed here: women who are household heads face no risk of the expropriation of their labour product and have no within-household bargaining issue in the allocation of inputs.

In a pioneering work, Boserup (1970) underlined the gender division of labour. She emphasized the fundamental role that women play in African agriculture in contrast to their lesser roles in Asian and Latin American countries; she assigned this difference, in large part, to differences in farming systems. She also pointed to the fact that women's contributions to household work and domestic production were vastly underestimated if only because they had never been statistically recorded.

Anthropologists have emphasized the clear delineation of gender roles in farming and how women must negotiate their access to resources. Bikketi et al. (2016) describe the gender division of labour in Kenya. They ran focus groups separately by gender and recorded the access to and control over each type of resource (land, fertilizer, labour, pesticides, livestock and water) for each participant. Although

⁹This information is not systematically collected, which prevents researchers from establishing a clear picture for the entire continent.

the focus groups of both genders described female farmers as having access to all types of inputs, they indicated that the women have very limited control: women have control only over labour and sometimes over fertilizer and pesticides. Both sets of focus groups agreed on this description, which suggests that the norm is fairly established. The authors emphasize that even when women purchase the assets, their husband is still regarded as the owner of the assets and resources and may control their use and sale.¹⁰ Women seem unable and unwilling to question this control over resources and the products of their work. When they have better access to some resources, it is actually attached to an increased number of duties, particularly for daily household expenditures.¹¹

Aside from their participation in agricultural activities, one of the main income-earning activities of women is trade. The Ghanaian example described by Clark illustrates this. Another instance of very active women traders is composed of women in fishing communities of Southeast Asia who control fish transformation activities and trade (Niehof, 2007). This possibility is, however, not open to women in all societies, as prevailing norms might limit access to this type of occupation. Maher (1981) describes how among the Berber-speaking people of the middle Atlas in Morocco, at least until the eighties, women were barred from selling their labour. Even going to the market was problematic, as women buying or selling were considered to be compromising their dignity. In fact, women were confined to activities that do not involve interactions with unknown people and were not supposed to have any contact with money. In some contexts, respecting *purdah* (women's seclusion) rules might prevent women from accessing the public space altogether (as described in Kibria (1995) or Rashid (2013) in Bangladesh, where *purdah* is not legally binding but is a strong cultural tradition).

When women work, they may not have control over their wages. In the garment industry in Bangladesh, young unmarried women tend to keep full control over their wages, while their married working-class counterparts hand over their salary to their husbands and retain absolutely no control over it (Kibria, 1995). In lower-middle class households, men assert their authority by not touching their wife's pay, thereby belittling the role of women's income in the household economy.

Overall, despite their important contributions to household production, women have fewer possibilities than men to secure a cash income in most developing country contexts.

¹⁰These authors quote a female smallholder as follows: "There is no equality when it comes to ownership of assets. My husband owns everything except the money I may make from my sales and group investments that I do not reveal to him, overall all assets I have bought belong to him".

¹¹A male smallholder in Mbeere South says, "Most of us allocate a small plot to our wives to produce Khat and sell so that they can sustain the daily house requirements, however we have to know how much money they earn from each sale because we have to be in charge of all our finances. In case they earn more than the usual then we add some more responsibilities for them e.g. buying books for the children and paying for medical expenses or even paying for veterinary services."

2. Economic activities of the household

The sets of norms that define the roles and responsibilities of each individual in the household limit the possibilities for each individual to enjoy private consumption. As a result, household members might try to bypass these constraints by generating more income that can be kept “private” rather than shared. This might come at the cost of allocative inefficiencies.¹² This section focuses on the non-cooperative behaviours that permit financial privacy.

2.1. Productive inefficiencies

In an aforementioned paper, Udry (1996) shows that households in Burkina Faso do not reach Pareto efficiency. The environment under study is the following: households own several plots, and each plot is the responsibility of one individual. “Female” plots are generally smaller in size, but Udry shows that conditional on plot size and quality and on household fixed effects, the productivity on these plots is lower than that on “male” plots. This suggests that households should either reallocate female plots to be under male supervision or allocate more inputs to the female plots to increase their productivity. Indeed, Udry also shows that important inputs such as male household labour, non household labour and manure are under-provided to female plots, all plots characteristics equal. He estimates that approximately 6% of output is lost because of this inefficient factor allocation within the household. Despite household income loss, household members are unwilling or unable to engage in transactions that would bring them closer to the optimum. Women are most certainly unwilling to rent or give away their plot to their husband, since they may lose usufruct. However, it is not clear why women do not engage in transactions that would guarantee better access to inputs, for instance, by compensating their husband for their work.

Several other papers have addressed the same issue. Akresh (2005) challenges Udry’s results with a larger dataset from Burkina Faso, but he cannot control for plot-level characteristics, while Goldstein & Udry (2008) points to inefficiency in Ghana, where women make lower land investments due to a lower security of tenure. Haider et al. (2018) confirm the inefficiency of the allocation of fertilizers and show that common plots supervised by the household head receive far more than the other plots when controlling for their characteristics.

A possible interpretation of these facts is that these inefficiencies result from the way that individuals act to secure individual access to income, given the constraints imposed by the norms that govern the

¹²Allocative inefficiency refers to a situation where inputs are not allocated within the couple in the way that would permit to maximize total profit. It is perfectly compatible with each individual being technically efficient, i.e. being on the frontier of production given the inputs s/he has access to.

gender roles in farming, resource provision and time use. A major difficulty in actually pinpointing this relation is to disentangle what is due to the norms that dictate roles and opportunities from what is due to the conscious choice to engage in non-cooperative behaviour in an attempt to secure private resources for one's self and one's dependents.¹³ There are two ways of thinking about the influence of norms. Norms constrain an individual's choices. They provide a framework within which people can choose a limited set of acceptable actions to secure resources. At the same time, norms can be the result of a process that allows individuals to identify an efficient household organization given the economic situation that prevails at the time (Voss, 2005). However, economic circumstances evolve faster than norms, and during the process of adaptation to evolving economic conditions, there are frictions with the current prevailing norm. The following paragraphs emphasize behaviours that were caused by shocks external to the household in settings where the norms remain stable. Demonstrating whether the behaviours described are suboptimal is beyond the scope of this literature. This section nevertheless provides illustrations of non-cooperation within the household.

Bassett (2002) documents a change in farming practices following the introduction of cotton as a cash crop in Côte d'Ivoire. The information was collected regularly from 1981 to 1997, which allows a long-term perspective of a village located in the north of the country. In the early 1980s, few women grew cotton: most grew a field of peanuts and a field of rice. They devoted most of their time to the common fields and had a limited number of days that they could allocate to their own plots.¹⁴ They depended heavily on their husband to obtain land and needed to ask their husbands' permission to make their children work on their plots. The change arose from the simultaneous introduction of cotton as a cash crop and the adoption of oxen, which reduced the workload of women and allowed them to increase their plot size. The husbands were displeased by their wives entering cotton farming for two reasons. First, if women signed an agreement with the firm that buys the cotton, they would have to comply with their agricultural calendar, which would jeopardize the control of husbands over their wives' labour. Second, men feared the increased bargaining power associated with greater economic autonomy. Despite this resistance, cotton was largely adopted by women. Depending on their status within the household and in the community, women had an unequal possibility to guarantee sufficient inputs on their plots.

¹³Bernard et al. (2018) directly ask household members whether they identify with different vignettes that represent household functioning (i.e., dictator or separate spheres based on norms, contributions or the most informed person) and relate the answer to performance in the production and consumption spheres. They find that in production, relative to the dictator type, the norm-driven type of household is associated with lower production, while the most-informed type is associated with more production. In consumption, the dictator type performs worse than any other type.

¹⁴Senufo women have the right to work two days on their own plots in the traditional 6-day week, while Jula women have to work with their husbands when they are asked to do so and are free to spend their remaining time working on their own plots.

Women of higher standing in the household¹⁵ had better access to the household male inputs (help in stocking and selling the product and male labour for spraying pesticides); nevertheless, the number of pesticide applications remained lower than the company's recommendations. Furthermore, women with more resources had fewer difficulties accessing an external labour force, either because they had sufficient cash to pay for labour or because they had better connections that allowed them to participate in reciprocal labour groups. Often, women with less agency could rely only on a "late" labour force rather than one with ideal timing, which leads to lower output. Two striking points of Bassett's description are that women depended heavily on non-household labour to perform critical tasks, with very few instances of women hiring their husband to work on their plots, and that women were not equally positioned to take on a new profitable activity.

Carney (2004) analysed the gender conflicts in the Gambian wetlands following a change in the allocation of land. Traditionally, the plots close to the river (wetlands) were farmed by women and were planted with rice, while upland fields were devoted to cash crops (peanuts) under male supervision.¹⁶ All family members were allocated individual plots (named "kamanyango") in return for working in the common fields ("maruo"). Rice fields operated by women were in part individual and in part common (Dey, 1981). However, the low participation of men in rice cultivation limited increases in rice output. The government thus decided to boost rice production by implementing a large-scale irrigation project and introducing improved seeds. During the demarcation of fields with the community, the new rice fields were strategically labelled common fields as a prerequisite for men's involvement. This implied a *de facto* shift of land that was typically farmed by women towards use by men. Women resisted this deterioration of their situation in a variety of ways by relocating their individual production to unimproved wetlands to keep their autonomy, agreeing to provide labour on common irrigated plots if they could use the plot for themselves in the rainy season, asking for compensation for the additional labour performed in one season or simply refusing to work on the irrigated plots. Von Braun & Webb (1989) compare households with high and low shares of land dedicated to rice in 1985 after the implementation of the scheme. They show that intra-household taxation, defined as the labour contribution of each individual in common plots relative to his total activity, is much higher for women in households who are involved in rice-irrigated agriculture. This means that the new high-technology rice impinges relatively more on women's private agriculture than on men's private agriculture. When payments were made, those associated with female

¹⁵For instance, the senior wife in polygamous households.

¹⁶Prior to the establishment of this system, men and women were both involved in the cropping of rice in the lowlands and cereals in the uplands. It was only when peanut cultivation started to generate cash that men began specializing in this crop, which left women to produce food crops and established a clear gender division of labour and roles.

work in the common field were approximately equal to the average labour productivity of women in their least remunerative individual cash crops. However, the shift in production seems to have been associated with improvements in terms of nutrition for children and women. This positive outcome is unfortunately not systematically observed as a consequence of such an intervention. Bruce (1989) cites a study that describes a similar program in Kenya that not only likewise led to a reduction in women's access to independent plots and a decline in women's income but also resulted in a worsening of the family nutritional situation.

In principle, intra-household transfers to compensate each member for his or her labour contribution to the other members' plots should allow the household to approach productive efficiency and should therefore be rather prevalent. However, we found in the literature only one case where the woman would potentially pay her husband for his work (Bassett, 2002). A few articles have addressed the question of the compensation of women for their work in joint fields or in the fields of their husbands, but these articles usually rely on a very limited number of observations. Jones (1983) estimates the compensation paid to women for their labour in joint rice fields in north Cameroon. She finds that women are better compensated than their opportunity cost (which arises from working on their own plots). However, she also finds that widows, who control the products of their labour, allocate more labour time to transplanting rice than women who work for their husbands. Therefore, the compensation does not seem to be sufficient to reach the optimal allocation of labour on crops. Lilja et al. (1996) and Lilja & Sanders (1998) scrutinize the changes in husbands' demand for their wives' labour associated with improved technology in cotton farming in Mali. Women are requested to work more on the common plots, which leaves them less time to work on their own plots. The authors find that the additional compensation for the women's work, in kind or in cash, increases with the introduction of new technology. However, they find that the output loss on their personal fields exceeds the increased compensation, and in total, the women lose from the technological gain.

These various papers therefore establish that household members appear to implement non-cooperative strategies to secure their production, possibly at the expense of total household resources, but do not explain why households may fail to achieve efficiency.

2.2. Why do households not cooperate in production?

In attempting to understand why non-cooperation might prevail, several explanations have been put forward. A first possibility for gaining understanding in this area is exploring the role of altruism (or

lack thereof). In the absence of a direct measure of altruism, some authors have resorted to comparing monogamous and polygamous households under the assumption that altruism is lower within a polygamous conjugal unit and that this is the difference that matters for this question. Using the same data as Udry, Akresh et al. (2016) show that the deviation from optimality is lower and non-significant for polygamous households. They argue that altruism in the household may actually deter cooperation since the household members refrain from retaliating in the case of deviation. However, the experimental evidence, which is based mostly on within-household public good games, is far from definitive on the question of the relative efficiency reached by polygamous and monogamous households. Barr et al. (2019) runs such an experiment in Nigeria, where polygyny is common. The analysis shows that within both household types, cooperation is high, but polygynous households are less cooperative, which goes against Akresh et al. (2016). Munro et al. (2019) also reject efficiency, but they find no penalty in efficiency from polygyny and that both types of households are equally inefficient. Therefore, even if one accepts the idea that comparing monogamous and polygynous households is a way to address this question, the existing evidence does not allow us to draw conclusions about the role played by altruism.¹⁷

A second explanation for the failure to reach efficiency is information asymmetries among household members. Guirkinger et al. (2015) assess whether information asymmetries in effort levels are a driver of non-efficient labour provision in Mali. They focus on collective fields supervised by the household head and individual plots managed by junior male members.¹⁸ They show that productivity is lower in collective plots than in individual plots for care-intensive crops but not for other crops, which they interpret as a confirmation of the fact that supervisors of collective plots face difficulties in securing an adequate level of effort. The model provided in Guirkinger & Platteau (2014) suggests that the choice by the household head of allocating some of the farmland to individual plots comes from several constraints as follows: the impossibility of observing effort; the impossibility of compensating people individually for labour in the common plot for fear of conflict in the household; and rent-seeking in the common plot from the household head, who obtains a significant share before dividing the rest of the harvest among household workers. Guirkinger & Platteau (2014) provide qualitative evidence for each of the constraints and, in particular, for the fact that junior male members provide a low effort level in the collective field to preserve their energy for their own plots.

¹⁷Ziparo (2014), in a very different setup, also concludes that altruism may not be the right explanation for cooperation.

¹⁸The environment under study is different from the one studied by Udry, for instance, since women provide a shared good (vegetables) by farming their individual plots and are relieved from the duty of working on collective fields.

2.3. *Coordination of non-cooperative behaviour*

The extent of opposition to an improvement in personal income by the other household members brings to light how uncooperative individuals may be if they fear that they might lose from the change. We go further in this work to emphasize how individuals try (and sometimes succeed in) counteracting organizational changes that threaten prevailing gender roles. In particular, we want to identify how part of this resistance occurs in the public sphere, not just in the intimacy of the household.

We have already identified the difficulties that women faced when adopting cotton in Côte d'Ivoire (Bassett, 2002): their access to inputs was uncertain and difficult, and they needed a man to market the product. Bassett documents that in 1993, an incident occurred at the market in which a man brought his wife's production and was waiting for his turn to weigh and load the cotton. A group of men spoke up and said that their wives were not growing cotton so they would not help the man unload, and then they departed, which left him in the awkward position of being seen as working for his wife. These men, who felt threatened by the progressive change in gender roles, chose to shame one of the husbands who was accepting the evolution of norms. This put a halt to the change: men were not willing to be ostracized, but women needed them to help. Although cotton had been widely adopted by women in the surveyed village in 1988, almost all of them had discontinued their cotton farming by 1994. The following four reasons were given for this, each by one-fourth of the women: men wanted them to work in the household fields; there was an insufficient labour supply at critical periods; the absence of women in the cotton cooperative market prevented them from selling their product by themselves; and cotton was not sufficiently profitable. The obstruction implemented by men, individually and collectively, was successful at maintaining the *status quo*. However, Bassett (2002) mentions that women also resisted when their husbands decided to grow cotton and asked them to work in the field: they refused to harvest their husband's cotton, spent more time in their individual field and showed less interest in having sexual relations.

Kevane & Gray (1999) document several instances where women lost their land rights following an institutional change in the environment, but they actually benefited from the change. The context is the southwestern part of Burkina Faso, where migration, combined with technological improvements and widespread cotton adoption, led to an extensification of land use and, therefore, land scarcity. Quite surprisingly, women negotiated better access to land via the market, since large landowners were unwilling to lend to men for fear of expropriation. The inability of women to claim permanent rights was the key factor that helped them rent land (and, on average, they could keep the plot for only three consecutive

years). Kevane & Gray (1999) claims that the impossibility of hiring male labour on these plots might explain the inefficiency result established by Udry (1996). However, it is also important to note that there was no opposition within the household in this instance since the value of the women's labour on the men's plots was extremely limited due to the scarcity of land.

Kapadia (1995) also provides evidence of such coordination among women occurring in Asia. She documents the types of work available to lower-caste women in southern India. The author emphasizes that women are paid half of what men are paid for a day of work, even when they undertake a "male" activity, and this state of affairs is accepted by women. However, the labour market also provides a different type of contract that is extremely appreciated by the labourers: it consists of paying a group of people for a given task rather than paying them by the day. Given that the group may select only better able individuals and have high incentives to finish the task as quickly as possible, this contract leads to better-paid jobs. She describes how when a man belongs to the group, he becomes the *de facto* group leader and the person in charge of receiving and distributing the payments. In these circumstances, the higher pay associated with the contract is never obtained by the female labourers: the man negotiates the pay with the employer, keeps it a secret and pays them at the daily work rate, even if they have worked longer hours and faster. As a result, women form separate, all-female work groups, which allows them to access higher payments.

These are some instances where the coordination of non-cooperative behaviours has prevented or accelerated social changes. Nevertheless, there is not a strong strand of literature that covers this issue, and the topic is notably absent in economics.

2.4. Time as a constrained resource

Another resource that may play a key role in women's opportunities is their own working time. In economies where women's participation in the labour market is significant, women's time becomes increasingly constrained, as they have to juggle work, whether formal or informal, and domestic and parental tasks at home. This aspect has been identified in developed economies and, to a certain extent, in developing countries by the economics literature (see, for instance, Herrera & Torelli (2013) and Bardasi & Wodon (2006) in Guinea, Wodon & Ying (2010) in Sierra Leone, Robles (2010) in Ethiopia and Charmes (2006) for a review in some countries of sub-Saharan Africa). However, in many economies, the social norm that dictates that it falls to women to assume most, if not all, domestic and care responsibilities is by no means faltering, despite women's increasing workload outside the household. As a result, time

becomes a scarce resource for women who wish to work or must work. As husbands' participation in domestic work seems to stagnate, women find themselves to be time poor.¹⁹ Consequently, domestic time turns out to be an object of bargaining and strategic behaviour within households, with women attempting to work around the social norms attached to their role as a carer to secure time outside their household duties.

Jacquemin et al. (2018) documents this aspect based on interviews with women who live in Dakar and belong to various socio-economic groups, from working class to upper class. All of these women are or have been married and have children in their care. These interviews reveal that working women face a very heavy workload. Between the domestic and professional spheres and commuting, the interviewed women remain active without taking breaks from 14 to 21 hours per day. A strategy chosen by women to free up time is to delegate some of the domestic and care chores. However, this delegation induces complex negotiations with their husbands. First, although they can delegate domestic chores, they still internalize the norm that they are in charge of the domestic sphere and the children. As a result, they tend to bear the entire cost of hired domestic labour. They also remain in charge of managing their labour. Second, there is negotiation with the husband about which chores she can delegate. Chores related to the direct care of the husband are the least likely to be outsourced, as the husband generally wants to be able to observe that his wife remains somehow devoted to him. It is likely that women eventually face a social cost for circumventing the norm that a married woman should take care of her husband and her household (Gnoumou Thiombiano, 2014).

Clark (1995) shows that the economic success of Kumasi women traders depends heavily on their ability to simultaneously manage competing demands from their husbands and children and the need for labour time. Disengagement from housework turns out to be vital for business expansion. Because of the close association between food preparation and sex, these tasks can hardly be delegated, except perhaps, because of the prohibition of incest, to a daughter who is old enough to prepare food. The difficulty is that preparing the meal takes approximately 3 hours and has to be finished while there is still some daylight, which forces these traders to stop their activity at approximately 2 or 3 pm, while a very commercially active part of the day has yet to occur. By comparison, it is easier to delegate childcare.²⁰ This description echoes the one made by Hanrahan (2015) of the Konkomba community in

¹⁹This notion is defined in Bardasi & Wodon (2006) as the fact that some individuals do not have sufficient time for rest and leisure after considering the time spent working, whether in the labour market, domestic work, or other activities, such as fetching water and wood.

²⁰A woman can take in a young maid if she can afford it and if there is no co-residence with the husband (so that the maid does not become a sexual rival).

Ghana, where cooking for the husband is viewed as a crucial aspect of marriage. There, women have to earn their way to independence in cooking, a status that is viewed as marking the household's full acceptance of the newly married woman.²¹

In a book that describes the interactions between economic activity and family life for women fishmongers in the fish market of Dakar, Lecarme-Frassy (2000) also reports that time is a scarce resource for these women. To be able to fulfil both their domestic tasks and their trading activities, they have to command some labour force to take over for them at home. Young women, be they the women's daughters, fostered girls or young parents hired as maids by the women themselves, play this role. In fact, there is an entire system of the circulation of girls whereby a woman whose daughters are adults who no longer live at home takes in fostered girls from rural relatives. For these girls, this is a first step in their urban life. Hjort (2011) also provides evidence of the substitution of the time use of one mother and her daughter when the mother was randomly chosen from a pool of applicants for a job at a flower farm in Ethiopia. This result confirms that having a daughter who is old enough to take over at home is key for women to be able to seize new economic opportunities.

The examples cited above well illustrate the complexity of the intra-household bargaining induced by women trying to reclaim their time. These examples may open avenues for research that considers time to be a (scarce) resource for women and examines the strategies that women utilise to reclaim this time and the potential impact that it could have on their well-being and the well-being of their daughters.

The economic literature has tended to consider the time devoted to domestic labour to be a form of leverage in the household bargaining process. Walther (2017) develops a model of moral hazard in which husbands and wives consume a private good bought with the wages earned by the husband and a public good that is the output of the wife's domestic labour. The husband decides how much effort to put into work. His wife observes only the income that he brings into the household, which is a noisy signal of his actual effort. To incentivize him to exert a high level of effort, the wife can either threaten to reduce domestic labour, threaten to divorce or do nothing. The model predicts that when outside options such as divorce are not accessible, women use domestic labour as leverage, although it results in an inefficient time allocation. When divorce is a credible option, domestic labour leverage is less relevant. Walther confirms the model predictions by comparing time use and expenses in patrilineal and matrilineal groups in Malawi, with divorce being a more credible threat in matrilineal groups.

²¹Usually, women are not allowed to have their own hearth prior to one year after the wedding.

2.5. Endogenous bargaining

Sometimes, individuals (usually men) limit the earning opportunities of other household members to directly appropriate the earning options (as described in Bassett (2002) and Carney (2004), for example). However, maintaining their future bargaining power might be another reason why they restrict their spouses' economic opportunities. For instance, Wrigley-Asante (2012) studied the consequences of a credit programme that targets women in Ghana. Women reported their husbands' reluctance to take the credit and obtain more agency. One man said, "We are happy that our wives are working to support us, we want them to even work more and to be given more loans to support us. But this is giving them too much power and this is what we don't like." One woman said, "So he is always quarreling with me because he wants me to stop the work I am doing and stay idle as I was formerly so that he can control me." These quotations show the importance for men of keeping their capacity to control household decisions and their high bargaining power. They act non-cooperatively today to lower their wife's future bargaining threat point.

The impossibility for household members to commit to an intertemporal allocation of resources is key here. In fact, achieving intertemporal efficiency is likely even more difficult than achieving static efficiency, since in addition to reaching an agreement on the Pareto frontier, couples would have to stick with it over multiple time periods (Baland & Ziparo, 2018; Schaner, 2015). Despite the difficulty of identifying the existence of non-cooperative behaviour aimed at maintaining high bargaining power for the future, some evidence points in this direction.

McPeak & Doss (2006) study nomadic pastoralists in northern Kenya. Traditionally, men choose the location of the dwelling (because they are responsible for the herd), while women are responsible for everything inside the hut and for the milk. Marketing options for milk have improved, which opens more cash earning possibilities for households. However, the authors show that men tend to locate slightly further away from towns where such selling prospects are available to reduce the earning opportunities for women.

Walther (2018) provides a theoretical model where husbands and wives first choose their labour time allocation and anticipates that this affects their bargaining position in the second period and, therefore, the resource allocation. The author exploits the already mentioned variety in lineage systems in Malawi. Most of the land available to matrilineal households is obtained from the wife, while the husband provides the land in patrilineal households. In the case of divorce, the land is kept by its primary owner. Walther shows that men in patrilineal households tend to overinvest labour on farms

because they own such investments. As a result, men forego wage opportunities in patrilineal households more than in matrilineal households, and the results are consistent with this theory.

3. Savings and hidden income

Because in many instances, the expenses and duties of each individual are tied to his or her earnings, household members play a game in which they have a strong incentive to hide their income. Hiding income, savings and activities are therefore strategies to secure resources and to limit claims and predation from other household members.

3.1. Survey evidence of information asymmetries

Many social scientists have documented that individuals keep how much they earn a secret to have greater discretionary power about how much money they share with the rest of the household. Economists have created questionnaires to capture information asymmetries in households. These data display an extremely high amount of misinformation within households, which confirms that household members keep separate and secret accounts. In Cameroon, Ziparo (2014) records the knowledge of each spouse about the income of his/her partner in separate interviews. More than 60% of the interviewees declared to not completely know the income of their partner. In comparing their estimate with the actual income of the spouse, it appears that approximately 25% of the respondents are off by at least 50% in estimating their spouse's income. On average, the respondents who attempt to estimate their partner's income underestimate it by 40%.

In a study of Yoruba households in Lagos, it also appears that spouses have limited knowledge of each other's financial affairs. Fapohuda (1988) found in her sample that 80% of wives did not know their husband's income, and 65% ignored their spouse's expenditures. Seventy-eight percent reported that they did not pool income.

Chen & Collins (2014) separately asked men and women about their own farm production and expenses on a list of ten types of goods and their estimate for their spouse's production and expenses. The comparison of the two shows that both men and women underestimate the total expenditures of their spouse by an average of 79% and that the discrepancies in farm income are even greater. The direction of the bias towards a clear underestimation suggests that the error is not random and that it is the result of individuals hiding behaviour from their spouses. De Mel et al. (2009) reach a similar

conclusion, finding that men and women under-report their profits by 8% when their spouse is present during an interview.

Ambler et al. (forthcoming) provides a theoretical framework to test whether the discrepancy in reports for asset ownership and participation in household decisions can be fully attributable to measurement errors. Using Bangladeshi data, they show that the disagreement is large: it ranges from a minimum of 8 percent for the ownership of transportation means to a maximum of 48 percent for the ownership of small durables and decisions about livestock. They reject that this is driven by measurement error. They cannot definitively determine whether the disagreement is due to intentional (strategic) hiding or unintentional asymmetric information, but it is noticeable that the disagreement is higher for decision making and assets that are easier to hide.

3.2. Sociological evidence of hiding behaviour

For women, personal financial secrecy is a way to limit, to a degree, the ability of their husbands to pass household financial responsibilities on to them. It might, in fact, be wise for women to protect themselves against changes in their financial responsibilities, as several examples of such an evolution following an increase in their relative cash income can be found in the literature (Guyer, 1988; Bikketi et al., 2016). Hoodfar (1988) even suggests that the power of wives vis-a-vis their husbands may decrease when they earn an income of their own; some husbands then keep more of their own earnings for personal expenditures, while the women's earnings go to pay for collective family needs. More precisely, husbands would not allow their wives to work if women were to spend their earnings on themselves, and women are fully aware of this.

In Fon society, husbands are supposed to assist their wives by giving them an allowance on market days. Making cheaper purchases at the market or haggling efficiently allows women to discreetly pocket some part of the allowance, thereby easing their burden of general food provision for the family (Falen, 2011). Berber women have a different strategy for gaining control over some money, given that they are not allowed to sell their labour (Maher, 1981). They hide their stocks of foodstuffs and then ask their husbands for more housekeeping money to buy more, which gives them some extra money that they can spend on what they choose.

Lecarme-Frassy (2000), in contrast, describes the male strategies in Senegal to reduce their wives' allowances. They may not only underestimate their income but also vary the amount given on a daily basis to avoid any habit formation, or they may give money directly to the shopkeeper to prevent their

wives from keeping the change.

Finally, in some contexts, the relevant unit of analysis for money management and control may not be the couple but rather the intergenerational family. As described in section 1, this is notably the case in South Asia. There, money management and control are very often in the hands of the husband's parents, which leaves the young couple dependent on them for accessing resources (Singh & Bhandari, 2012). Gram et al. (2018) show that as a result, hiding behaviour may be implemented by the young couple, who attempts to keep their resources secret and to not hand them over to the financial guardian (usually the mother-in-law). Husbands and wives often have aligned incentives for allowing the wife to accumulate her own savings, since junior husbands are just as powerless as their wives in influencing financial decisions. Possible strategies include saving up gifts from one's natal parents, manipulating information about prices when claiming money for expenses, and selling off the household's grain surplus in secret. When the husband is employed abroad, he may even send his remittances to the wife's natal family to avoid interference and suspicion from his own parents. In some instances, husbands assent to their wives having secret strategies, even if it entails a degree of lying.

3.3. Experimental evidence of income hiding behaviour

Spouses keeping their earnings a secret does not necessarily lead to an inefficient allocation of resources within the household. However, the (very) poor knowledge that they display of one another's resources suggests that they adopt non-cooperative behaviours. This has been the conclusion reached by most of the experimental literature (even if several papers have found results that qualify this assertion; see Munro et al. (2014) in the Indian context and Hoel (2015) in the Kenyan context). Many experiments have been conducted to quantify how much individuals are willing to hide and how much they are willing to pay to hide, which yields information on the deviation from optimality.

Ashraf (2009) was one of the first papers that explicitly tied information asymmetries and inefficiencies through the specific channel of incentives for income hiding. In the context of the Philippines, where it is customary for women to manage the financial resources of the household, Ashraf identified the causal effect of spousal observability and communication on the savings and consumption choices of couples. In her experimental setting, each partner received a windfall income that they chose either to use for their own consumption or to save in their own account, their spouse's account or a joint account. Ashraf varied the observability of the income received by each partner and whether spouses communicated about how to allocate the money between consumption and various savings accounts. She found that both men and

women whose partner controlled savings decisions tended to allocate more money to their own account when the observability of the financial choices was reduced.²² However, this finding was insufficient to pinpoint inefficiency. Inefficiency was proven by the fact that subjects are willing to pay to deposit money into an account of their choice. In Ashraf (2009), on average, men were willing to pay 21 pesos (more than 10% of the initial allocation of 200 pesos) in private rather than 9 pesos in public to choose the account in which to deposit the money. In Ethiopia, Kebede et al. (2013) conclude that in a public good game, the observability of the initial endowment increases the investment in the common pot and fosters more cooperation, even though the contribution to the common pot never reaches efficiency.

Castilla & Walker (2013) studies the implication of asymmetric information on resource sharing between cohabiting spouses. They focus on an ethno-linguistic group in southern Ghana with two key features. First, husbands and wives are known to keep their finances separate; therefore, no partner has total financial control. Second, as described in section 1, husbands must provide a housekeeping allowance to their wife (“chop money”). In this context, the authors implemented an experiment in which couples participated in four rounds of a game spread out over 10 months. In each round, individuals received exogenous shocks through a public lottery where participants could win cash or livestock prizes, followed by a private draw for both types of prizes. During the lottery sessions, survey data were collected on consumption, household expenditures and the amount of chop money received by wives. The experiment provides evidence of non-cooperation, as the authors find a differential effect of public and private cash prizes on expenses. In addition, husbands and wives exhibit different patterns of behaviour, in both the type and the timing of their expenses, when the observability of the windfall gains changes. In particular, winning a private cash prize increased the husbands’ expenditures on in-kind gifts, while it increased wives’ spending on cash gifts in the week that the lottery gains were earned. According to the authors, these differences in patterns are consistent with women who hide income from their husband by distributing cash gifts, which they claim are more difficult to monitor than in-kind gifts. This result is consistent with the observation offered in Fapohuda (1988): women who have sufficient economic autonomy invest in extended family relationships and social networks, thereby improving their bargaining position in their ongoing marital relationship. This network might insure women in cases of marital disruption.

Lab-in-the-field experiments conducted in rural Liberia (Beekman et al., 2015), Senegal (Boltz et al.,

²²Giving spouses the opportunity to negotiate each other’s individual choices brought these choices closer to what was observed when allocation decisions were public.

2019) and Kenya (Jakiela & Ozier, 2015) have measured individuals' willingness to pay to hide income and escape the social pressure to transfer money to kin networks in poor communities. Here, kin networks are larger than the household definition, but these pieces of evidence are nevertheless relevant in this discussion. For instance, Jakiela & Ozier (2015) implemented investment games with all adults from a village and invited them to participate in sessions wherein participants were given, in private, an initial endowment of 80 to 180 Kenyan shillings. The subjects were then invited to share this endowment between a risk-free account and a risky but high-return investment. Every player was then assigned to either a private treatment (where his or her investment decisions were not disclosed to the other participants), to a public treatment (where their investment decisions and whether they were successful were revealed to the other participants), or to a price treatment (where they must disclose their investments and payoffs unless they pay a certain price). Jakiela & Ozier find that women tend to adopt investment strategies that conceal the size of their initial endowment (by investing no more than 80 shillings) although it reduces their expected earnings. In the study, the effect was larger among women with relatives outside the household who attended the session. Among the participants who could afford to hide income, 30% hid it. On average, they agreed to pay approximately 15% of their earnings to hide their income. The authors estimate that women expect to be taxed by their kin at a rate of approximately 4%, and this rate doubles when kin can observe income directly.

Boltz et al. (2019) went a step further by collecting data on individual labour income and transfers made after they conducted an experiment similar in spirit to the research of Jakiela et al. in the poor urban areas of Dakar, Senegal. In addition, they randomly varied the number of kin invited to the lab session. They found that when it was costless, 60% of participants were willing to hide income. Unlike Jakiela & Ozier (2015), they did not find that women have a higher willingness to pay to hide income than men but did confirm that the willingness was higher among women with relatives outside of the household who attended the session.²³ They actually estimated the social tax at 13% for men and 8% for women. The strength of Boltz et al. (2019) is that they mapped the lab outputs to individual data. They find that poorer women are willing to pay more than richer women to hide income and decrease transfers. In particular, when given the opportunity to hide income, women in poorer households reduce their purchasing of productive assets, while when not given this chance, they invest heavily. According to the authors, this behaviour is consistent with women who use investments in small inputs as a strategy

²³In rural Liberia, Beekman et al. (2015) find that individuals are more willing to pay to hide their income when they have a dense family network.

to avoid redistributive pressure and maintain better control over their resources. This strategy to secure income is not implemented by men.

Pouliquen (2019) also quantifies the willingness to pay to hide income in a specific context in Benin. After an experiment that provides an exogenous variation in the propensity to register an informal business, he assesses whether formalization affects the propensity of spouses to hide a cash grant. He finds that formalization increases hiding behaviour for women entrepreneurs, but it decreases hiding behaviour for male entrepreneurs. A theoretical model offers an explanation for this differential result. Formalization provides better control over resources. The model explains that male entrepreneurs are less willing to pay to hide income.²⁴ However, to explain female entrepreneurs' behaviour, Pouliquen introduces another consideration: women, by securing their property rights to the business, gain insurance against divorce or widowhood, and this insurance is worth investing in. If husbands want to limit this investment to prevent an improvement in women's bargaining power, they create constraints on the business investment level. The additional investment incentivized by the greater control over resources might encounter the constraint, which explains the higher willingness to pay to hide income.

3.4. Evidence of savings

As previewed by Pouliquen (2019) and Boltz et al. (2019), hiding income is associated with the ability to save and invest, which is crucial in terms of poverty exit. Saving in secrecy might be a way to hide income, but saving in itself might also be difficult if the spouse adopts predatory behaviour. Indeed, women also keep secret caches, thanks in part to money diverted from other household expenses (especially for non-working women). Women can inflate claimed household expenditures or save money from household shopping and keep the change. These practices are described in detail in Eroglu (2009) in the case of poor Turkish households. They seem to be rather frequent in sub-Saharan African countries (Falen, 2011; Lecarme-Frassy, 2000). This is also the case in India, which became vividly apparent when there was the surprise demonetization: women, who had kept secret savings, suddenly had to queue openly to change their banknotes and let their family know that they had kept all of this money in secret.²⁵

Few papers have attempted to identify the non-cooperative behaviour of households in terms of savings outside of laboratory experiments. The observation of such behaviour is often difficult and only

²⁴A companion paper rules out formalization leading to income changes, which means that the channel is not simply a change in bargaining power due to increased income.

²⁵Source: <https://www.bbc.com/news/world-asia-india-37935738>.

indirect. However, observing how members of a household manage to escape other family members' pressure offers relevant insights into the types of strategies that can actually be implemented.

Anderson & Baland (2002) show how the existence of rotating savings and credit associations (roskas) can be explained in a context where women try to hide money from their husband to modify the expenditure decision. The argument is as follows: if women have a higher valuation of a consumption good that can be funded only with income accumulated over several periods, then they are willing to pay to secretly save in the first period. The key aspect is that in the second period, even if, collectively, the household would not have bought the good *ex ante* because the woman's valuation is not high enough to compensate for the preference for the present consumption of her spouse, it might be different *ex post* (after the savings decision has been made and the necessary amount is accumulated). As a result, the household may opt to buy the good valued by the woman. However, given that saving through a rosca is (time-)costly, the woman chooses this solution only if she cannot buy the good without using this trick and if she can indeed buy the good in the second period. Therefore, women with a high bargaining power should not need to use rosкас, and similarly, women with too little bargaining power do not use them for fear that their savings will be expropriated in the second period. Only women with intermediate bargaining power choose to save through rosкас. Anderson & Baland (2002) provide empirical evidence to support this theory based on data from Kenya. The description of Fon couples in Falen (2011) also suggests that rosкас are used to protect money from kin demands. In this environment, rosкас are used both by men and women, which suggests that men also need to find appropriate savings tools. However, Falen does not rule out the idea that part of the rosкас' attractiveness may also originate from the savings commitment that they embed.

Somville (2011) questions whether saving via daily collectors could also be triggered by intra-household resource control motivations. Daily collectors are a convenient way to save since they operate in the market, and one can deposit immediately after receiving the cash, which may reduce the risk of theft. However, the service is fairly expensive. In the outskirts of Cotonou (Benin), clients earn a negative nominal return of -3.3% per month. Somville (2011) shows that the use of daily collectors responds to one's income share with an inverted U-shape, similar to the one predicted in Anderson & Baland (2002). Interestingly, he also matches savings through daily collectors with different patterns of consumption: individuals spend less on public goods (schooling fees) and more on frivolous goods (clothes, tobacco and alcohol). Ashraf et al. (2006) reach a very similar conclusion when studying deposit collectors in the Philippines. They find that married women are more likely than unmarried women to save with deposit

collectors. Furthermore, the likelihood of women signing up for a deposit collection service follows an inverted-U shape with income, while this is not the case for men.

Baland et al. (2011) provide another example of a non-cooperative behaviour in Cameroon that aims to protect one's resources. They provide evidence that excess borrowing is a strategy used by some members to protect their savings from the demands by relatives and friends for money. By taking out a loan, the member signals to friends and family that he is currently cash constrained and cannot respond to their demands: while saving is done secretly, borrowing is publicized.²⁶ Quite interestingly, this strategy seems to be implemented both by men and women, which suggests not only that all members face kin pressure but also that none of them can easily refuse requests for money. The evidence is mostly qualitative and provides a theoretical model of signalling to show that such a strategy can indeed reach an equilibrium.

Finally, Schaner (2015) implements an experiment with a somewhat different perspective. Rather than viewing conflict over savings as the result of a disagreement over how to spend money, she concentrates on the role of differences in time preferences.²⁷ She offers a theoretical model where poorly matched couples (couples who have divergent time preferences) are more willing to undergo costs to save according to their preferences. In the experiment (implemented in rural Kenya), she manipulates the interest rates in the various types of savings accounts (two private and one joint account per couple) and shows that poorly matched couples are more likely to use private savings accounts, even when they forego interest earnings.²⁸

It should be noted that the use of roscas to gain more control over household resources and spending is not limited to the African continent. In fact, Anderson & Baland review a series of papers that describe similar behaviours in Asia (India, Indonesia, and Bangladesh).

3.5. Consequences of concealment strategies

Pinpointing hiding behaviour is a way to reveal inefficiencies, which are, in the experiments, quantified by the magnitude of the willingness to pay. Although information asymmetries are a likely source of inefficiencies, we find it misleading to infer the relationship between inefficiency and secrecy purely based on experiments.

²⁶ "My husband ignores how much is on my account. When I save I don't tell him, and I make sure to hide my passbook. When I take a loan, I even tell him how much I borrowed" (answered during an interview conducted by Baland et al. (2011)).

²⁷ In her data, the median couple's estimated discount factor is 0.5 standard deviations apart.

²⁸ Although 19% of poorly matched couples are inefficient, this figure is only 8% among well matched couples. Poorly matched couples leave at least 52% more interest on the table.

First, most of the empirical literature that demonstrates the link between information asymmetries and a deviation from efficiency relies on average treatment effects. Allowing for heterogeneity in the response to information asymmetries might qualify these results. For instance, in the context of Kenya, Hoel (2015) implemented a variant of dictator games, where each individual in a monogamous couple played a public game in which each partner knew about the other person's choices and pay out and a private game where the partners' decisions were unknown to each other. She finds that on average, if respondents responded opportunistically to private information, the within-subject analysis showed that respondents gave the same amount in public and private in 49% of the games. In 36% of the games, the subjects acted opportunistically by giving 30% more in public than in private. Using survey data collected after the game, the author also reports that among opportunistic participants, opportunism was acute when the respondents believed that their spouse knew a high share of their income stream. She interprets this result as a symptom of the close monitoring of a suspicious spouse rather than a sign of improved cooperation. For some couples, greater opportunism might be an endogenous response to non-cooperative behaviour.

Second, hiding resources might actually reduce inefficiency in some circumstances. This would be the case if, for instance, it allows women to invest more than what they are allowed to based on cultural norms. Pouliquen (2019) does not make a welfare statement, but his result points in this direction. There may be other instances where hiding resources gives women more agency without necessarily limiting their partner's well-being. Experimental setups are an environment where other constraints are usually poorly represented. As a result, it is not completely straightforward to extrapolate welfare conclusions from experimental setups to the "real world". It is unclear on a priori ground whether this generates inefficiencies in the way resources are allocated within the household due to imperfect information or whether it permits bypassing some of the constraints listed above, helping to bring households closer to an efficient outcome.

4. Violence and decision making

As described earlier, both the theoretical and empirical literature demonstrate that men develop non-cooperative strategies to prevent women from accessing resources within the household. Section 2.5 illustrates one end of the spectrum of the non-cooperative strategies at men's disposal. At the other end of this spectrum is the use of violence (whether physical or emotional) to thwart women's attempts to

access resources. While the threat of physical coercion has been proven to loom over women,²⁹ most of the intra-household decision-making literature leaves out the question of violence.

Although we do not assert that women necessarily experience violence because of disagreements that arise from intra-household bargaining, male-partner violence is nevertheless a behaviour that can occur during this process. Among the two main motives that have been formalized by the sociological literature to attempt to explain why men resort to physical coercion, instrumental violence, which assumes that husbands use violence to control their partner's behaviour and access to resources in the household, is the motive we chose to emphasize.³⁰

In an original approach, Bloch & Rao (2002) uses ethnographic information on dowry-related violence in India to design a model of non-cooperative household bargaining with asymmetric information, wherein husbands use domestic violence as a signal of their dissatisfaction with the marriage. Husbands have an incentive to use violence against their wife to extract additional resources from her family. When the wife's family is richer (and the husband is less satisfied with the union), the incentive to exert physical violence is stronger. In India, Menon (2020) also shows that an increase in gold prices at the time of the marriage increases domestic violence among married women. Although her data do not allow her to test her hypothesis, she assumes that the effect of rising gold prices on violence is channeled through a decrease in the bride's bargaining power because of the reduction in the quantity of gold jewellery in her dowry basket when she marries.³¹ La Mattina (2017) also makes the case that women's bargaining power decreases and exposure to spousal violence increases in response to civil conflict in Rwanda. Gaspart & Platteau (2010) and Platteau & Gaspart (2007) develop a model and gather qualitative evidence that suggests that there is a positive correlation between unfavourable marital outcomes and marriage payments, in a context where a woman-initiated early divorce might justify the bride price to be repaid. Their results hint at the fact that in the Senegal River Valley, husbands who pay a high brideprice and who are dissatisfied with their union may strategically use violence to push their wife to ask for divorce. In this way, they attempt to obtain the reimbursement of the brideprice.

Nishimura (1998) (for south India) confirms that the strength of relationships with the extended household (and particularly between the wife and her natal family) is explained by the fact that this

²⁹Overall, 30% of ever-partnered women worldwide have been the victim of intimate partner violence (WHO, 2013).

³⁰The other motive for violence formalized in the literature is expressive violence, whereby a partner uses violence to vent frustration or stress and directly benefits from it. In reality, both motives are likely to be intertwined (Tauchen et al. (1991)).

³¹A spike in gold prices also increases the value of the gold component of the dowry and could lead husbands to use violence to extract resources from their wives. Menon recognizes that due to a lack of appropriate data, it is beyond the scope of the paper to determine which effect dominates.

natal family serves as an income source. For the natal family, not giving the entirety of the daughter's property share at the time of the wedding but rather giving it in instalments for decades maintains her high status in her conjugal relationship.

Following the approach of Bloch & Rao (2002), Anderson & Genicot (2015) develop a model of intra-household bargaining with asymmetric information, where conflict is considered to be an intrinsic and likely part of bargaining. The model predicts that when wives contribute a greater share of the household wealth, they expect and obtain a higher share of the consumption. However, as a consequence, there may be more conflict in the household. An empirical test confirms the predictions of the model. An improvement in women's access to property induced by a change in the law is associated with an increase in both female and male suicide rates, potentially as a consequence of more intra-household conflict.³²

Other papers have shown that there can be equivocal consequences to the measures expected to improve women's access to resources within the household. This literature points to conflict in the intra-household bargaining process as a likely reason why these measures may backfire for women. In the context of Vietnam, Bulte & Lensink (2019) find evidence that participating in a business training program aimed at improving women's income and bargaining power is associated with an increase in exposure to violence. They find that the beneficial effect of improved bargaining power is offset by a rise in male partner violence in response to women bringing more resources into the household. Chin (2012) finds that when women have better labor market opportunities, they suffer less from violence. According to her, working outside the household reduces exposure to violent behaviour from the spouse and this compensates for the male backlash effect associated with improved opportunities for the woman. Bobonis et al. (2013) show that women who benefited from a female-targeted cash-transfer as part of the Oportunidades program in Mexico were 40% less likely to be the victim of physical violence but were also more exposed to verbal threats with no associated physical abuse. The authors find evidence that the substitution between physical and verbal abuse is stronger among households with poorly matched education levels, which they interpret as a sign of low expected gains from marriage. In a randomized controlled trial where female applicants' access to employment was randomized at a flower farm in Ethiopia, Hjort & Villanger (2011) show that female employment led to a 13% and 34% increase in physical and emotional violence, respectively. Although they find little support in the data for the hypothesis that husbands intensify violence to extract resources, they underline that their results are consistent with husbands lashing out at their wives for deviating from prescribed gender norms because

³²The increase is more acute among men than among women.

this behaviour entails an emotional cost for the men. Finding inspiration in the literature on identity economics, Akerlof & Kranton (2000) suggest a theoretical model in which both partners derive utility from their self-image when the consistency with a reference, for instance, traditional gender roles, directly impacts the utility that they derive from marriage and, consequently, the male partner's incentive to use physical violence against his wife.

Even in contexts where it is culturally accepted that it falls to women to act as the financial manager of the household, the process by which women exert control over resources is not frictionless, as suggested by Tsai (2017). Tsai finds that Filipino women who declare that they manage finances independently rather than jointly with their partner tend to declare to have been the victim of severe acts of physical violence more often. Based on interviews led over the course of six years in Bangladeshi villages where women had access to BRAC and Grameen Bank loans, Schuler et al. (1998) provide a stimulating discussion of the channels that may enhance women's vulnerability to violence following their improved access to resources outside the household. In particular, some testimonies suggest that there might be a tipping point beyond which increased bargaining power—induced by increased access to resources—is less likely to entail violence. Heath (2014) does not specifically tackle this point, but she nevertheless shows that in Bangladesh, women are less likely to experience violence upon starting to work for pay if they have high bargaining power before entering the labour force.

In contrast with the evidence mentioned above, other studies find effects, which range from non-detrimental to unequivocally positive, of women's increased access to resources on their risk of falling victim to an abusive partner. In a study that spans three East African countries, González-Brenes (2004) emphasized that they find no significant association between women's employment or earnings and their experience of violence. In Ecuador, Hidrobo et al. (2016) find that the transfer of cash, food, or vouchers for food to Colombian refugees targeted at women decreases controlling behaviours and physical violence by 40%. Unlike what was found in Mexico, there is no evidence of an increase in emotional violence; rather, the transfers improve women's bargaining power and increase domestic labour for both partners.

To the best of our knowledge, few empirical papers have studied the impact of an increase in husbands' resources on conflict in the intra-household sharing process, nor have many papers studied this impact in non-nuclear households. Heath et al. (2018) do both and study the impact of a cash transfer that targets household heads, mostly men, in Mali, where 40% of married women are in a union with a polygynous partner. They find no effect of cash transfers on women married to monogamous men, whereas they find that the studied program decreased the prevalence of physical and emotional violence by 7 and 12

percentage points, respectively, among polygamous households. The effects are mainly driven by second and later wives. It seems that the main channels in violence reduction are a large decrease in reported arguments and a decrease in men's stress and anxiety. The evidence does not indicate an improvement in wives' bargaining power.

5. Marriage and fertility

A general observation from DHS data is that husbands and wives disagree on the desired number of children. The differing stakes of men and women regarding fertility are summarized in Bruce (1989). Fertility is therefore central in intra-household negotiation. Ashraf et al. (2014) has documented that secretive behaviours also concern fertility, a non-pecuniary issue with long-term consequences for household members. In their experimental study in Zambia, Ashraf et al. provided vouchers for contraceptives to couples. They randomly varied the observability of the voucher to the husband, inducing information asymmetry and creating an opportunity for women to conceal contraceptive taking. They found that receiving the voucher in private boosted the share of women who redeem the voucher by 19%. Receiving the voucher in private also increased the use of (concealable) injectable contraceptives and led women to be 27% less likely to give birth.

As described in section 1, married women are often dependent on their husbands for their subsistence, as men are in charge of catering to the fundamental needs of their wives and children in most societies. Furthermore, women's access to assets is mainly indirect, with women going through their father or husband to access land, for example. Therefore, protecting one's marriage is important to secure access to economic resources during marital life. In countries where polygamy is permitted, a common worry for wives is that the husband will spend money courting another woman and eventually marry her, which means that they would then have to compete with a co-wife for the husband's resources. Falen (2011) describes various ways women have of diverting resources from their husbands to avoid this outcome. Since men are responsible for medical expenses, being ill (faking sickness) is a strategy for women to prevent their husband from having the means of courting another woman. Similar strategies have been described in Senegal, with women trying to spend more and save more when they feel that their husband is about to take a second wife (Boltz & Chort, 2016). Among the Fon described by Falen, women also use their stereotypical gender role to control their husband and their money: they can refuse to cook and/or refuse sex until he gives in to their demands (at least if he is monogamous). She can also refuse to be buried in the family home, which would bring shame to the husband's family.

In the long run, it is also crucial for women to insure themselves against the economic consequences of marital upheaval due to divorce or widowhood (see van de Walle (2013) for the consequences of widowhood). In Africa, the probability of facing either divorce or widowhood in a lifetime is rather high; for example, in 2006, approximately one-third of ever-married women in Senegal had suffered at least one marriage dissolution (Lambert et al., 2018). As pointed out by Munachonga (1988), the perspective of becoming a widow in the absence of any formal widowhood insurance system affects women's choices and strategies during their marital life.³³ For example, given that one avenue to securing a living in case of widowhood is living with a son, Lambert & Rossi (2016) show that women's fertility behaviour is affected by the imperative to have a son; as a result, when faced with the existence of competing heirs for their husband's wealth, they accelerate their fertility (by reducing birth spacing) until they have a male child. In polygamous households, Rossi (2018) presents evidence of strategic complementarity between the fertility of co-wives, which is explained by the competition for both current resources and future access to the husband's inheritance. The fact that having a boy attenuates the likelihood of being dispossessed upon widowhood has been observed in other parts of the world (such as South Asia and Indonesia), particularly when the remarriage of widows is not as common as in sub-Saharan Africa (Cain, 1986).

In the case of marriage dissolution, women who have failed to secure sufficient savings or resources to sustain themselves can remarry. This is an unavoidable situation for women of child-bearing age in many societies where social norms assign a strong stigma to unmarried women of child-bearing age, particularly if they have previously divorced their husbands. Levirate marriage, whereby a widow marries the brother (or another close relative) of their late husband, is the main form of "insurance" for widows. With such a marriage, they remain in the lineage of their husband, which might be the only way to stay with their children in patrilineal societies. Although it provides a safety net for the most vulnerable women, levirate marriages are associated with a significant decline in their well-being relative to the first marriage (Lambert et al., 2018). The same paper underlines that divorcees have better chances of remarriage, some of them even using divorce as an instrument of economic mobility (a point already mentioned by Locoh & Thariat (1995)).

³³In some contexts, widows benefit from inheritance rules guaranteeing their access to the household assets after the passing of their husband. It is in particular the case of some social groups in Ethiopia, as described by Fafchamps & Quisumbing (2002). These authors also describe disposition rules for assets upon divorce that are often rather protective for women.

Conclusion

This review of the literature described a set of individual strategies used to bypass intra-household negotiations and secure access to private resources. Insights gleaned from different social science fields suggest a number of research avenues for economists. Particularly notable are the gaps in the economic literature in four dimensions. First, because of the non-cooperative nature of these behaviours, the economic literature often associates such behaviour with Pareto inefficiency and, therefore, with reduced total household resources. Nevertheless, this does not need to be the case. In some contexts, securing private (secret) resources is the only way to circumvent social norms or intra-household conflicts that might prevent seizing new economic opportunities. A first avenue would be to understand clearly whether and when non-cooperative behaviours induce an increase rather than a waste of household resources and what type of constraints they permit individuals to overcome. Another way forward would be to introduce a dynamic element to this analysis to determine how this might change when the economic and social environment evolves. Such research could pave the way for the design of public policies that would support new economic opportunities at a lesser cost to individuals and households. The second set of questions that seem understudied in the economic literature is that of the collective resistance to economic changes that threaten social norms, particularly when gender roles are at stake. There have been only a few attempts to identify the situations in which individuals are incentivized to coordinate in an attempt to prevent women from taking steps that might overturn traditional roles. The deep motives for these social forces that limit social and economic innovations need to be understood if one wants to be able to promote potential welfare-improving changes, since these changes might generate intra-household conflict. Third, in all of these cases, it is necessary to take into account the fact that the scarce resources that household members (women in particular) need to secure might be time rather than money. Time is clearly needed to develop economic activities or to develop one's social network through "leisure" time and thereby gain autonomy and agency, but leisure might also be a desired good whose consumption is particularly unequal within the household. Fourth, this review highlights how imperative it is to have precise knowledge regarding the anthropological realities of the context under study when exploring household economics questions. A cross-fertilization of the different branches of social sciences is therefore desirable for making progress on the question of intra-household resources allocation. Finally, none of these topics can be fruitfully explored without more individualized data on consumption and resources. An important effort of data collection at the individual rather than just at the household level is clearly needed to address these questions.

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