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Abstract

The question of diverging interests and preferences within couples over the use of household's resources, and the consequences of this conflictual views has been present for a long time in the development literature, albeit in a somewhat scattered way. This paper reviews selectively 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. It bridges between the different strands of social sciences, and exemplifies the complementarities between them. The main features of household organization are described to set the scene for the individual strategies put in place to bypass intra-household negotiations and secure access to private resources. These include efforts to keep access to income earnings opportunities and secrecy over income and savings. The paper also discusses the use of violence on the one hand and of marital and fertility choices on the other in attempts at maintaining or tilting balance of power in the household. It highlights directions for future research aimed at improving the understanding of household behavior and response to economic stimulus.

Introduction

Public transfers to households are a common instrument of the fight against poverty. Even when they are intended to benefit several household members, they 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. Understanding properly what takes place in the household when one member is the recipient of such external support, and how it depends on his position in the household, would be essential to design those social policies efficiently. Many questions remain on the organisation of households in the African and Asian continents and how this should be factored in development strategies. More broadly, a better knowledge of the flows of resources within the household would help understanding the determinants of individual well-being and contribute to the analysis of marital tensions (including domestic violence).

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This paper sets out to review selectively the abundant literature in various disciplines of social sciences that offer 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 between the different strands of literature is relevant. Sociologists and anthropologists have delved in detail into the question of the social organization of the household, as well as analyzed how the historical and cultural contexts shape the household's decision making processes. On their side, economists have developed quantitative tools to evaluate individual wellbeing assuming some specific household organisations, but often based on theoretical models that are not designed to take the complexities of developing countries households into account.

While 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 attracted many criticisms, in particular for failing to take into account gender power balance within the household (Folbre, 1986). Further, the hypothesis of full income pooling that is required by the unitary model has been proven inadequate both in developed (Browning et al., 1994) and in developing countries, where the identity of the income earner or transfer beneficiary has been shown to affect the household consumption patterns (Duflo, 2003; Hoddinott & Haddad, 1995; Thomas, 1994).

An alternative representation of the household as a set of individuals taking decisions through a bargaining process dispenses with this undesirable assumption. The collective model relies on the hypothesis that household's decisions are Pareto optimal, a hypothesis that might sound only weakly restrictive. This model sees the decision making as a two-steps process, whereby public good consumption 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 bargaining power, which is affected by distribution factors determining each one's outside options.¹ A number of papers testing directly the restrictions imposed by the model in developed countries do not reject them. Nevertheless, empirical evidence for developing countries suggests it might typically not hold. In fact, the Pareto efficiency hypothesis is not always found to be valid in such contexts, implying that households are wasting resources. Udry (1996) shows that households in Burkina Faso do not reach productive efficiency because labour is not allocated optimally between plots of a same household. de Mel et al. (2009) also detect productive inefficiency with experimental data: when offering cash grants to micro-entrepreneurs, they find that women either do not invest the grant in their business or do not earn additional profits, while men do actually get returns from the grant. Assessing how households cope with shocks allows to evaluate whether the allocation 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 affecting individual incomes, which contradicts efficiency. Dercon &

¹Sen (1990) proposed an early discussion of models of cooperative conflicts in the household.

Krishnan (2000) and Robinson (2012) reach a similar conclusion in very different contexts. As a result, it seems difficult to consider even the Pareto efficiency assumption as 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 intra-household resources 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 the Pareto efficient households reach better outcomes for children than inefficient ones (in terms of primary and secondary education) and that their responsiveness to the cash transfer treatment is higher. Further, the dynamic impact of meddling with intra-household balance of power should be taken into account in policy design. In fact, creating a new income flow towards one member might impact household functioning and even 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 the allocation of resources within the household and hence the consumption pattern.

In many of the instances where inefficiencies have been identified in the data, a possible immediate cause are individual behaviours aiming at securing personal resources, even if they come at the expense of 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 suboptimal 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 each person can implement. Indeed, living in society imposes to conform to 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 manoeuvre for individuals lies within these constraints and this is why a clear understanding of them is crucial.

There are large variations of norms over space and across social groups. Describing fully these different contexts is not possible here, so we will restrict our attention in two ways. First, we concentrate on the functioning of households composed of conjugal family units, as defined by van de Walle (2006), where a conjugal family unit is composed of a man, his wife or wives and their children. This definition encompasses households organised over multiple residences, which can be particularly important for polygamous households (Ocholla-Ayayo, 1997). However, we will not address situations that entail non-coresidence due to migration. Second, we focus our analysis on sub-Saharan Africa because the complex household structures and prevailing strict social norms make the question of intrahousehold allocation especially salient in the area and

there is subsequently a large literature. Though the literature is less abundant than for Africa, we also provide illustrations from other regions, notably South Asia, when relevant. In fact, individual strategies to secure personal income exist throughout the world and would deserve to be investigated more thoroughly in non-African contexts as well.

After having presented a qualitative description of households' organisation in section 1, we turn to the description of individuals strategies to secure resources. Section 2 highlights strategies to increase individual income and how this leads to inefficiency in 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. Last, section 5 quickly highlights how individual strategies take place upstream from the household constitution with strategic behaviour in marriage and fertility decisions.

1. Household functioning

1.1. Households organisation

Several challenges arise when modelling household decision making in developing countries. First, the actual structure and organisation of the household is not adequately represented by the case of a nuclear household, sharing a residence and deciding jointly on the consumption of public goods. Second, households can include several autonomous budgetary units. Individual resources are not generally pooled, they are not even always known within the household. Third, social norms codify in large parts who has access to which resources, and who is responsible for catering for which needs in the households. These norms are historically determined, but they evolve with changes in the economic environment. Married individuals have a very clear understanding about their respective rights and duties, and, although they might help each other in case of temporary incapacity to fulfill 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.

A remarkably helpful presentation of the broad determinants of household structure and organisation is given in Paulme (1960). Given exogamy rules prevalent in most social groups, marriage brings together people from different lineages who are therefore facing competing loyalties, towards one's own lineage and towards the spouse's. According to her, which lineage "owns" the children largely shapes the relations 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 of the father on the other hand are opposed when it comes to inheritance is a potential source of dissension between spouses.² In a patrilineal, pa-

²Matrilineal societies are nowadays much less frequent than patrilineal ones, 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 inheritance laws, is shaped by those descent

triarchal society, children belong to the father's lineage, creating a stronger link between spouses (who have aligned inheritance interests). Yet, in patrilineal societies, women are particularly fragile as divorce might not be a very strong outside option in intra-household negotiations: in fact, upon divorce, a woman loses access to both children and resources. Further, in case of widowhood, they might also be left with very little access to any resources. As a result, women have an interest in securing personal savings that would act as a safety net if they leave their husband's lineage, giving room to divergences between spouses. For Munachonga (1988), the lack of cooperation within households (in Zambia) might be fostered by a lack of insurance in case of widowhood.

Whatever the lineage system, individual responsibilities are clearly defined. The broad rule is that women are in charge with catering for the daily needs requiring small expenses while husbands obligation is to provide lodging, bear the cost of health and education expenditures as well as other infrequent but costly purchases, notably of durable goods. Although there are variations around 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 insuring food security for their household, although Kevane & Gray (1999) indicate that for some ethnic groups in Burkina Faso, women bear the primary responsibility to feed themselves and their children. 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 over this particular dimension, maybe reflecting a lower access of women to resources management on that continent.

Case studies illustrate the role of the lineage system in shaping household organisation. Clark (1995) gives a particularly vivid example of a matrilineal society in her analysis of the Kumasi female market traders (Ghana), while Falen (2011) presents a detailed example of household's organisation in a patrilineal system, the Fon in Benin. The comparison between the two makes salient a greater economic autonomy of women in the matrilineal system, that comes with both costs and benefits for them. These women described by Clark (1995) have shops in a very active market, operating daily. This economic activity can be profitable, provided one invests enough time and capital in it. In this setting, only half of the married women actually coreside with their husband: the woman lives with some of her matrilineal kin (mother, cousins or some siblings). She is nevertheless in charge for preparing her husband's meals. The woman shares no monetary resources with her coresident kin, nor with her husband. Financial arrangement with the husband involves mainly him paying a regular allowance earmarked for the purchase of food, the *chop money*, and possibly some participation to the cost of children. She is in charge for completing the meal with vegetables that she has to purchase. Chop money quid pro quo is

rules).

that she prepares the meal for her husband and has sex with him.³ 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 the wife's own income. For women, generating their own earning is all the more crucial that marriages are rather unstable (death, divorce, polygamy are threats to the financial support of the husband). Falen's description of the Fon in Benin depicts that women are expected to take on cooking, cleaning and child care. Further, 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 command, for any type of errand. In addition to the usual duties (paying for the main staple, lodging, health and education), the husband should also 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.⁴ An additional norm is that women are responsible for managing the ceremonial gifts, that are indispensable to maintain the social network (see Buggenhagen (2012) for Senegal).

Necessities sometimes command the general rules to be bent. Bikketi et al. (2016) underline that, in Kenya, despite clearly defined traditional roles, the necessity to secure their livelihood have led spouses to become flexible about their gendered obligations, diverging 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, frequent husband's absences, partly due to long migration towards Gulf countries, led women, even those who were traditionally not allowed to deal with money, to take on the household budget. Lecarme-Frassy (2000) reports, for fishmongers in Dakar market (Senegal), that women often need to supplement the husbands' earnings to cater for daily needs.

That men are viewed as breadwinners does not prevent women from working as well and earning some income, of which they keep a part 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 have often only imprecise knowledge of each other's resources and expenses.⁵ The literature has many examples of this income privacy. 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 seen as risky. Hoodfar (1988) stresses 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 that varies from situations in which the women are not supposed to even touch the

³If the husband is away for some days, no chop money is provided during this period.

⁴Such a definition of a good husband is also spelled out in Senegal (Hotte & Lambert, 2019).

⁵Deane (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.

money to situations where they fully manage the household budget. In a similar way, imperfect knowledge of each other's finances is underlined in contexts as varied as Lagos (Fapohuda, 1988), Beti villages in Cameroon (Guyer, 1988) or urban Zambia (Munachonga, 1988).

The sharing of responsibilities described above is encountered in many different settings, not only across the African continent. Similar patterns of households organisation are described for the Hmong and Yao in Vietnam (Bonnin & Turner, 2014), with women generally responsible for all household reproductive activities, notably maintaining families' daily food supply through household gardens while men assume the same key roles as in the African continent. The description of north Indian households by Singh & Bhandari (2012) also points at a dominant situation which is one of the male control of money and property in the family, with budget management in general in female hands, at least for 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. Both gender and generation divides 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 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 they might have (Singh & Bhandari, 2012). Hypergamy in marriages, common in the patrilineal system prevalent in north India, tends to reinforce this domination of 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, by isolating the new bride from her kin, contributes to young women subordination to both their husband and older women among the 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 households. In south India, women's position and access to resources appear to be more favorable, but there again, the husband and wife's financial spheres remain fairly separate (Nishimura, 1998).

1.2. Division of labour and income earnings opportunities

Women often lack a proper control over assets and inputs. For Africa, Doss et al. (2015) show that the relative ownership of land by gender varies massively: men individually own, on average, 22 times as much land area as women in Nigeria, and between 1.1 and 6.9 times as much land area as women in the other countries with available data, namely: Niger, Tanzania, Uganda, Ethiopia and Malawi.⁶ Doss et al. (2014) provide a cross-continent picture by looking at three countries and show that the ownership of wealth and land is extremely imbalanced by gender in Asia (Karnataka), less so in Ghana and not at all in Ecuador. Peterman et al. (2011a) discuss access to other agricultural inputs and technology. They conclude to mixed results in terms of differential access of women to variable inputs. These differences may lead to a lower technical

⁶The information is not systematically collected and prevents from establishing a clear picture for the whole continent.

efficiency on women's plots. In addition, Peterman et al. (2011b) suggest that the inputs' quality (in particular, soil quality) may also be lower, and that the crop choice may differ. However, very few papers make within-households 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 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 women played in African agriculture in contrast to their lesser role in Asian countries and in Latin America as well, a difference she assigns in large part to differences in farming systems. She also pointed to the fact that women's contribution to household work and domestic production was vastly underestimated if only because never statistically recorded.

Anthropologists have emphasized the clear delineation of the gender roles in farming and how women have to negotiate their access to resources. Bikketi et al. (2016) describe the gender division of labour in Kenya. They run focus groups separately by gender and record with each their access to and control over each type of resources (land, fertilizer, labour, pesticides, livestock and water). While the focus groups of both genders describe that female farmers have access to all types of inputs, they indicate a very limited control: women only have control over labour, and sometimes also over fertilizer and pesticides. Both sets of focus groups agree on this description, which suggests that the norm is fairly established. The authors emphasize that, even when the women purchased the assets, their husband is still regarded as the owner of assets and resources and may control their use and sale.⁷ Women seem unable and unwilling to question this control over resources and over the product of their work. When they have better access to some resources, it is actually attached to an increased number of duties, in particular for daily household expenditures.⁸

Aside from their participation in agricultural activities, one of the main income earning activity of women is trade. The Ghanaian example described by Clark illustrates this. This possibility is nevertheless not open to women in all societies, as prevailing norms might limit access to this kind of occupation. Maher (1981) relates that among 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 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, the respect of *purdah* (women seclusion) rules might prevent women to access

⁷These authors quote a female small holder: "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".

⁸A male smallholder in Mbeere South: "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."

the public space altogether (as described in Kibria (1995) or Rashid (2013) for Bangladesh, where *purdah* is not legally binding but is a strong cultural tradition).

When women work, they may not have control over their wage. In the garment industry in Bangladesh, young unmarried women tend to keep full control over their wage, while their married working-class counterparts hand over their salary to their husband, retaining 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.

In total, despite their important contribution to household production, women have fewer possibilities than men to secure cash income in most developing country contexts.

2. Economic activities of the household

The sets of norms defining the role and responsibilities of each individual in the household limits the possibilities for each one to enjoy private consumption. As a result, household members might try to bypass those constraints by generating more income that can be kept “private” rather than shared. This might come at the cost of allocative inefficiencies. This section focuses on the non-cooperative behaviours permitting to reach this financial privacy.

2.1. Productive inefficiencies

In the 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, each being under the responsibility of one individual. “Female” plots are generally of smaller size, but Udry shows that, conditional on plot size and quality, as well as conditional on household fixed effects, productivity on these plots is lower than on “male” ones. This suggests that households should either reallocate female plots to male supervision, or allocate more inputs to the female plots, in order to increase their productivity. Indeed, he 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 about 6% of output is lost because of this inefficient factor allocation within the household. Despite the 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 loose usufruct. However, it is not clear why women do not manage to engage in transactions that would guarantee a better access to inputs, for instance by compensating their husband for their work.

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

A possible interpretation of these facts is that these inefficiencies result from the way individuals act to secure individual access to income, given the constraints imposed by norms governing the gender roles in farming, resource provision and time use. A major difficulty to actually pinpoint this relation is to disentangle what is due to norms dictating roles and opportunities from what is due to conscious choice of non-cooperative behaviour aiming at securing private resources, for themselves and their dependents.⁹ There are indeed two ways of thinking about the influence of norms. Norms constrain 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 could be the result of a process that allowed individuals to identify an efficient household organization given the economic situation that prevailed at the time (Voss, 2005). However, economic circumstances evolve faster than norms and in the process of adaptation to evolving economic conditions, there are frictions with the current prevailing norm. The following paragraphs offer to highlight behaviours that were brought about by shocks external to the household in settings where norms remain stable. Demonstrating whether the behaviours described are suboptimal is beyond the scope of this literature. It 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, allowing a long-term perspective for a village located in the north of the country. In the early 80s, few women grew cotton: they most likely 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 they could allocate to their own plots.¹⁰ They depended heavily on their husband to obtain land and needed to ask their 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 plots size. The husbands were displeased by their wives entering the cotton farming on two grounds. First, if women signed an agreement with the firm buying the cotton, they would have to comply with their agricultural calendar, which would jeopardize the control of husbands over women's labour force. Second, men feared the increased bargaining power associated to the 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 unequal possibility to guarantee sufficient inputs on their plots. Women of higher standing in the household¹¹ had better access to the household

⁹Bernard et al. (2018) directly ask household members whether they identify themselves to different vignettes representing the household functioning (dictator, separate sphere, based on norms, based on contribution and based on most informed person) and relate the answer to performance in the production and the 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.

¹⁰Senufo women have the right to work two days on their own plots in the traditional 6-days week, while Julia women have to work by their husbands when they are asked to do so and are free to work their remaining time on their own plots.

¹¹For instance, the senior wife in polygamous households.

male inputs (help in stocking and selling the product, and male labour time for spraying the pesticide), the number of pesticide applications remaining nevertheless lower than the company's recommendations. Further, women with more resources had fewer difficulties accessing external labour force, either because they had enough cash to pay for labour, or because they had better connections to participate in reciprocal labour groups. Often, women with less agency could only rely on "late" labour force compared to the ideal timing, leading 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) analyzed 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.¹² All family members were allocated individual plots (named "kamanyango") in return for working on the common fields ("maruo"). Rice fields operated by women were in part individual and in part common (Dey, 1981). However, low participation of men in rice cultivation limited the increase in rice output. The government thus decided to boost rice production by implementing a large-scale irrigation project and introducing improved seeds. In the process of demarcation of fields with the community, the new rice fields were strategically labelled as common fields as a prerequisite for men involvement. This implied a *de facto* shift of land that was typically farmed by women towards men. Women resisted this deterioration of their situation in a variety of ways, relocating their individual production to unimproved wetlands to keep their autonomy, agreeing to provide labour on common irrigated plot 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. When they took place, the payments associated to female work on the common field were about 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 intervention. Bruce (1989) cites a study describing a similar program in Kenya that also led to a reduction in women's access to independent plot and a decline and women's income, but that resulted in a worsening of the family nutritional situation.

¹²Prior 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 is only when peanuts cultivation started to generate cash that men specialized on this crop, leaving women produce the food crops and establishing a clear gender division of labour and roles.

In principle, intra-household transfers to compensate each member for their labour contribution on each other's plot should allow the household to approach productive efficiency and should therefore be rather prevalent. We have 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 on the joint or husband's fields, but they usually rely on a very limited number of observations. Jones (1983) estimates the compensation paid to women for their labour on the joint rice fields in north Cameroon. She finds that women are better compensated than their opportunity cost (arising from working on their own plots). However, she also finds that widows, who control the product of their labour, allocate more labour time to transplanting rice than women who work for their husband. 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 the husbands' demand for their wives' labour associated to an improved technology in cotton farming in Mali. Women are requested to work more on the common plots, leaving 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 the new technology. However, they find that the output loss on their personal fields exceeds the increased compensation, and in total the women loose from the technological gain.

These various papers therefore establish that households' 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 are households not cooperating in production?

In trying to understand why non-cooperation might prevail, several explanations have been put forward. A first possibility is to explore the role of altruism (or lack thereof). In 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 case of deviation. However, experimental evidence, 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 yields 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, both types of households being equally inefficient. Hence, even if one accepts the idea that comparing monogamous and polygynous household is a way to address

this question, existing evidence do not allow to conclude on the role played by altruism.¹³

A second candidate for explaining failure to reach efficiency is information asymmetries between household members. Guirking et al. (2015) assess whether information asymmetries on the effort level 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.¹⁴ They show that the productivity is lower on the collective plots than on individual ones 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 securing an adequate level of effort. The model they provide in Guirking & Platteau (2014) suggests that the choice by the household head of allocating some of the farm land to individual plots comes from several constraints: impossibility to observe effort, impossibility to compensate individually for labour on the common plot for fear of conflict in the household, and rent-seeking from the household head on the common plot, who gets a significant share before splitting the rest of the harvest among household workers. Guirking & Platteau (2014) provide qualitative evidence for each of the constraints and in particular on the fact that junior male members provide low effort level on the collective field so as to keep energy for their own plot.

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 the individuals may be if they fear they might loose from the change. We go further in this literature in order to highlight how individuals try (and sometimes succeed) to counteract organisational changes, that are threatening prevailing gender roles. In particular, we want to highlight how part of this resistance takes place in the public sphere and not only in the household intimacy.

We have already highlighted the difficulties women faced when adopting cotton in Côte d'Ivoire (Bassett, 2002): access to inputs was uncertain and difficult and they needed a man to market the product. The author documents that, in 1993, an incident occurred at the market. A man had brought there the production of his wife 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 him unload, and then departed, leaving 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 put to shame one of the husbands who were accepting the evolution of norms. This put a halt to the change: men were not willing to be ostracized and women were needing them. While cotton had been widely adopted by women in the surveyed village in 1988, almost all of them had discontinued their cotton farming in 1994. Four reasons were

¹³Ziparo (2014), in a very different setup, also concludes that altruism may not be the right explanation for cooperation.

¹⁴The environment under study is different from the one studied by Udry for instance, since women provide a shared good (vegetables) by farming their individual plot and are relieved from the duty of working on the collective field.

given for this, each by one fourth of the women: men wanted them to work in the household fields, there was insufficient labour supply at critical periods, the absence of women at the cotton cooperative market prevented them to sell their product by themselves and it was not sufficiently profitable. The obstruction implemented by men, individually and collectively, was successful in maintaining the *status quo*. However, Bassett (2002) mentions that women also resisted when their husbands decided to grow cotton and asked them to work on the field: they refused to harvest their husband's cotton, spending more time in their individual fields 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 also one where they actually benefited. The context is the southwestern part of Burkina Faso, where migration combined to technological improvements and widespread cotton adoption led to an extensification of land use and therefore land scarcity. Quite surprisingly, women negotiated a 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 renting land (and indeed, on average, they could keep the plot for only three consecutive years). Kevane & Gray (1999) goes as far as claiming that the impossibility to hire 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 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 taking place in Asia. She documents the types of work available to lower caste women in south India. She highlights that women are paid half 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 extremely appreciated by the labourers: it consists in 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 fast as possible, this contract gives rise to better paid jobs. She describes that when a man belongs to the group, he becomes *de facto* the group leader and becomes 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 secret and pays them at the daily work rate, even though they worked longer hours and faster. As a result, women constitute separate all-female work groups, which allows them to access higher payments.

These are some instances where the coordination of non-cooperative behaviours prevented or accelerated some social changes. There is nevertheless not a strong strand of literature covering this issue, and economics is notably absent on this topic.

2.4. Time as a constrained resource

Another resource that may play a key role in the women's opportunities is their own working time. In economies where women's participation to the labour market is significant, women's time becomes indeed increasingly constrained as they have to juggle work, whether formal or informal, and domestic and parental tasks at home. This aspect has been highlighted in developed economies and to a certain extent in developing countries by the economics literature (see for instance Herrera & Torelli (2013), Bardasi & Wodon (2006) in Guinea, Wodon & Ying (2010) in Sierra Leone, Robles (2010) in Ethiopia or Charmes (2006) for a review in some countries of sub-Saharan Africa). Yet, in many economies, the social norm dictating that it falls to women to assume most, if not all domestic and care responsibilities, is by no means faltering despite their increasing workload outside of the household. As a result, time becomes a scarce resource for women who wish or have to work. As husbands' participation in domestic work seems to stagnate, women find themselves to be time poor.¹⁵ Consequently, domestic time turns out to be an object of bargaining and strategic behavior within households, with women trying to work around the social norms attached to their role as a carer to secure time outside of their household duties.

Jacquemin et al. (2018) documents this aspect based on interviews with women living in Dakar and belonging to various socio-economic groups from the working to the upper class. All 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, interviewed women remain active without taking breaks from 14 hours 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, it induces complex negotiations with their husbands. First, even though 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 whole cost of hired domestic labour. They also remain in charge of managing them. Second, there is a negotiation with the husband as to which chores she can delegate. Chores related to the direct care of the husband are the least likely to be outsourced, as the husband should be able to observe that his wife remains somehow devoted to him. Eventually, it is likely that women have to 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 the Kumasi women traders depends heavily on their ability to simultaneously manage the competing demands from their husband 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, this task can hardly be delegated, except to an old enough daughter, thanks to the prohibition of

¹⁵The notion is defined in Bardasi & Wodon (2006) as the fact that some individuals do not have enough time for rest and leisure after taking into account the time spent working, whether in the labour market, for domestic work, or for other activities such as fetching water and wood.

incest. The difficulty is that preparing the meal takes about 3 hours, and has to be finished while there is still some day light, which forces these traders to stop their activity around 2 or 3 pm, while a very commercially active part of the day is still to happen. By comparison, it is easier to delegate child care.¹⁶ This description echoes the one made by Hanrahan (2015) on the Konkomba community in Ghana, where cooking for the husband is viewed as a crucial aspect of marriage. There, women have to earn their way to independent cooking, which is viewed as the full acceptance by the household of the newly-married woman.¹⁷

In a book describing the interactions between economic activity and family life for women fishmongers in a fish market of Dakar, Lecarme-Frassy (2000) also reports that the scarce resource for these women is time. In order to be able to fulfill both their domestic tasks and their trading activity, they have to command some labour force to take over them at home. Young women, be they their daughters, fostered girls or some young parents hired as maids by the women themselves, play this role. In fact there is a whole system of circulation of girls whereby a woman whose daughters are grown up and gone 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 a substitution between mother's and daughter's time use when the former is randomly chosen from a pool of applicants for a job at a flower farm in Ethiopia. This result confirms that having an old enough daughter to take over them at home is key for women to be able to seize new economic opportunities.

The examples cited above illustrate well the complexity of the intra-household bargaining induced by women trying to reclaim their time. It may open avenues for research considering time as a (scarce) resource for women, on the strategies they set up to reclaim this time and the potential impact it could have on their well-being, and that of their daughters.

The economic literature has rather considered time devoted to domestic labour as a leverage in the household bargaining process. Walther (2017) develops a model of moral hazard in which husband and wife consume a private good bought with the wages earned by the husband and a public good, which is the output of the wife's domestic labour. The husband decides how much effort to put in work. His wife only observes the income he brings to the household, which is a noisy signal of his actual effort. In order to incentivize him to choose 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 a leverage, even though it results in an inefficient time allocation. When divorce is a credible option, the domestic labour leverage is less relevant. Walther confirms the model predictions by comparing time use and expenses in patrilineal and matrilineal groups in Malawi, divorce being a more credible threat in the latter.

¹⁶A 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).

¹⁷Usually women are not allowed to have their own hearth less than one year after the wedding.

2.5. Endogenous bargaining

Sometimes, individuals (men, usually) limit the earnings opportunities of other household members in order to directly appropriate the earnings options (as described in Bassett (2002) and Carney (2004) for example). However, maintaining their future bargaining power might be another reason why they restrict the spouse's economic opportunities. For instance, Wrigley-Asante (2012) studies the consequences of a credit programme targeting women that took place in Ghana. Women report their husband's reluctance to them taking credit and getting more agency. A man says "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. But this is giving them too much power and this is what we don't like." A woman says "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 citations put forward the importance, for men, to keep their capacity to control household decisions and their high bargaining power. They act non-cooperatively today so as to lower their wife's future bargaining threat point.

The impossibility of 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 to it over multiple time periods (Baland & Ziparo, 2018; Schaner, 2015). Despite the difficulty to identify the existence of the non-cooperative behaviour aiming at keeping high bargaining power for the next periods, some evidence point in that 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, as well as milk. Marketing options for the milk have improved, opening more cash earning possibilities for the households. However, the authors show that men tend to locate slightly further away from towns where such selling prospects are available so as to reduce earnings opportunities for women.

Walther (2018) provides a theoretical model where husband and wife first choose their labour time allocation, anticipating that this affects their bargaining position in the second period and hence the resource allocation. She exploits the already mentioned variety in lineage systems in Malawi. Most of the land available to matrilinear households are obtained from the wife, while the husband provides the land in patrilinear households. In case of divorce, the land is kept by its primary owner. She shows that men in patrilinear households tend to overinvest labour on farm, because they own such investments. As a result, men forego wage opportunities in patrilinear households compared to matrilinear households and the results are consistent with this theory.

3. Savings and income hiding

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 is therefore a strategy to secure resources, and to limit the claim and predation from other household members.

3.1. Survey evidence on information asymmetries

Many social scientists have documented that individuals keep secret how much they earn, in order to have a larger discretionary power on how much they share with the rest of the household. Economists have set up questionnaires to capture information asymmetries in the households. These data display an extremely high amount of misinformation within the 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 interviewees declared not to completely know the income of their partner. Indeed, comparing their estimate with the actual income of the spouse, it appears that about 25% of the respondents are at least 50% off in estimating their spouse's income. On average, those who risk an estimate of their partner's income underestimate it by 40%.

In the study of Yoruba households in Lagos, it also appears that spouses have limited knowledge of each other's financial affairs. Fapohuda (1988) counted in her sample that 80% of wives did not know their husband's income and 65% ignored their spouse's expenditures. 78% reported they did not pool income.

Chen & Collins (2014) asks separately to men and women their own value of farm production and expenses on a list of ten types of goods, as well as 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 hiding behavior from the spouse. de Mel et al. (2009) reach a similar conclusion since they find that men and women under-report their profits by 8% when the spouse is present during the 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. They show, using Bangladeshi data, that the disagreement is large: it ranges from a minimum of 8 percent for ownership of transportation means, to a maximum of 48 percent for ownership of small durables and decisions about livestock. They reject that this is driven by measurement error. They cannot be definitive on 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 on hiding behaviour

For women, personal financial secrecy is a way to limit to a degree the ability of the husband 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 evolution following an increase of 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 expenditure while the women’s earnings go to pay for collective family needs. More precisely, husbands would not allow their wives to work if they spent their earnings on themselves, and women are fully aware of this.

In the Fon society, husbands are supposed to assist their wives through allowance on market days. Making cheaper purchases at the market or haggling efficiently allows women to pocket discreetly some part of the allowance, thereby easing their burden of general food provision for the family (Falen, 2011). Berber women had a different strategy to gain control on some money, given they were not allowed to sell their workforce (Maher, 1981). They would hide their stock of foodstuffs and then ask their husband for more housekeeping money to buy more, so as to get some extra money they could spend on the object of their choice.

Lecarme-Frassy (2000), on the other hand, describes the male strategies to reduce their wife’s allowances in Senegal. They may underestimate their income, but also vary the amount given on a daily basis, to avoid any habit formation, and directly give the money to the shopkeeper, to prevent their wife to keep the change.

Last, 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 the Hindu patriarchal belt. There, money management and control are very often in the hands of the husband’s parents, leaving the young couple dependent on them to access resources (Singh & Bhandari, 2012). Gram et al. (2018) show that, as a result, the hiding behaviour may be implemented by the young couple, who tries to keep secret their resources and not to hand them over to the financial guardian (usually the mother-in-law). Husbands and wives often have aligned incentives to allow the wife to accumulate her own savings, since junior husbands are as powerless as their wives to influence financial decisions. Possible strategies include saving up gifts from one’s natal parents, manipulating information about prices when claiming money for expenses, or 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 assented to their wives having secret strategies, even if it entailed a degree of lying.

3.3. Experimental evidence on hiding income

The fact that spouses keep their earnings secret does not necessarily lead to an inefficient allocation of resources within the household. Yet the (very) poor knowledge they display of one another’s resources suggests that they adopt non-cooperative behaviours. This is the conclusion reached by most of the experimental literature (even if a few papers found results qualifying this assertion, see Munro et al. (2014) in the Indian context and Hoel (2015) in Kenya). Many experiments have been set up in order to quantify how much individuals are willing to hide and how much they are willing to pay to hide, which informs on the deviation from optimality.

Ashraf (2009) is 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, she pins down the causal effect of spousal observability and communication on savings and consumption choices of couples. In her experimental setting, each partner receives a windfall income that they choose to use for their own consumption or to save on their own, spouse's or joint account. Ashraf varies the observability of income received by each partner and whether spouses communicate on how to allocate money between consumption, and the various savings accounts. She finds that both men and women whose partner controls savings decisions tend to allocate more money to their own account when the observability of financial choices is reduced.¹⁸ Yet, this finding is insufficient to pinpoint inefficiency. Inefficiency is proven by the fact that subjects are willing to pay to deposit money into an account of their choosing. In Ashraf (2009), on average, men are 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 on which to deposit 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 of southern Ghana with two key features. First, husbands and wives are known to keep separate economies, so that no partner has total control over expenses. Second, as described in section 1, husbands must provide a housekeeping allowance to their wife ("chop money"). In this context, the authors implement an experiment in which individuals forming couples took part in four rounds of a game spread over 10 months. At 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 type of prizes as well. During the lottery sessions, survey data was collected on consumption, household expenditures and the amount of chop money received by wives. The experiment provides evidence of non-cooperation as they find a differential effect of public and private cash prizes on expenses. In addition, husbands and wives exhibit different patterns of behaviour when observability of windfall gains changes, both in the type and the timing of their expenses. In particular, winning a private cash prize increases husbands' expenditures on in-kind gifts, while it increases wives' spending on cash gifts in the week the lottery gains were earned. According to the authors, these differences in pattern are consistent with women hiding income from their husband through cash gifts that they claim are harder to monitor than in-kind gifts. This result is consistent with the observation offered in Fapohuda (1988): women who have a sufficient economic autonomy invest in extended family relationship and social networks thereby improving their bargaining position in their ongoing marital relationship. This network might

¹⁸Giving spouses the opportunity to negotiate each other's individual choices brings those choices closer to what is observed when allocations decisions are public.

insure the woman in case of marital disruption.

Lab-in-the-field experiments led in rural Liberia (Beekman et al., 2015), in Senegal (Boltz et al., 2019) and in Kenya (Jakiela & Ozier, 2015) have measured the willingness to pay of individuals 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) implement investments games with all adults from a village being invited to take part in sessions where participants are given, in private, an initial endowment of 80 to 180 Kenyan shillings. Subjects are then invited to share this endowment between a risk-free account and a risky but high-return investment. Every player is then assigned to either a private treatment where his investment decision are not disclosed to other participants, to a public treatment (where their investment decisions and whether they were successful is revealed) or to a price treatment, in which 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) even though it reduces their expected earnings. The effect is larger among women with relatives outside of the household attending the session. Among the participants who could afford to hide income, 30% did. On average, they agreed to pay around 15% of their earnings to hide income. The authors estimate that women expect to be taxed by their kin at a rate of about 4%, and this rate doubles when kin can observe income directly.

Boltz et al. (2019) goes a step further by collecting data on individual labour income and transfers made after they conducted an experiment similar in spirit in poor urban areas of Dakar, Senegal. In addition, they randomly varied the number of kin invited to the lab session. They find that, when it is costless, 60% of participants are willing to hide income. Unlike Jakiela & Ozier (2015), they do not find that women have a higher willingness to pay to hide income than men, but confirm that it is higher among women with relatives outside of the household attending the session.¹⁹ They actually estimate the social tax at 13% for men and 8% for women. The strength of Boltz et al. (2019) is to map the lab outputs to individual data. They find that poorer women are willing to pay more to hide income and decrease transfers compared to richer women. In particular, when given the opportunity to hide income, women in poorer households reduce their purchase of productive assets while when not given this chance, they invest massively. According to the authors, this behaviour is consistent with women using investments in small inputs as a strategy to avoid redistributive pressure and maintain a better control over their resources. This strategy to secure income is not implemented by men.

Pouliquen (2019) also quantifies willingness to pay for hiding 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

¹⁹In rural Liberia, Beekman et al. (2015) find that individuals are more willing to pay for hiding when they have a dense family network.

a cash grant. He finds that formalization increases hiding behaviour for women entrepreneurs, while it decreases hiding behaviour for male entrepreneurs. A theoretical model offers an explanation for this differential result. Formalization provides a better control over resources. It explains that male entrepreneurs are less willing to pay for hiding.²⁰ However, to explain female entrepreneurs' behaviour, Pouliquen needs to introduce another consideration: women, by securing their property right on the business, have gained an insurance against divorce or widowhood in which it is worth investing. If husbands want to limit this investment in order to prevent an improvement in women bargaining power, they set up a constraint on the business investment level. The additional investment incentivized by the greater control over resources might hit the constraint, which explains the higher willingness to pay for hiding income.

3.4. *Evidence on savings*

As previewed by Pouliquen (2019) and Boltz et al. (2019), hiding income is associated with 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 a predatory behaviour. Indeed, women also keep secret kitties filled in part thanks 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) for the case of poor Turkish households. They seem to be rather frequent in sub-saharan African countries (e.g. Falen (2011), Lecarme-Frassy (2000)). In India, this is also the case and became vividly visible at the moment of the surprise demonetization: women, who had kept secret savings, suddenly had to queue openly to change their banknotes and let their family know they had kept secret all this money.²¹

Few papers have tried to identify the non-cooperative behavior of households in terms of savings outside of laboratories experiments. Indeed, the observation of such behavior is often difficult and only indirect. However, observing how households members manage to escape other members' pressure offers relevant insights on the type of strategies that can actually be implemented.

Anderson & Baland (2002) show how the existence of rotating savings and credit associations (roscas) can be explained in a context where women try to hide money from their husband in order to modify the expenditure decision. The argument is the following: if women have a higher valuation of a consumption good that can only be funded 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 the preference for present consumption of her spouse, it might be different ex-post (after the saving decision has been taken and the necessary amount is accumulated). As a result, the household may opt for buying

²⁰ A companion paper rules out that formalization leads to income changes, which means that the channel is not simply a change in bargaining power due to increased income.

²¹Source: <https://www.bbc.com/news/world-asia-india-37935738>.

the good valued by the woman. However, given that saving through a rosca is (time-)costly, the woman opt for 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 the roscas, and women with a too low bargaining power do not do it either, for fear of being expropriated of their savings in the second period. Only women with an intermediate bargaining power choose to save through roscas. Anderson & Baland (2002) provide empirical evidence supporting this theory, based on data from Kenya. The description of Fon couples in Falen (2011) also suggests that roscas are used to protect money from kin demands. In this environment roscas are used both by men and women, suggesting that men also need to find appropriate savings tools. However, Falen does not rule out that part of the roscas' attractiveness may also stem from the saving commitment it embeds.

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 provided service is fairly expensive. In the outskirts of Cotonou (Benin), the 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 the saving 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 to save with deposit collectors than unmarried women. Further, the likelihood for women to sign up for a deposit collection service follows an inverted-U shape with income, while it is not the case for men.

Baland et al. (2011) provides another example of a non-cooperative behavior in Cameroon, that aims at protecting one's resources. They provide evidence that excess borrowing is a strategy used by some members to protect their savings from demands for money by relatives and friends. By taking a loan, the member signals to the latter that he is currently cash constrained and cannot respond to their demands: while saving is done secretly, borrowing is publicized.²² Quite interestingly, this strategy seems to be implemented both by men and women, suggesting that all members face kin pressure but also that none of them can easily refuse. The evidence is mostly qualitative and they provide a theoretical model of signaling to show that such a strategy can indeed be an equilibrium.

Last, Schaner (2015) implements an experiment where the perspective is somewhat different. Rather than viewing conflict over savings as the result on how to spend the money, she concentrates on the role of differences in time preferences.²³ She offers a theoretical model where poorly

²² "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." answer during an interview done by Baland et al. (2011).

²³ In her data, the median couple's estimated discount factor are 0.5 standard deviations apart.

matched couples (meaning, couples where individuals 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 account (two private and one joint account per couple) and shows that poorly matched couples are more likely to use private savings account, even when they forego interest earnings.²⁴

As a final note, it should be underlined that the use of roscas to gain more control over household resources and spending is not limited to the African continent. In fact, in their paper, Anderson & Baland review a series of paper describing similar such behaviour in Asia (India, Indonesia, Bangladesh).

3.5. Consequences of hiding strategies

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

First, most of the empirical literature demonstrating the link between information asymmetries and deviation from efficiency relies on average treatment effects. Allowing for heterogeneity in the response to information asymmetries might qualify those results. For instance, in the context of Kenya, Hoel (2015) implements a variant of dictator games where each monogamous spouse of a couple played a public game in which their partner knows about their choices and payout and a private game where partner's decisions are unknown. If she finds that, on average, respondents respond opportunistically to private information, her within-subject analysis yields that respondents give the same amount in public and private in 49% of the games. In 36% of the games, subjects act opportunistically, giving 30% more in public than in private. Using survey data collected after the game, the author finds that among opportunistic participants, the opportunism is acute when the respondents believe their spouse knows 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 a non-cooperative behavior.

Second, hiding resources might actually reduce inefficiency in some circumstances. It would be the case for instance if 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 that direction. We may think of other instances where hiding gives women more agency, without necessarily limiting their partner's wellbeing. The experimental set-up is an environment where usually other constraints are poorly represented. As a result, it is not completely straightforward to extrapolate welfare conclusions 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

²⁴19% of poorly matched couples are inefficient, while this is only 8% of well matched couples. Poorly matched couples leave at least 52 percent more interest on the table.

imperfect information or whether it permits to bypass 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 the empirical literature demonstrate that men develop non-cooperative strategies to prevent women from accessing resources within the household. The section 2.5 illustrates one end of the spectrum of the non-cooperative strategies at their disposal. At the other end of this spectrum stands the use of violence by the partner (whether physical or emotional) in order to thwart women's attempts to access resources. Though the threat of physical coercion is proved to be looming upon women,²⁵ most of the intra-household decision making literature leaves out the question of violence.

While we do not assert that women necessarily experience violence because of disagreements arising 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 try and explain why men resort to physical coercion, the instrumental violence, which assumes that husbands use violence to control their partner's behaviour and access resources in the household, is the one that we insist on.²⁶

In an original approach, Bloch & Rao (2002) use ethnographic information on dowry-related violence in India. They design a model of non-cooperative household bargaining with asymmetric information where husbands use domestic violence as a signal of their satisfaction with the marriage. Husbands have an incentive to use violence against their wife to extract additional resources from her family. The richer the wife's family (and the lesser the husband's satisfaction with the union), the stronger the incentive to exert physical violence. In India as well, Menon (2020) shows that an increase in gold price at the time of marriage increases domestic violence among married women. Though her data does not allow her to test the hypothesis, she assumes that the effect of rising gold prices on violence goes through a decrease in the bride's bargaining power because of the reduction in the quantity of gold jewellerys in her dowry basket when she marries.²⁷ Gaspart & Platteau (2010) and Platteau & Gaspart (2007) develop a model and gather qualitative evidence suggesting there is a positive correlation between unfavorable marital outcomes and marriage payments. Their results hint at the fact that, in the context of the Senegal River valley, husbands who paid a high brideprice and that are dissatisfied with their union may use violence strategically to push their wife to ask for divorce in the attempt to be repaid the brideprice.

²⁵30% of ever-partnered women worldwide have been the victim of intimate partner violence (WHO (2013)).

²⁶The other motive for violence formalized in the literature is expressive violence, whereby the partner uses violence in order to vent frustration or stress and directly benefits from it. In reality, both motives are likely to be intertwined (Tauchen et al. (1991)).

²⁷A 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, for lack of appropriate data to do it, it is beyond the scope of the paper to determine which effect dominates.

Nishimura (1998) (for south India) confirms that the strength of relationships with the extended household (and in particular between the wife and her natal family) is explained by the fact that this 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 installments 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 asymmetry of information, where conflict is considered as an intrinsic and likely part of bargaining. The model predicts that when wives contribute a greater share of the household wealth, they expect and get a higher share of consumption. However, as a consequence, there may be more conflict in the household. The 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.²⁸

Other papers have shown that there can be equivocal consequences to 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 those measures may backfire for women. In the context of Vietnam, Bulte & Lensink (2019) find evidence that participating to 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 female bringing more resources to the household. 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 level, which they interpret as a sign of low expected gains to marriage. In a RCT where access to employment of female applicants is randomized in a flower farm in Ethiopia, Hjort & Villanger (2011) show that female employment leads to a 13% and 34% increase in physical and emotional violence respectively. Though 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 it entails an emotional cost for them. Finding inspiration from the literature of identity economics (Akerlof & Kranton, 2000), they suggest a theoretical model in which both partners derive utility from their self-image whose consistence with a reference, for instance traditional gender roles, directly impacts the utility 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 a financial manager for the household, the process by which women exert control over resources is not

²⁸The increase is more acute among men than women.

frictionless as suggested by Tsai (2017). She finds that Philippino women who declare 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 exist a tipping point beyond which increased bargaining power - induced by increased access to resources - is less likely to entail violence. Though Heath (2014) does not specifically tackle this point, she nevertheless shows that, in Bangladesh, women are less likely to experience violence upon starting working for pay if they had a high bargaining power before entering the labor force.

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

To our knowledge, few empirical papers studied the impact of an increase in husband’s resources on conflict in the intra-household sharing process nor have they studied it in non-nuclear households. Heath et al. (2018) do both and study the impact of a cash transfer targeting household heads, thus mostly men, in Mali where 40% of married women are in a union with a polygynous partner. While they find no effect of the cash transfer on women married to monogamous men, they find that the program decreased 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 wife’s 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 when it comes to 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. provide vouchers for contraceptives to couples. They randomly vary the observability of the voucher by the husband, inducing information asymmetry and creating an opportunity

for women to conceal the contraceptive take-up. They found that receiving the voucher in private boosted the share of women redeeming the voucher by 19%. Receiving the voucher in private also increased the use of (concealable) injectable contraceptive and led women to be 27% less likely to give birth.

As pointed out in section 1, married women are often dependent on their husbands for their subsistence, as men are, in most societies, in charge of catering for the fundamental needs of their wife and children. Further, women's access to assets is mainly indirect, through their father or husband for women access to land for example. Hence, 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 might spend money to court another woman and eventually marry her, so that they would then have to compete with a co-wife for the husband's resources. Falen (2011) describes various ways women have to divert resources from their husbands so as to avoid this outcome. Since men are responsible for medical expenses, being ill (faking sickness) is a strategy for women to prevent their husband having the means of courting another woman. Similar strategies have been described in Senegal with women trying to spend and to save more when they feel 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 as long as he does not give 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 on the husband's family.

In the long run, it is also crucial for women to insure 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, about a third of ever-married women in Senegal had suffered at least one marriage dissolution (Lambert et al., 2018). As pointed by Munachonga (1988), the perspective of becoming a widow in absence of any formal widowhood insurance system, affects women's choices and strategies during their marital life. For example, given that one avenue to secure a living in case of widowhood is to live with a son, Lambert & Rossi (2016) show that women fertility behaviour is affected by the imperative to have a son, so that, when faced with the existence of competing heirs for their husband's wealth, they accelerate their fertility (reducing birth spacing) until they have a male birth. In polygamous households, Rossi (2018) presents evidence of strategic complementarity between the fertility of co-wives, explained by competition for both current resources and future access to husband's inheritance. The fact that having a boy attenuates the likelihood to be dispossessed upon widowhood has been observed in other parts of the world (such as South Asia or Indonesia), in particular when remarriage of widows is not as common as in sub-Saharan Africa (Cain, 1986).

In case of marriage dissolution, women who failed to secure sufficient saving or resources to sustain themselves can remarry. This is an unavoidable situation for women of child bearing age

in many societies where social norms associate a strong stigma to unmarried women of those ages, in particular if they divorced their previous husbands. Levirate marriage, whereby a widow marries the brother (or another close relative) of their late husband, is also the main “insurance” for widows. With such 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 face better possibilities of remarriage, some of them even using divorce as an instrument of economic mobility (Locoh & Thiriat, 1995).

Conclusion

This review of the literature described a set of individual strategies put in place to bypass intra-household negotiations and secure access to private resources. Insights gleaned from different social sciences suggest a number of research avenues for economists. Particularly notable are the gaps of the economic literature in four dimensions. First, because of the non-cooperative nature of these behaviours, the economic literature often associate it with Pareto inefficiency, and hence with reduced total household resources. Nevertheless, it 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 kind of constraints they permit to overcome. Another way forward would be to introduce a dynamic element to this analysis to pin down how this might change when the economic and social environment evolve. Such research could pave the way for the design of public policies that would support new economic opportunities at a lesser cost for 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, in particular when gender role is at stake. There are only few attempts at identifying those situations when individuals will have incentives to coordinate to prevent women to take steps that might overturn traditional roles. The deep motives of these social forces limiting social and economic innovations need to be understood if one wants to be able to promote potentially welfare improving changes since those changes might generate intra-household conflicts. Third, in all these cases, it is necessary to take into account the fact that the scarce resource 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 the imperative of a precise knowledge of 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 to make progress on the question

of the intrahousehold allocation. Finally, none of these topics will be fruitfully explored without more individualised data on consumption and resources. An important effort of data collection at the individual rather than at the household level is clearly needed to address those questions.

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