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Louis Olie

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Par **Louis OLIÉ**

Essays in Development Economics: An Analysis of
Redistributive Pressure and Child Fostering in
Sub-Saharan Africa

Sous la direction de : **Jérôme BALLETT**
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Titre : Essais en économie du développement : Une analyse de la pression redistributive et du confiage des enfants en Afrique Sub-Saharienne

Résumé : Cette thèse explore les aspects de la solidarité informelle inhérente aux pays en développement, en particulier ceux d'Afrique Sub-Saharienne. Son objectif principal est de mieux appréhender deux mécanismes informels de cette solidarité: les transferts informels et le *confiage* des enfants. Elle traite des questions de pression redistributive et de bien-être des enfants confiés au sein de leurs ménages d'accueil. C'est un recueil de trois essais en économie du développement. Le premier chapitre vise à faire progresser la recherche économique sur la compréhension de la pression redistributive en faisant une synthèse de la littérature et en proposant un cadre conceptuel ainsi que des outils de mesure d'un tel phénomène. Le second chapitre évalue le coût économique de cette pression à la redistribution pour les ménages à partir des données d'enquêtes ménages récentes de la Côte d'Ivoire. Le troisième chapitre teste empiriquement l'hypothèse d'égalité de consommation entre les enfants confiés et leurs frères et sœurs d'accueil à partir de données représentatives de la Côte d'Ivoire.

Mots-clés : Normes de solidarité, Réseaux communautaires, Transferts informels, Pression redistributive, Confiage d'enfants, Discrimination, Inégalités de consommation

Title: Essays in Development Economics: An Analysis of Redistributive Pressure and Child Fostering in Sub-Saharan Africa

Abstract: This dissertation explores solidarity arrangements inherent in developing countries, where financial markets and formal social protection are lacking. Its main objective is to understand better two informal solidarity mechanisms, which represent significant habits for some households. This dissertation, therefore, focuses on informal transfers and child fostering. Specifically, it addresses issues of redistributive pressure and the treatment of foster children in their host households. It is a collection of three essays in development economics. The first chapter aims to advance the understanding of economic research on redistributive pressure by proposing a conceptual framework that provides new tools for measuring such pressure. The second chapter assesses the financial cost of this redistributive pressure for households and its micro-economic correlates using recent household survey data from Côte d'Ivoire. Finally, the third chapter tests the consumption equality hypothesis between foster children and their host siblings using representative data from Côte d'Ivoire.

Keywords: Solidarity Norms, Community-based Networks, Informal transfers, Redistributive Pressure, Child Fostering, Discrimination, Consumption inequality

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L'université n'entend ni approuver, ni désapprouver les opinions particulières émises dans cette thèse. Ces opinions sont considérées comme propres à l'auteur.

To all young (wo)man, If you never try ... You will never know !

To my father[†] Louis Olié, my mother Marie-Laure Mobio, and my son Louis Olié

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Contents

Abstract	iii
Declaration	iv
Acknowledgments	vii
List of Figures	xiii
List of Tables	xv
General Introduction	1
1 Redistributive Pressure in Sub-Saharan Africa	19
1.1 Introduction	20
1.2 Understanding redistributive pressure	21
1.2.1 Redistributive pressure or pressures?	21
1.2.2 The logic behind income-sharing	22
1.2.3 Definition of concepts	23
1.3 Evidence of redistributive pressure in the literature	26
1.3.1 Qualitative and anecdotal evidence	27
1.3.2 Empirical evidence on redistributive pressure effects	30
1.4 Measurement: what do we know?	34
1.5 A new approach in measuring explicit redistributive pressure	37
1.5.1 How to target informal taxation?	37
1.5.2 Identifying agents under pressure to share	41

1.5.3	Assessing the Informal Tax rate	44
1.5.4	Redistributive Pressure Intensity: An index	45
1.6	Concluding remarks, discussion, and directions for future research	48
	Appendix	51
2	Assessing the Cost of Forced Solidarity in Côte d’Ivoire	53
2.1	Introduction	54
2.2	Conceptual framework: informal taxation	56
2.3	Contextualization: Forced mutual help in Côte d’Ivoire	58
2.3.1	Background	58
2.3.2	Social sharing norms in Côte d’Ivoire	59
2.3.3	Qualitative evidence of forced solidarity in Côte d’Ivoire	60
2.4	Descriptive analysis: measuring redistributive pressure	62
2.4.1	Data	62
2.4.2	Who are under pressure?	63
2.4.3	Summarizing the data	68
2.4.4	How much does it cost to satisfy forced solidarity?	69
2.5	Correlates of being the under pressure to share	76
2.5.1	Econometric model	76
2.5.2	Regression results	77
2.6	Summary and concluding remarks	81
	Appendix	83
3	Child Fostering and Consumption Inequality	91
3.1	Introduction	92
3.2	Child fostering overview	95
3.2.1	Definition and motives	96
3.2.2	Caregivers treatment and child status in the literature	96
3.2.3	Background on Côte d’Ivoire	97
3.3	Theoretical and empirical frameworks	98

3.3.1	Theoretical framework	98
3.3.2	Empirical procedure	100
3.4	Data and descriptive statistics	103
3.4.1	Data	103
3.4.2	Descriptive statistics	104
3.5	Estimation results	107
3.5.1	Testing for status-gender discrimination: Basic results . . .	107
3.5.2	Testing for status-gender discrimination: Disaggregated results	109
3.6	Sensitivity and robustness analysis	117
3.6.1	Handling data censorship.	117
3.6.2	Age decomposition	117
3.6.3	Age limit	118
	Appendix	122
	General Conclusion	135
	Bibliography	139

List of Figures

1	Provision of financial services	5
2	Main source of emergency funds	6
3	SMEs financial constraints	7
4	Public social protection expenditure and poverty rates in sub-Saharan Africa	9
1.1	A conceptual framework for redistributive pressure	24
1.2	Agents' perceptions about redistributive pressure	30
1.3	Distinguish between transfers	39
1.4	Designing the degree of coercion C_{it}	43
1.5	Designing the Redistributive Pressure Index	47
A-1.1	RPI's rank following the tax rate distribution	51
2.1	Informal redistribution in Côte d'Ivoire	59
2.2	Identifying households under pressure	66
2.3	Geographical distribution of households under pressure in Côte d'Ivoire	67
2.4	Household living standards and social taxation	73
2.5	Poor <i>vs</i> under pressure households strategies to deal with economic hardship	76
A-2.1	Plausibility of the questions used to identify households under pressure	83
B-2.1	Budget share per consumption item	84

3.1	Child fostering prevalence in selected sub-Saharan countries	93
3.2	π -ratios for the aggregated adult good	108
3.3	π -ratios for the aggregated adult good, by sibship composition . . .	112
3.4	π -ratios for the aggregated adult good, by household types	115
C-3.1	Food aid receives, by sibship composition	128

List of Tables

1.1	Redistributive pressure in practice	29
1.2	Empirical studies on the effects of redistributive pressure	31
1.3	The Redistributive Pressure Index's parameters	48
A.2	52
2.1	The components of the transfer variable	64
2.2	Descriptive statistics—demographics and occupation	69
2.3	Descriptive statistics—transfers and resources	70
2.4	Social tax evaluation in Côte d'Ivoire	71
2.5	Household strategies to balance the budget in bad times	75
2.6	Correlates of being under pressure to share (Probit estimation) . . .	80
A-2.1	Background characteristics of qualitative survey's respondents . . .	86
A-2.2	Correlates of being under pressure to share (Robustness check) . .	87
A-2.3	Correlates of being under pressure to share (OLS)	88
A-2.4	Correlates of being under pressure to share (OLS–Alternative definition)	89
3.1	Summary Statistics for household sample	106
3.2	P-values for test of equal π -ratios, by status and gender	108
3.3	P-values for test of equal π -ratios for children	113
3.4	P-values for test of equal π -ratios, by household types	114
A-3.1	Candidates Adult Goods and Expenditure Elasticity	122
A-3.2	Testing for true adult goods	124

B-3.1 Engel curves estimates, main results	125
B-3.2 OERs for each Adult Good	126
B-3.3 Engel curves estimates for the aggregated Adult Good, disaggregated results	127
C-3.1 Summary statistics for child sample, by sibship structure	129
C-3.2 P-values for test of equal π -ratios, age decomposition	130
C-3.3 Engel curves estimates for the aggregated Adult Good, age decomposition	131
C-3.4 P-values for test of equal π -ratios, age limit	132
C-3.5 Engel curves estimates for the aggregated Adult Good, age limit . .	133

General Introduction

In sub-Saharan Africa, millions of people suffer deprivation and lack access to government social security programs. The human progress made in recent decades in improving people's living conditions has not been sufficient to address this issue. Such a situation is compounded by uncertainty about livelihoods, which naturally increases in high-risk environments without institutional insurance. Specifically, many states in this region have not been able to strengthen minimum social safety nets, leaving the fate of individuals to the simple success of their individual and collective strategies for coping with the adversities of daily life.

A large body of economic literature suggests that the success of these strategies depends on the solidarity mechanisms that prevail in the societies concerned. In this respect, the vital role of food transfers in the case of famines has been emphasized by Caldwell (1975), Mahieu & Nour (1987), and Drèze & Sen (1990). Solidarity arrangements are indeed expressed in different ways, including interest-free loans, labour assistance, food sharing, information sharing, children transfers, (in)voluntary transfers between households, among others. In this dissertation, I will focus on two widespread and costly aspects of solidarity, namely involuntary transfers due to sharing norms inducing *forced solidarity*, and the transfers of children known as *child fostering*. In a context of tight public resources, knowing the extent to which informal solidarity mechanisms compensate for institutional weaknesses is crucial to design better and implement any public policy that aims to enhance social welfare.

Forced solidarity or redistributive pressure refers to financial obligations, examined from the perspective of coercion. Indeed, the study of solidarity

mechanisms primarily through informal transfers in economic research has long been driven by work on altruism and exchange. However, coercion remains a poorly explored motivation, though it coexists with the traditional altruistic giving and exchange logic Cox & Fafchamps (2007). As a result, the empirical economic literature is growing rapidly but lacks a conceptual framework and measurement tools for a more in-depth study of its consequences. The study of solidarity mechanisms from the perspective of coercion is essential for understanding individual choices and related economic outcomes. There is ample evidence of the distortions caused by forced solidarity. Pressure to share may indeed prevent individuals from pursuing privately optimal choices (Giné, Goldberg, Silverman, & Yang, 2018). Such pressure may easily cause losses of efficiency, bankruptcies, and loss of growth opportunities, hence hampering economic development Platteau (2014). In this thesis, I aim to advance the understanding of this topic by providing the appropriate tools, including conceptual and theoretical clarification and measurement, for an in-depth analysis of the related economic consequences.

Child fostering consists, for biological parents, in sending their children to live in another household, mostly close relatives or friends (Isiugo-Abanihe, 1985; Serra, 2009). This practice is not a new phenomenon in Sub-Saharan Africa (henceforth, SSA), but its interest among economists is relatively recent (see Ainsworth 1996). In lineage-based societies, the treatment of children in terms of their status remains highly debated. This issue has been raised in the social sciences literature, but empirical evidence for the virtues or shortcomings of this institution is still scarce. The primary argument posits that the family norms for both fostered and biological children to be treated equally within the same household and that family ties override the distinction between children of the same lineage (see, e.g., Caldwell & Caldwell, 1988; Jonckers, 1997; Serra, 2009; Zimmerman, 2003). In contrast, another strand of the literature states that parents have strong preferences for their own-birth children. As a consequence, they are more likely to favor their biological children in resource allocation (see, e.g., Akresh, 2005; Case, Paxson, Ableidinger,

2004; Desai, 1995). This contrast indeed directly echoes child welfare, and I aim to provide empirical evidence that helps to side with this debate.

The rationale behind the work presented in this dissertation is, on the one hand, the failures of formal institutions, and on the other hand, the pervasiveness of informal institutions. According to North (1990): “Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. In consequence, they structure incentives in human exchange, whether political, social, or economic. Institutional change shapes the way societies evolve through time and hence is the key to understanding historical change.” From the new institutional approach to development economics, it is undeniable that institutions play a crucial role in understanding individual and collective behaviors as well as social relationships and interactions. They shape agents’ daily lives by establishing rights and obligations between them or by defining rules that provide a set of incentives for regulating individual behavior. They are not neutral in the narrative that one can have about the choices made by agents. In the remainder of this introduction, I will focus on the analytical foundations of redistributive pressure, namely the correlation with (in)formal institutions in SSA. I will first address the following question: What institutional factors explain the prevalence of redistributive pressure? Explanations fall into three broad categories: (1) failures in credit and insurance markets, (2) lack of public redistribution, and (3) social norms, particularly that of sharing. Then, I will briefly present the issue of the treatment of children in fostering arrangements before outlining the chapters that make up this thesis and their contribution to the field of development economics.

Institutional failures

Credit and insurance markets

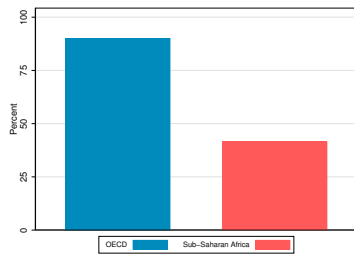
Failures in credit and insurance markets are among the key causes of redistributive pressure. The argument is that the incomplete nature of these markets leads

to excessive demands for financial support on those who are relatively most successful in their networks. From the unemployed thinking about starting an income-generating activity to the elderly worker experiencing a downside health shock, non-market financial institutions such as solidarity from community-based networks remain the main sources of access to financial resources for business and livelihood purposes (see, e.g., Adjognon, Liverpool-Tasie, & Reardon, 2017; Bigsten et al., 2003; C. Poulton, Kydd, & Dorward, 2006; Wellalage & Locke, 2016). A growing literature highlights the positive impact of financial inclusion on poverty alleviation (e.g. Churchill & Marisetty, 2020; Koomson, Villano, & Hadley, 2020). However, many barriers to large-scale financial inclusion remain in SSA.

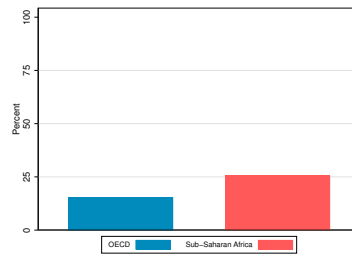
The basis for financial inclusion is the possession of an account at a formal institution. Recent studies have highlighted major advances in financial inclusion in SSA (see, e.g., Demirgüç-Kunt, Klapper, Singer, Ansar, & Hess, 2020), although some structural problems remain. I use specific indicators from the Global Financial Inclusion (Global Findex) database of World Bank to map the state of financial inclusion in SSA. Figure 1a presents the percentage of account owners and the major reasons why others do not have it. The data reveals that while on average less than 2 out of 10 adults are unbanked—i.e., not having formal account—in OECD countries, this ratio falls to 6 out of 10 in SSA.¹ Among these unbanked people, distance from the financial institution and the cost of financial services are among the main reasons for being a non-owner (see Figure 1b). In addition, Figure 1c shows that the unbanked may have extra barriers to being reached by financial products for risk management when affordable, as fewer than one in three adults report financial services high cost as a barrier for being non-owner.

¹Account ownership denotes the percentage of respondents aged 15 and more who report having an account (by themselves or together with someone else) at a bank or another type of formal financial institution or reports personally using a mobile money service in the past 12 months prior to the survey. Even if certain countries experiencing success with the mobile money revolution in terms of coverage—mobile money account helps to overcome physical distance barrier—e.g., M-PESA in Kenya (see, e.g., Suri & Jack, 2016), MTN and Orange Mobile Money in West and Central Africa (see, e.g., Morvant-Roux & Peixoto-Charles, 2020), is still some progress to reach all the underserved group in particular rural ones.

(a) Percentage of adults who own formal account*



(b) Percentage of adults who do not have a formal account because financial institutions are too far away



(c) Percentage of adults who do not have a formal account because financial services are too expensive

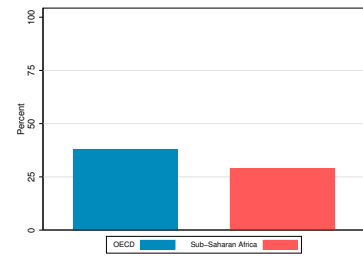


Figure 1: Provision of financial services

Notes: This figure presents the state of financial inclusion in sub-Saharan Africa and OECD regions using three leading indicators. Averages are calculated over all countries within each region from 2011 to 2019 and are population-weighted. Adults are individuals aged 15 and above. *A formal account is defined as an account held in a financial institution such as a credit union, a microfinance institution, or a cooperative, whether physical or digital (mobile money).

Source: Author's calculation based on the World Bank's Global Findex database (www.globalfindex.worldbank.org).

It is well known that people save to meet regular planned or large expenses. However, the way individuals save can be a constraint in their risk management. Demirguc-Kunt, Klapper, Singer, Ansar, Hess (2018) show that sub-Saharan savers mainly use semi-formal methods such as savings clubs or entrusting money to someone outside the family compared to others from OECD countries that use formal saving accounts. How do individuals deal with unexpected expenses? Figures 2a and 2b show that personal savings and bank loans are the main source of emergency funds in OECD countries (50 and 80 percent of adults, respectively), whereas this is the case for 20 and 40 percent of adults in SSA. In contrast, Figure 2c shows that a significant percentage of adults in SSA relies on family and friends as sources of emergency funds compared to OECD.² This situation, which may cover various risk-sharing mechanisms, does not exclude redistributive pressure. As a matter of fact, there is a growing body of evidence that mobile bank savings help users achieve a pre-designed specific goal and resist social pressure to share (e.g.,

²To measure the ability of people in meeting unexpected expenses, the Global Findex survey asked adults whether it would be possible to come up with an amount equal to 1/20 of gross national income (GNI) per capita in local currency within the next month. Forty percent in SSA against 70 percent in OECD countries have reported they are able to raise emergency funds (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018).

Dupas & Robinson, 2013; Lipscomb & Schechter, 2018; Riley, 2020).

If agents rely less on their savings, what about using insurance devices for risk management? Insurance products can be an essential tool in managing the financial risks associated with one-time expenses due to unexpected shocks such as sudden illness, crop failure, natural disasters, or income loss due to a household wage earner’s death (Demirguc-Kunt, Klapper, & Singer, 2017). It is well documented that insurance products helping vulnerable agents to deal with ubiquitous risk may have more substantial and long-term benefits for social welfare (see Karlan & Morduch 2010). Despite this recognition, there is still a long way to cover low-income individuals in SSA. Many projects struggle to materialize and help low-income agents managing risk, notably the universal health coverage (see, e.g., Carapinha, Ross-Degnan, Desta, & Wagner, 2011; Delpy & Olié, 2021; van Hees et al., 2019) or the promising weather insurance index for farmers (see, e.g., Tadesse, Shiferaw, & Erenstein, 2015).³

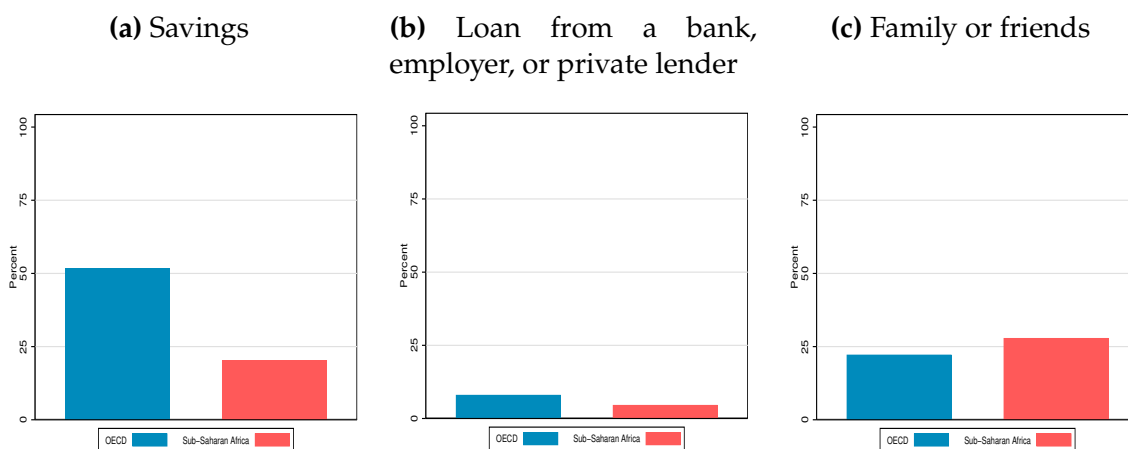


Figure 2: Main source of emergency funds

Notes: This figure presents the main source of emergency funds in sub-Saharan African and OECD regions using three leading indicators for adults aged 15 and above who reported that it would be possible to come up with the money. Averages are calculated over all countries within each region from 2011 to 2019 and are population-weighted.

Source: Author’s calculation based on the World Bank’s Global Findex database (www.globalfindex.worldbank.org).

In addition, it is undeniable that both access and costs of formal finance are

³See Benami & Carter (2021) for how emerging digital technologies such as mobile money, digital credit, and scoring can reshape rural microfinance to overcome existing financial barriers.

essential for business growth. In SSA, although almost three-quarters of companies need a loan (Figure 3a), the value of collateral remains very high. The value of collateral required for a loan expressed as a percentage of the loan amount indeed exceeds 200 percent on average in SSA, whereas it is less than 100 percent in OECD countries (Figure 3b). Besides these observations, it is not surprising that nearly half of the SSA firms identify access/cost to finance as a “major” or “very severe” barrier to achieving their growth ambitions (figure 3c). This financial “exclusion” is a barrier to economic growth that, through job creation, among other benefits, can provide resources to an increasingly important set of individuals.

In sum, gaps in access to financial services between low- and high-income countries remain stark. Moreover, as illustrated below, the public sector is also failing, whereas private forms of risk coping do not allow many individuals to mitigate risk.

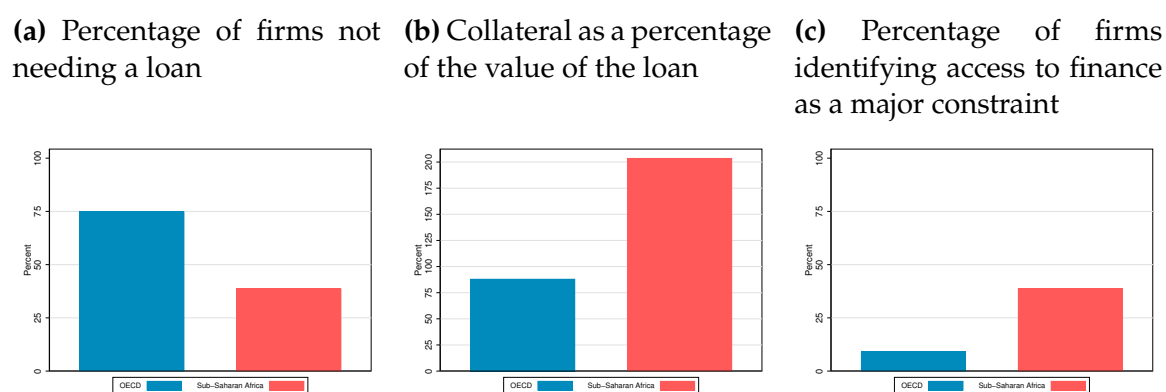


Figure 3: SMEs financial constraints

Notes: This figure presents the small and medium size enterprises (SMEs) barriers to accessing financial services in sub-Saharan African and high-income OECD countries using three leading indicators. (a) denotes the percentage of firms that did not apply for a loan in the last fiscal year because they did not need a loan. The denominator is the number of firms who did and did not apply for a loan. The numerator is the number of firms who did not apply for a loan and also stated that they did not need a loan. Averages are calculated over all countries within each region from 2006 to 2020 and are population-weighted.

Source: Author’s calculation based on the World Bank’s Enterprise Surveys database (www.enterprisesurveys.org).

Welfare States

Formal social protection mechanisms regulated by governments, such as social insurance schemes (e.g., health and unemployment insurance) and labor legislation (e.g., establishing a minimum wage or safe working conditions that prevent accidents), are strongly linked to the formal labor market in SSA. This makes them unreachable for a large part of the population that is either poor or belongs to the informal sector. Social assistance interventions through welfare programs are well recognized for helping low-income agents cope with chronic poverty and various risks (International Labour Office, 2015).⁴ Yet, despite considerable efforts in recent decades to design and implement the latter interventions, many SSA countries are failing to cover a large number of risks for a growing number of the population (see, e.g., Devereux, 2017).

For instance, Figure 4 presents poverty rates and social protection spending as a percentage of GDP in SSA. A striking pattern is that lower levels of social protection spending are associated with higher levels of poverty. This pattern shows the need for individuals to find strategies to cope with livelihood risks. In fact, to cope with poverty and hardships, agents primarily rely on their extended family members and friends. Community-based social protection, i.e., the traditional means of providing safety nets for all members by extended family and community support structures, are well known for compensating for the lack of public redistribution (Devereux & Getu, 2013).⁵ I would argue that these solidarity mechanisms are running out of steam, given the penetration of the market economy into previously traditional societies and the abuses that occur there. There is indeed ample evidence that relatively prosperous individuals undertake strategies to avoid redistribution within their solidarity networks. Such incentive problems have already highlighted by Fafchamps (1992, p. 149; 160–163). In addition, there is strong empirical evidence of a crowding-out effect between public and private

⁴Welfare programs include, for example, unconditional and conditional cash transfers, noncontributory social pensions, food and in-kind transfers, school feeding programs, public works, and fee waivers (World Bank, 2018b).

⁵See Platteau (1991) for an historical perspective in precolonial Africa.

transfers (e.g., Dercon & Krishnan 2003; Strupat & Klohn 2018).

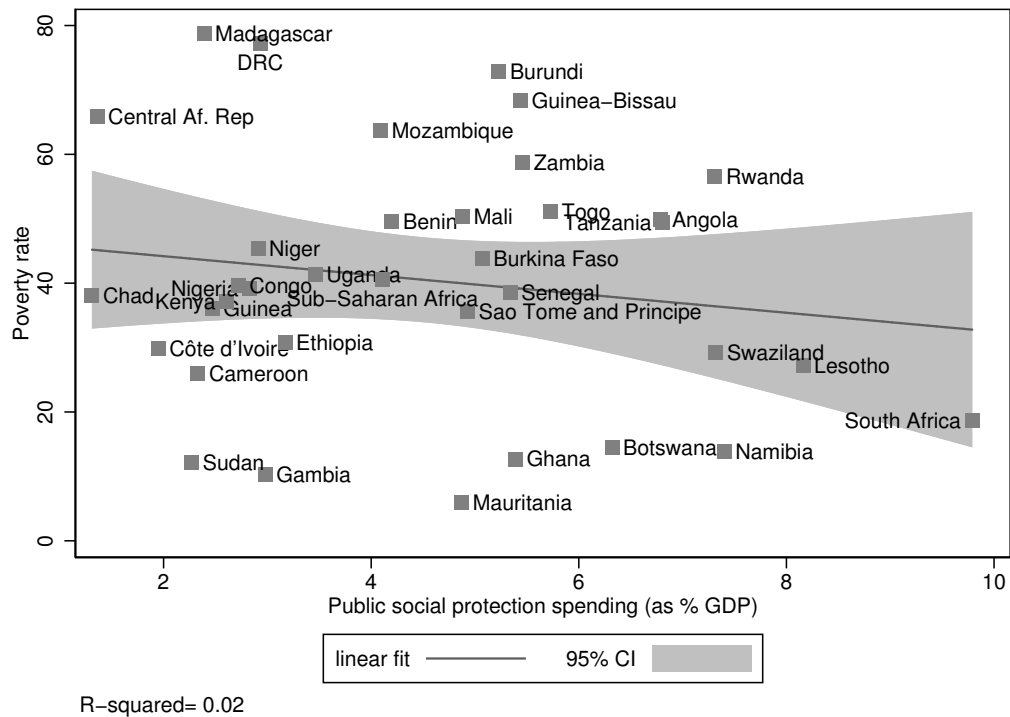


Figure 4: Public social protection expenditure and poverty rates in sub-Saharan Africa

Notes: This figure depicts the state of public social protection expenditure (SP) in 2014 and poverty rates in sub-Saharan Africa in 2018. SP is expressed as a percentage of GDP, and poverty headcount denotes the proportion of the population living under \$1.90 a day. Latest available values are used for countries with missing data. *Source:* International Labour Office report 2014/2015 and World Development Indicators.

Social sharing norms

Economists have devoted much of their research to understand the relationship between social norms and individual preferences and behaviors (e.g., Fehr, Fischbacher, & Gächter, 2002; Fehr, Kirchler, Weichbold, & Gächter, 1998; Greif, 1994; Henrich et al., 2001; Lindbeck, Nyberg, & Weibull, 1999). Social norms are some of the driving forces behind informal redistribution in many societies, especially in SSA (Platteau, 2009). To be clear, I define *social norms as informal tacit or implicit—rules such as customs, traditions, values, and beliefs collectively shared that govern individuals’ behavior, perceptions, and attitudes in society.* Do I have the right

to claim or request financial assistance from such a person? Is s/he “forced” to respond favorably to such a request? What happens to the person who refuses to obey a rule? These are just some questions, among many others, whose answers can be predefined or anticipated in time and space based on the social norms and their enforcement mechanisms that prevail in a given society. For instance, it well-document that in the SSA context, sharing norms support moral obligations towards informal redistribution (see, e.g., Platteau, 2009, 2014).

Sharing norms are used to maintain a certain social organization in egalitarian societies.⁶ As stressed by (Platteau, 2006, p. 828), private wealth accumulation is perceived as an antisocial behavior in sub-Saharan societies where egalitarian norms prevail—community-based networks prevent private accumulation from discouraging the exit of its most prosperous members. The argument is that accumulation would allow an individual to emancipate from traditional solidarity networks, which would harm the pre-established organization. These sharing norms give rise to what Firth (1951)—cited in Platteau (2006)—terms “forced mutual help” are used to maintain equality between individuals. In this line, Bernard, De Janvry, & Sadoulet (2010, p. 610) argue that sharing norms in African communities are settled to prevent economic differentiation—sort of community conservatism—as they set out in the following description: “economic differentiation is perceived as a threat to the traditional social structure and to the solidarity system. Consequently, these communities tend to enforce strict redistributive practices, whereby enriched individuals are socially compelled to share with the rest of the community not only their good fortunes but also the differentiated product of their hard work.”⁷ Sharing norms postulate that those who have abundant resources are expected to share them with others. But, unfortunately, the norm does not determine the threshold amount that stipulates that resources are abundant, which implies a great deal of subjectivity

⁶See Woodburn (1982) for an anthropological approach to the issue. In this sense, Hoff & Sen (2006) argue that kinship-based sharing norms may prevent economic modernization.

⁷This quotation is a synthesis of the following work: Englebert (1996); Fiske (1991); Platteau (2000); Platteau & Abraham (2002).

in understanding the norm. Sharing norms are thus the breeding ground for redistributive pressure since these allowing one to seek financial assistance from those *believed* to be better off to address idiosyncratic shock or economic hardship. The potential donors overwhelmed by requests for financial support are thus inclined to be under pressure to share their income.

According to Platteau (1991), sharing norms set a minimum floor for social security for vulnerable people through risk-sharing mechanisms. This argument holds partially because numerous studies have rejected complete insurance mechanisms in empirical tests of private transfers' motives at different aggregate levels (see, e.g., Deaton 1992; Dercon & Krishnan 2003; Grimard 1997; Townsend 1994). I can conjecture that redistributive pressure may explain these results to some extent. (Dizon, Gong, & Jones, 2020) show that promoting savings via mobile bank savings has an adverse effect on risk-sharing in Kenya. Moreover, information and enforcement mechanisms are the basis of risk-sharing networks. However, an agent who is consistently more successful than others would lack the incentive to share information about its resources, thus avoiding redistribution within the group. This argument is likely to be even stronger when the group is increasingly large (e.g., kinship network or community). Information and enforcement aspects are indeed presumably better within a small group (e.g., single household) than between different households (Robinson, 2012). Another argument is that market penetration in traditional (erstwhile non-market) societies disrupts the social order and challenges traditional norms. On the one hand, market activities, in essence, are based on profit maximization and the growth of activity that requires a certain accumulation of capital for eventual reinvestment. On the other hand, solidarity mechanisms can be weakened by greater social and economic heterogeneity, associated with wider distributional ranges of incomes, opportunities, and access to infrastructure, services, and political influence (Moser, 1998).

Sanctions are the most effective tools used to enforce informal redistribution

in the context of strong sharing norms. In the words of Elster (2009) “social norms are social both because they are maintained by the sanctions that others impose on norm violators and because they are shared—and known to be shared—with others.” Firstly, economists emphasize that exclusion and ostracism are the primary social sanctions that apply to those who shirk their financial obligations to the needy in their community-based networks (see, e.g., Beekman, Gatto, & Nillesen 2015; Mahieu 1989a; Nordman & Vaillant 2014; Platteau 2000).⁸ Indeed, both theoretical and experimental literature shows that individual that receives requests for financial support are more likely to agree to meet such solicitation where there is the threat of punishment. Second, there may also be intrinsic reasons for obeying the sharing rule. Some agents are concerned about the psychological costs associated with some requests, suggesting that the request’s circumstances and characteristics are important. Thirdly, potential donors are more likely not to decline certain requests when they live in environments where mystical beliefs predominate, in particular witchcraft practices, envy, and evil-eye.⁹ Mahieu (1993) points out that witchcraft attacks grip individuals who wish to circumvent social sharing norms in a state of persistent fear. For instance, MacLean (2010) shows how witchcraft attacks are used as a sanction mechanism in Côte d’Ivoire. She summarizes this when she writes: “One sanction that was cited by villagers as occurring more frequently in the recent past was the use of witchcraft to punish a young nephew or niece who had succeeded but not helped his or her extended family member with needed financial support.” LeMay-Boucher, Noret, & Somville (2013) show that some successful Benin agents resort to magico-religious expenditures to prevent income-sharing in dealing with redistributive pressure.¹⁰

⁸For example, Collier & Garg (1999) point out that the kinship group uses the ban on being buried in their home village, which is highly valued in that culture, to discipline successful Kenyan migrants who would like to avoid redistribution.

⁹Bernard et al. (2010) point out that an agent who is repeatedly more successful than others can be blamed for manipulating supernatural forces in Burkina Faso. In the face of this risk, sharing is used to appease feelings of jealousy. See also Gershman (2015, 2016) for incidence of evil-eye and witchcraft beliefs on agents behavior and welfare in SSA.

¹⁰See Platteau (2014) for a broad review of social sciences literature on how redistributive pressure interacts with supernatural beliefs.

Children's living arrangements in sub-Saharan Africa: the case of child fostering

Child fostering is another aspect of solidarity mechanisms. It is one of the primary living arrangements experienced by a significant number of children in SSA, especially orphans and vulnerable children. In much of West Africa, fostering arrangements occur on a huge scale Caldwell & Caldwell (1987). Children indeed spend substantial proportions of their childhood years apart from their parents at any given time and probably over half in the course of their upbringing Lloyd & Desai (1992). The dominant reasons underlying this practice in the social sciences literature are primarily the socialization of the child, access to better opportunities in terms of education or employment, and smoothing household consumption under challenging times by sharing the benefits and costs of the children through the community-based network (see, e.g., Serra, 2009).

Child fostering is a social institution in its own right that deserves special attention because of its direct impact on child welfare. Studies on child fostering began in other social sciences with work in anthropology and demography (see, e.g., C. H. Bledsoe, Ewbank, & Isiugo-Abanihe, 1988; Isiugo-Abanihe, 1985). Although economists have widely studied child fostering, little is known about how resources are allocated between foster and biological children within the household. Much of the empirical literature to date on developing countries has focused on human capital investment (see, e.g., Ainsworth & Filmer, 2006; Ardington & Leibbrandt, 2010; Beegle, De Weerd, & Dercon, 2006; Zimmerman, 2003), health related-investment (see, e.g., Fotso, 2017; Hayduk, 2017), and gender bias within the household (see, e.g., Bargain, Kwenda, & Ntuli, 2018; Bhalotra & Attfield, 1998; Deaton, 1989a; Fuwa, 2014; Gibson & Rozelle, 2004; Haddad & Reardon, 1993).

The issue of child treatment in their foster household is more critical since there is plenty of evidence that low resource allocation in childhood would threaten

both skills and well-being in adulthood (see, e.g., Beegle et al., 2006; R. Poulton et al., 2002). The social science literature emphasizes that poverty, for instance, is a significant cause of poor child development because it compromises the satisfaction of children's basic material needs, e.g., food, education, and health care (Roelen, Delap, Jones, & Chettri, 2017). Further, the sibling sex composition literature highlights that sibling rivalry have an impact on child outcomes. The sibling rivalry idea is that all else equal, the child is better off with more siblings who are comparatively less valued in terms of preferences and market opportunities when institutional failures (as described above) that cause parents investment decisions to depend on the sex composition of children in the household or parental preferences have to vary across children (Edmonds, 2007). Therefore, it is plausible to question the rivalry between children of different status and gender in the intra-household allocation of resources.

Contribution and outline of the dissertation

The analysis of redistributive pressure and child fostering is fundamental in understanding the societal and contemporary dynamics in SSA. On the one hand, deep academic knowledge on these topics is essential for the evaluation of individual well-being and a better understanding of the inner workings of the household, and on the other hand, for the characterization of the demographic and economic issues inherent to development economics. These topics have received considerable attention in the literature. However, there are still *grey areas* that this dissertation aims to fill. This dissertation speaks to two broad streams of economic literature. First, this dissertation contributes to the microeconomic literature investigating the effects of solidarity mechanisms on agents' behavior. Second, it also relates to the literature on intrahousehold resource allocation. This dissertation is a collection of two related essays and an independent one. The three chapters are written in a regular economic journal article format and divided into two main parts. The first part discusses redistributive pressure issues and

household behavior. The second part is devoted to child welfare in fostering arrangements.

The first chapter is entitled “Redistributive Pressure in sub-Saharan Africa: Concepts and Measurement.” In this chapter, I aim to advance the economic research on the concept of redistributive pressure. As illustrated above, financial markets are incomplete, and public redistribution is quasi-absent in SSA. These markets failures lead to considerable informal redistribution within community networks. Economists argue that redistributive pressure explains a significant part of this redistribution, given the social pressure exerted on some agents to share with others. In this chapter, I review and synthesize the burgeoning economic literature on this issue. I also propose a specific conceptual framework to provide a suitable definition of the related key concepts and address measurement issues of this phenomenon. After laying the foundations for its economic analysis, I also address the issue of data collection and present new measurement tools to detect and measure the extent of redistributive pressure in any context. Finally, I propose a detailed index to capture the intensity of such pressure. Overall, this chapter emphasizes the *unilateral* redistribution induced by such pressure and the need for accurate measures to better address its effects.

The second chapter is entitled “Under Pressure: Assessing the Cost of Forced Solidarity in Côte d’Ivoire.” In this chapter, I empirically investigate the basics of redistributive pressure using nationally representative data from Côte d’Ivoire (2015). Indeed, despite the abundant literature on redistributive pressure, highlighting its essential deterrent effects, the following fundamental questions remain unanswered. How many households face redistributive pressure in a given country? How much does it cost to satisfy it? Which income group pays the most taxed? What are the correlates of complying with strong sharing norms? In this chapter, I use both insights from a qualitative survey I conducted in the country and borrowed from Chapter 1 to answer these fundamental questions. I find that one in five Ivorian households is under pressure to share. These

households are net transfer donors (88%). Second, I evaluate for households under pressure the redistribution cost labeled the “social tax”. It corresponds to the budget share devoted to meet financial support requests from kin and kith. The average social tax represents 10% of households’ monthly expenditure and 17% of their monthly income. Third, according to the different measures of household living standards, the social tax rate is roughly constant, like a flat tax, for the middle and wealthy classes. Conversely, the poorest households exhibit higher tax rates. This finding contrasts with the widely held view that forced solidarity is a redistribution from the rich to the poor. Fourth, using an econometric approach to examine the issue of its correlates, the results show that religious beliefs, age, income, and mobile phone-owning are strong predictors of being under pressure to share in rural areas. In addition, education, occupational status, and marital status are the most important predictors in urban areas. Further, the results are strongly driven by male-headed households, all else equal. This implies that female-headed households are more able to resist such pressure. Overall, this study offers new insights into the economic cost of forced solidarity and draws attention to household targeting in public cash transfer policies.

The third chapter is entitled “Child Fostering and Consumption Inequality: Evidence from Côte d’Ivoire.” In this chapter, I study how resources are allocated between biological and foster children. The focus on consumption inequality among children in Côte d’Ivoire is to shed light on a ubiquitous question in the economic literature: Do parents favor their own biological children over foster children? To answer this, I apply the “Outlay Equivalent Ratio” approach developed by Deaton, Ruiz-Castillo, & Thomas (1989) on household expenditures data from Côte d’Ivoire. This method allows me to infer a bias in consumption expenditures allocated to a specific group of individuals among the household members. Its main strength is that it overcomes two significant problems: consumption data collected at the household level and the presence of public goods well known to economists. This method states that, for a given income level, children have a

“pure” negative effect on parents’ consumption demand for “adult” goods (e.g., adult clothing). The bias is revealed by how parents reduce their consumption to offset the cost of raising a specific type of child. The empirical estimates suggest that parents do not systematically discriminate against foster children in the allocation of household resources. On average, there is no evidence of discrimination among school-aged children aged 6-14. However, heterogeneity in fostering arrangements—analyzing the role of sibship composition and interhousehold transfers—mitigates the results and indicates a status-gender bias against foster boys aged 11-14.

Chapter 1

Redistributive Pressure in Sub-Saharan Africa: Concepts and Measurement

Contents

1.1	Introduction	20
1.2	Understanding redistributive pressure	21
1.2.1	Redistributive pressure or pressures?	21
1.2.2	The logic behind income-sharing	22
1.2.3	Definition of concepts	23
1.3	Evidence of redistributive pressure in the literature	26
1.3.1	Qualitative and anecdotal evidence	27
1.3.2	Empirical evidence on redistributive pressure effects	30
1.4	Measurement: what do we know?	34
1.5	A new approach in measuring explicit redistributive pressure	37
1.5.1	How to target informal taxation?	37
1.5.2	Identifying agents under pressure to share	41
1.5.3	Assessing the Informal Tax rate	44
1.5.4	Redistributive Pressure Intensity: An index	45
1.6	Concluding remarks, discussion, and directions for future research	48
	Appendix	51

1.1 Introduction

Community-based networks play a crucial role in the livelihoods of many agents, sometimes even affect their survival.¹ Although these networks have undeniable benefits for their members², they may have implicit distorting incentive effects for some agents because of the strict sharing rules that prevail.

In sub-Saharan Africa, where financial markets are incomplete and public redistribution is quasi-absent, solidarity arrangements through informal transfers are ubiquitous and frequent within community-based networks. Moreover, there is considerable evidence that part of such transfers within these networks can be considered as social taxes because of social pressure to share exerted on some agents. This situation refers to what economists call *redistributive pressure*.

The empirical literature on the effect of redistributive pressure on an agents' behavior has gained relevance over the last two decades. Researchers in this field, however, face two key challenges. On the one hand, the concept of redistributive pressure has been used in many ways, leaving its meaning unclear. On the other hand, the current literature does not provide a precise measure to assess the magnitude of this phenomenon and make its effects clear.

The goals of this essay are threefold. First, I aim to survey, synthesize recent developments and studies, and advance the understanding of economic research on the concept of redistributive pressure. Second, I draw attention to the empirical challenges in studying issues related to redistributive pressure and introduce new concepts to address some key concerns. Third, I attempt to provide solutions to the empirical research by proposing indicators to detect and measure redistributive pressure in any context and a detailed index that captures such pressure's intensity.

The remainder of this chapter is organized as follows. Section 1.2 explains the rationale for redistributive pressure and provides definitions of the key concepts.

¹In this essay, 'agent' always refers to an individual or household. The definition of community-based networks used here is quite broad, encompassing kinship and social networks, i.e., extended family members, friends, and other relatives. Therefore, an agent's network is all the members with whom one has ties—either weak or strong, living in a geographically close environment or not.

²See Chuang & Schechter (2015) for a broad survey.

Section 1.3 presents evidence of redistributive pressure in Sub-Saharan Africa based on the extensive social sciences literature. Section 1.4 discusses the measurement issue in the empirical economic literature while Section 1.5 proposes a new methodological approach to address *explicit* redistributive pressure issue. To further examine the measurement issue, and in particular, distinguishing between two agents according to the degree of pressure to which they are subjected, it also provides an index that accounts for the intensity of redistributive pressure. Section 1.6 concludes with a summary and with some directions for future research.

1.2 Understanding redistributive pressure

This section presents how redistributive pressure works and proposes definitions of the key related concepts. First, I describe the different types of redistributive pressure that an agent may experience. Second, I focus on income-sharing and present how it is legitimized in sub-Saharan societies. Third, I propose a definition of this ‘singular’ pressure, and I explain some related concepts.

1.2.1 Redistributive pressure or pressures?

Pressures for redistribution are multi-fold. It encompasses all the obligations of solidarity—under the influence of social norms and other means of coercion—that an agent must fulfill towards his community-based network members. Indirect forms of redistribution characterize such pressures. Some entrepreneurs face external pressure to hire relatives in their business regardless of their relatives’ skills (see, e.g., Alby, Auriol, & Nguimkeu, 2020; Kennedy, 1988; Nordman & Vaillant, 2014); migrants are forced to share their home indefinitely with newcomers from the community network in cities (see, e.g., Hoff & Sen, 2006); households are constrained to meet repetitive demands for meal-sharing (see, e.g., Dillon, De Weerdt, & O’Donoghue, 2021). For instance, Whitehouse (2011, p. 104) provides an illustrative anecdote: “In Bamako, I met a taxi driver who would not accept a

fare to his home neighbourhood in that city, because he knew once he arrived there he was likely to be spotted by some relative who would insist on being driven somewhere for free.” In this chapter, I use the singular for *pressure* because I exclusively focus on one of the most widespread forms of redistributive pressure in sub-Saharan Africa, which induces direct and readily measurable redistribution: income-sharing.³

1.2.2 The logic behind income-sharing

Social scientists point out that redistributive pressure occurs mainly in the context of the prevalence of non-market institutions such as customs, extended family, redistributive or sharing norms (see, e.g., Bauer & Yamey, 1957, p. 64; Mahieu, 1989a; Platteau, 1994; Russell, 1984). It is well documented that such institutions allow community-based network members to seek financial assistance from relatively successful members in order to circumvent the inefficiency of financial services, the lack of public redistribution, and pervasive idiosyncratic as well as common shocks (see, e.g., Barr & Stein, 2008; Coate & Ravallion, 1993). This refers to the concept of the “moral economy” widely popularized by Scott (1976)—in which risk aversion is reflected in the safety-first principle and adherence to the norm of a subsistence ethic within the community (Matsumura, 2006). In fact, the sharing norms are long-standing and come from these well-established traditional rules. Platteau (1991) argues that “In the moral economy approach, precapitalist rural communities are viewed as societies in which social rights of minimum subsistence are secured to all members [...] and it is only under exceptionally adverse circumstances (like wars, epidemics, repeated crop failures) that traditional systems of social security may collapse and give way to social anarchy characterized by individual behaviour of the struggle-for-life type.” Platteau also stresses that these informal arrangements have a high incidence of

³It should be noted that the prevalence is assessed arbitrarily and subjectively. Indeed, a small body of work documenting the cost of other forms of pressure, making income-sharing the most salient.

redistribution and reciprocity. I argue that these arrangements foster pressure to redistribute for successful agents within their networks due to the societal and economic changes since their settlement.

The interaction between social norms and pressure for sharing also raises the issue of individuals' beliefs. For instance, there is a fairly common belief in many sub-Saharan societies, characterized by egalitarian norms, that individual success is due to luck rather than risk-taking, talent, hard work, and the sacrifices it requires (Bernard et al., 2010; Platteau, 2000). This vision naturally requires that the fruits of luck be shared with other members of the community.⁴ Such beliefs elicit aversive emotions, a form of antagonism against relatively wealthy agents. The fear of envy and hostile actions can then be a real incentive for people to share their wealth with close relatives (Matsumura, 2006). Also, these contribute to a redistribution of income between (presumably) lucky and unlucky individuals (Platteau, 2014). Moreover, to ensure compliance with redistributive norms, individuals use harsh sanctions against those who want to shrink their obligations. Sanctions include stigma, social ostracism, exclusion, constant harassment, loss of land rights, and witchcraft accusations and practices (Hoff & Sen, 2006; Mahieu, 1989a; Platteau, 2000).

1.2.3 Definition of concepts

The social sciences literature does not give a clear-cut definition of redistributive pressure. However, following the rationale of income-sharing, economists agree that the interactions between market and non-market institutions described above are at the concept's core. This led to the conceptual framework presented in Figure 1.1. Therefore, I define *redistributive pressure* as a situation that stems from the moral economy, beyond reciprocity and any other mutual assistance mechanisms, in which *relatively* successful agents face *unilateral* financial solidarity obligations from

⁴In this sense, Hoff & Sen (2006) develop a model showing how informal redistribution within such networks imposed on the relatively successful members may hold the entire network back in a poverty trap.

which they cannot escape under the threat of informal sanctions. In other words, *redistributive pressure* refers to a situation in which an agent expects, or receives and agrees to meet requests for financial support from its community-based network members, not having the possibility to decline because of the sanctions involved or any other emotional reaction induced by their refusal, including guilt.

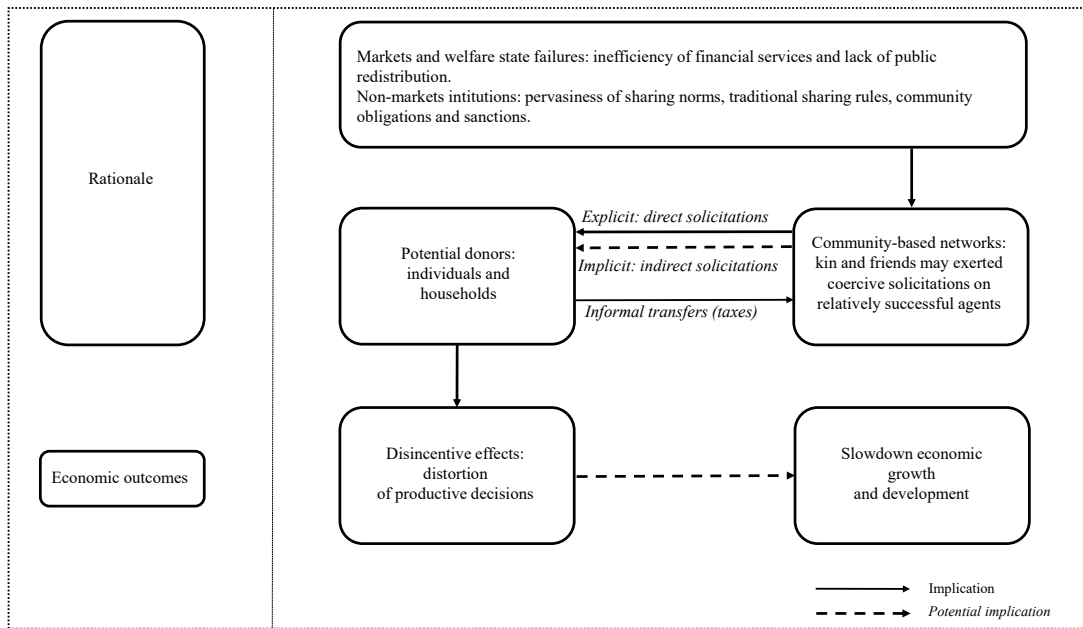


Figure 1.1: A conceptual framework for redistributive pressure

Source: Author.

One might argue that this pressure for redistribution is simply a “forced” redistribution from the rich to the poor.⁵ This is not the case in this context. The term “relatively” has its full meaning in the study of this phenomenon. In a community-based network setting, people in need who seek financial support rely on other members they *believe* can help them. This rationale can be associated with two key features: (i) potential donors are better off than they are, and (ii) potential donors fear social sanctions or guilt. Relatively successful does not mean that potential donors are necessarily the wealthiest in the network. It refers to the solicitor’s perception of the potential donor’s standard of living.⁶ These characteristics apply to any agent, whether rich or poor, since even a poor agent

⁵I use the term *poor* to refer to low-income agents.

⁶See De Weerd, Genicot, & Mesnard (2019) for the incidence of individuals’ misperceptions of income on transfer flows within the kin network due in part to redistributive pressure.

has horizontal and vertical social ties. I will discuss this in Section 1.5.2.

Redistributive pressure is one of the results of social pressure to share that comes in explicit and implicit ways. I conceive of redistributive pressure as *implicit* when potential donors expect money requests from their network members, and that directly affects their behavior. This may result from a strong internalization of sharing norms, or it may be triggered by observation, information-sharing, or past interactions that provide insight into the living conditions of network members. For example, some authors show that people who achieve high levels of wealth act as low-income agents (Baland, Guirkinger, & Mali, 2011) or develop other strategies to stay away from requests for financial support (see, e.g., Di falco, Feri, Pin, & Vollenweider 2018; Goldberg 2017).

I conceive of redistributive pressure as *explicit* when potential donors receive and agree to meet requests for financial support from their network members without the choice of saying *no* because of social sanctions.⁷

The theoretical and empirical literature emphasizes that the effects of redistributive pressure can be studied both within and between households. (Intra) Inter-household redistributive pressure manifests itself through excessive demands of money (within) between households, backed by sanctions and retaliations. Here, induced transfers within the household do not refer to requests for contributions to the household's public goods but rather to "extra" demands for private money among household members. A household member who requests and expects a recurring redistribution from cohabiting kin workers' financial support or a husband who regularly claims his wife's money for private purposes constitute suitable examples.⁸

Economists generally analyze money requests generating redistributive pressure on a household budget akin to a tax. They call it as a community tax (Koulibaly, 1997; Mahieu, 1989a), informal redistributive tax (Platteau, 2000), family

⁷These requests are made through various channels, for example, by telephone, through direct exchanges between the two parties concerned, or by involving a third party.

⁸Extended family households, i.e., households consisting of nuclear and other peripheral members—grandparents, siblings, and other kin—are prevalent in sub-Saharan Africa (see, e.g., Zimmer & Dayton, 2005.)

tax (Alby et al., 2020; Di Falco & Bulte, 2011; Wantchekon, Novta, Klasnja, & Novta, 2015), solidarity tax (Grimm, Hartwig, & Lay, 2017; Hadnes, Vollan, & Kosfeld, 2013), kinship tax (Boltz, Marazyan, & Villar, 2019; Squires, 2018), kin tax (Hoff & Sen, 2006; Jakiela & Ozier, 2016), and sharing tax (Dupas, Keats, & Robinson, 2019). Measuring this tax remains an empirical challenge given the multiple motivations underlying transfers in general. In section 1.5.1, I attempt to address this concern by taking a new approach.

1.3 Evidence of redistributive pressure in the literature

This section presents the origins of the economic analysis of redistributive pressure, reviews early and recent social sciences studies that provide solid evidence on this issue. Initially, I opted for a systematic review of the literature on redistributive pressure with its determinants and effects as the primary inclusion criterion. However, in social sciences research databases (Web of Science, Google Scholar, etc.), the naive use of keywords such as “redistributive pressure,” “forced solidarity,” “sharing obligations,” and “sharing pressure” coupled with “informal taxation,” “solidarity norms,” “sharing norms,” “dark side,” and “sanctions” (among others) did not lead to exciting results. Indeed, redistributive pressure is rarely the exclusive focus of studies. Instead, this concept is used to interpret some empirical results, often challenging to explain with known theories.⁹ The articles reviewed here were retrieved through the “snowball” method in which I reviewed the reference list of relevant articles and their citations to identify additional articles. Thus, this literature review is intended to be selective but coherent by linking studies together according to the topics covered rather than exhaustive. The next two subsections present anecdotal and empirical evidence of

⁹For instance, Brune, Giné, Goldberg, & Yang (2011) implemented a field experiment that randomly assigned smallholder cash crop farmers formal savings accounts in Malawi. They conjecture that one reason for the success of the saving commitment product is the desire to escape external pressure.

this phenomenon, respectively.

1.3.1 Qualitative and anecdotal evidence

Dating back to Lewis (1955) and Wolf (1955), economists have recognized that network members could generate additional budget constraints for some relatively successful agents through excessive demands for financial support. As noted by Wolf “Where an individual member of the group contemplates a wealth-increasing activity, e.g., through investment in a productive asset that will yield future returns, [...] the fruits or returns from his investment are subject to sharing among the other members of the extended family.” Further, Lewis writes in his seminal book *The theory of economic growth*: “Where the extended family exists, any member of the family whose income increases may be besieged by correspondingly increased demands for support from a large number of distant relations.” (Lewis, 1955, p. 114). Since these works, economists have attempted to include redistributive pressure into economic analysis by investigating theoretically and empirically its effects on various socio-economic outcomes (see Section 1.3.2 for examples).

There is a good amount of anecdotal and qualitative evidence documenting redistributive pressure, particularly income-sharing, which implies distortions to incentives and reduced efficiency for some agents. Supporting evidence of the *existence* of redistributive pressure comes from social sciences literature, spanning sociology, ethnography, anthropology, and economics. For example, in examining the determinants of the amounts sent by urban migrant workers in South Africa, Gandar & Bromberger (1984) found that urban workers do not simply send remittances as they wish. Instead, the authors present evidence that they face pressures from members of their rural kinship networks. Further, Russell (1984) documents how the practice of allocating a portion of their earnings to other rural relatives as a result of kinship obligations is widespread among urban workers in Swaziland. In order to get a comprehensive picture of how income sharing manifests itself in agents’ daily lives, I present numerous field observations in

Table 1.1. These quotations emphasize the issue of the obligation to share and its enforcement mechanisms, and to a certain extent, how redistributive pressure is pervasive in sub-Saharan Africa.¹⁰

How do agents themselves perceive redistributive pressure? Figure 1.2 presents survey responses about redistributive pressure issues from two original studies conducted in Burkina Faso by Grimm et al. (2017) (Figure 1.2a) and Côte d’Ivoire by Carranza, Donald, Grosset, & Kaur (2021) (Figure 1.2b) on samples of 278 and 420 individuals with regular wages, respectively. The results are quite striking. First, the demands for financial support appear to be excessive and go beyond the risk-sharing framework as supported by the proposed definition. Second, most survey respondents are aware that transfers requests are positively correlated with their earnings. These situations highlight the implicit and explicit features of redistributive pressure.

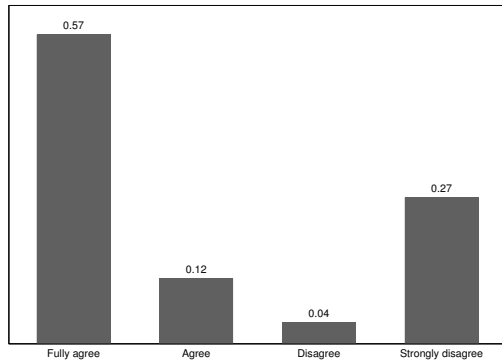
¹⁰Besides the anecdotal realities described above, there are numerous articles in non-academic literature, especially national media on this topic (see for example the issue of “Black Tax” in South Africa—<https://www.news24.com/citypress/trending/books/book-extract-is-black-tax-a-burden-or-ubuntu-20190901> (last accessed [28/12/2020]); Nigeria—<https://guardian.ng/life/black-tax-brotherhood-or-burden/> (last accessed [22/07/2021]); Zambia—<https://www.abc.net.au/everyday/why-black-tax-means-some-families-save-less-than-others/11988006> (last accessed [14/10/2021]); Kenya—<https://www.money254.co.ke/post/how-black-tax-impacts-you-financially-how-to-manage-it-better> (last accessed [14/10/2021]); and for a more general background, see <https://www.bbc.com/news/av/world-africa-54480738> (last accessed [28/12/2020]).

Table 1.1: Redistributive pressure in practice

Reference	Quotation
Bauer & Yamey (1957, p. 65) ^a	Even a moderately prosperous man may find that he has score of relatives and clansmen to provide for; hospitality on a lavish scale to family members and indiscriminate maintenance of distant relatives is a feature of economic life in many parts of Africa, India and China.
Nafziger (1969, p. 31) ^a (Nigeria)	In fact, the demands of the extended family curtail the use of profits for the expansion of sample firms. As the income of the entrepreneur increases, the number of dependents he is required to support also increases.
Hart (1973, p. 65) ^a (Ghana)	Migrant remittances to their rural families are likewise irregular, being paid often by means of loans incurred in response to pressures brought to bear by visitors from home in the dry season.
Russell (1984, p. 610) ^a (Swaziland)	Given the human frailty and unseen contingencies of contemporary Swazi life, these transfers can become very onerous.[...]. Those earning high wages are under constant onslaught from kinsmen to redistribute their income, or in the words of one of them, to “pump it out”.
Kennedy (1988, p. 169) ^a	[African] businessmen are often expected to finance the education nephews, nieces and younger siblings or even provide more or less permanent support for widowed or desert sisters, particularly in matrilineal societies.
Englund (1996, p. 266) ^a (Malawi)	Hawadi wanted to set limits to the sharing of his wealth and, simultaneously, to avoid projecting an image of individualism. This dilemma culminated in the fear of being seen as a witch.
Geschiere & Nyamnjoh (1998, p. 81) ^a (Cameroon)	Witchcraft is seen as a deadly threat against any rich relative who refuses to share [his/her wealth] with his kin [...]. In the face of so much pressure most newly wealthy emphasize the dangers of returning to the intimacy of one’s former fellow villagers.
Maranz (2001, p. 27) ^b	“If my friend ask for help or for a loan because he was ask by one of his relatives or friends for help, even though that person is unknown to me, society dictates that if I have the means, I should provide the help, whether or not my friend will be able to repay me.”
Guérin (2006, p. 557) ^a (Senegal)	Saving is difficult in a context where the financial demands of community and family obligations are high. <i>Tontines</i> [Roscas] provide members with an opportunity to keep their funds safe, from both themselves and the demands of others.
MacLean (2010, p. 89) ^b (Côte d’Ivoire)	“I will give to him [a relative in need]. It’s obligatory that I give to him. If I don’t give to him, that will go badly and witchcraft will intervene.”
Baland et al. (2011, p. 8) ^b (Cameroon)	“I have to help many people. There are many people below me who expect me to help them. It is hard but I am forced to help.”
Boltz & Villar (2013, p. 116) ^{b*}	“Here, you don’t have the possibility to save, because there is the family around, there is the pressure, you have the electricity bill that you have to pay, there are relatives to whom you have to provide financial support, there you can’t get out of it[...].”
Hadnes et al. (2013, p. 14) ^{b*} (Burkina Faso)	“Requests for family support negatively impact my investment projects. Every time he [my father] lets me know that he needs money to solve a problem; often I give it to him.”
Squires (2018, p. 2) ^a (Kenya)	“I sell second-hand clothes without anyone knowing, far from home. I hide from my friends because I believe not all friends will be happy with my success, and from family to create a picture that I have no money, for them to work hard for their own money. My previous business, a street-side restaurant, failed due to my in-laws using me for money, yet I wanted to expand it.”

Notes: ^aPersonal communication. ^bField observation: quotation retrieved from interviews. *My translation from french.

(a) “Every time I have money, my spouse or other family members in or outside the household ask for a part of it” (Grimm et al., 2017)



(b) “If someone in the community starts earning more money because they have decided to work harder, people would start asking that person more often for financial support” (Carranza et al., 2021)

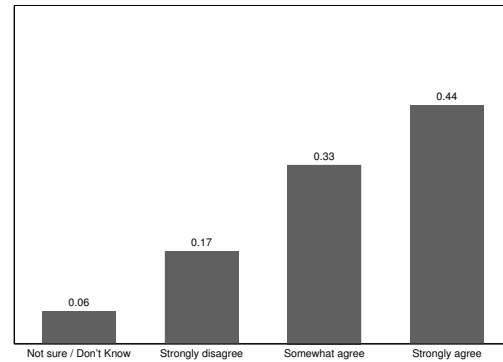


Figure 1.2: Agents’ perceptions about redistributive pressure

1.3.2 Empirical evidence on redistributive pressure effects

Table 1.2 presents the geographic distribution of empirical economic studies—including Randomized Control Trials (RCTs)—on redistributive pressure effects across sub-Saharan Africa. Based on this representative sample of studies, I summarize below the different outcomes covered by the empirical research according to the intra- and extra-household distinction in order to identify gaps and the most fruitful avenues of research for this literature.

1.3.2.1 Intra-household redistributive pressure

Pressure for sharing income within the household has been essentially studied in terms of the non-cooperative sphere between spouses. Asymmetric information between spouses refers to intrahousehold non-cooperative behaviors, highlighting an inclination to conceal resources within the household. Anderson & Baland (2002) show that urban women in Kenya are the most represented in rotating savings and credit associations (ROSCAs) to protect their income from the demands of their husbands’ immediate consumption: “You cannot trust your husband. If you leave money at home, he will take it.” Both Ziparo (2020) and Lemay-Boucher &

Table 1.2: Empirical studies on the effects of redistributive pressure

Author	Country	Location
Anderson & Baland (2002); Luke & Munshi (2006)	Kenya	Urban
Dupas & Robinson (2013); Jakiela & Ozier (2016)	Kenya	Rural
Egbert (2009)	Tanzania	Urban
Di Falco et al. (2018)	Tanzania	Rural
Di Falco, Lokina, Martinsson, & Pin (2019)	Tanzania	Rural
Baland et al. (2011)	Cameroon	Urban
Brune et al. (2011); Goldberg (2017)	Malawi	Rural
Di Falco & Bulte, (2011; 2015)	South Africa	Rural/Urban
Rooks, Szirmai, & Sserwanga (2012)	Uganda	Rural/Urban
Di Falco & Bulte (2013)	Ethiopia	Rural
Bernard et al. (2010)	Burkina Faso	Rural
Grimm et al. (2017); Hadnes et al. (2013)	Burkina Faso	Urban
Nordman & Vaillant (2014)	Madagascar	Urban
Beekman et al. (2015)	Liberia	Rural
Carranza, Donald, Grosset, & Kaur (2018)	Côte d'Ivoire	Rural
Boltz et al. (2019)	Senegal	Urban
Grimm, Gubert, Koriko, Lay, & Nordman (2013)	West Africa*	Urban
Alby et al. (2020)	sub-Saharan Africa**	Rural/Urban

Notes: *West African countries are Benin, Burkina Faso, Cote d'Ivoire, Mali, Niger, Senegal, Togo. **The authors use World Bank Enterprise Surveys database that compiles surveys from 7514 manufacturing enterprises in the following 31 Sub-Saharan African countries: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, DRC, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Rwanda, Swaziland, Senegal, South Africa, Tanzania, Uganda, and Zambia.

Source: Author

Dagnelie (2014) show that the financial spheres of spouses in Cameroon and Benin, respectively, are relatively disjointed. Spouses systematically underestimate their partner's income because both spouses give each other a blurry image of their earnings to keep them secret and manage them with maximum latitude. Using a field experiment and in-depth household survey in Ghana, Castilla & Walker (2013) show that spouses have a high tendency to hide unobservable resources money from their husbands. The main reason conjecture by the authors is to continue receiving the "chop money" allowance from the latter. Baland et al. (2011) describe how, in Cameroon, some individuals claim to be poor by taking out unnecessary loans as proof and thus hide their accumulated savings from their spouses.

However, there is growing evidence of redistributive pressure issues between other members within the same household. For example, Hadnes et al. (2013) study the impact of demands for financial support from family members on entrepreneurial activity in a real effort experiment in Burkina Faso. To this end,

they offered a lucrative job opportunity to small-scale tailors. The job consisted of the reproduction of small bags within a limited amount of time. The authors assessed the tailors' productivity in two specific treatments where the tailors' household members were either informed or not about the future income. They find that treated tailors' *expectations* and *real* demands for financial support impact significantly and negatively their productivity. In contrast, Boltz et al. (2019) provide evidence that intrahousehold redistributive pressure is less frightening than that exerted by individuals outside the household in their experimental setting in poor urban areas in Senegal.

1.3.2.2 Interhousehold redistributive pressure

Forced redistribution outside the household has been studied in several contexts and its effects on many outcomes. I will organize the discussion around Table 1.2, presenting these empirical studies grouped by topics that stand out most clearly in the literature.

Social interactions and income hiding. Many agents adopt secretive behavior to keep their earnings far from their community-based network members. Recent controlled laboratory environments implemented in Senegal (Boltz et al., 2019), Liberia (Beekman et al., 2015), and Kenya (Jakiela & Ozier, 2016) highlight this behavior when measuring social pressure to share income with kin and kith. A common conclusion reached by these studies is that individuals are willing to forgo a part of their gains in the experiment to keep it secret and avoid income-sharing.

Through a set of field experiments in rural Tanzania, Di falco et al. (2018) randomly increased the expected harvest of the treatment group through a series of field experiments in rural Tanzania by assigning them an improved and much more productive maize variety. They found that treated farmers adopted avoidance strategies by reducing interaction with their community-based network members. Farmers reduced the number of people they asked for help during the growing season and the number of people they talked about their improved seeds to keep

it secret. However, this strategy had an unintended consequence for them. Lower labor input severely reduced the benefit of the improved seeds; they obtained fewer harvest gains.

Consumption and savings. From a field experiment in rural Malawi, Goldberg (2017) presents evidence of redistributive pressure effect on the timing of consumption. Her findings suggest that individuals who receive their earnings in public and anticipate possible taxation from their relatives are more likely to spend a higher amount of their earnings after the experiment than those who receive their earnings in private. Di Falco & Bulte (2011) show that redistributive pressure negatively impacts savings. They show that some *Black* households in South Africa try to evade their sharing obligations by accumulating durables that are non-sharable and reducing savings in liquid assets. Dupas & Robinson (2013) provide evidence that offering women savings technologies helps them increase their investment in preventative health by resisting pressure to share their money with their relatives. Carranza et al. (2018) developed a financial innovation to study the impact of this redistributive pressure on full-time piece-rate factory workers' labor supply and productivity in Côte d'Ivoire. They show that the visibility of an account to one's social network and the degree of redistributive pressure a worker's faces are strong determinants of account take-up.

Efforts, productivity, and investment. In a field experiment with Ugandan women entrepreneurs, Riley (2020) finds that treated women receiving a loan through mobile money account increased both business capital and profits several months later than those receiving the loan in cash—with large effects among those under pressure to share their income with family members measured at baseline. In two companion papers, Di Falco and Bulte show that sharing obligations reduced investments in protection against weather shocks in rural Ethiopia (Di Falco & Bulte, 2013), and negatively impacts the incentive to invest in human capital in South Africa (Di Falco & Bulte, 2015). Other recent experimental studies indicate that

redistributive pressure implies adverse incentive effects that significantly hamper entrepreneurship by different canals. From field experiments, Grimm et al. (2017) show that redistributive pressure partly explains the low rate of reinvestment in firms in Burkina Faso while Squires (2018) finds that it reduces aggregate productivity among Kenyan firms in his sample by one quarter. Hadnes et al. (2013) analyze the impact of demands for financial support from family members on tailors' real effort experiment in Burkina Faso. They show that family pressure to share income impact negatively their treated tailors' productivity.

Across the board, empirical studies present in this section show that redistributive pressure has large adverse economic consequences. For instance, trying to evade redistributive pressure from community-based network members by implementing sub-optimal strategies such as hiding income, lower efforts, saving in non-liquid forms, lower reinvestment in firms may constitute a structural impediment to poverty reduction and economic development (see Christiaensen, Demery, & Hill 2019, p.62–64 for a discussion).¹¹ In the next section, I will show how empirical research to date has been plagued by measurement problems and attempt to address them.

1.4 Measurement: what do we know?

The question of measurement is crucial in any analysis, especially in the evaluation of economic outcomes. Unfortunately, the literature offers little guidance on how to measure redistributive pressure. Moreover, there is no consensus among economists on the measurement of redistributive pressure *per se*. A closer

¹¹One would conjecture that such pressure that has apparent efficiency costs can be at the origin of poverty traps if a number of entrepreneurs do not manage to pass certain milestones in the growth of their enterprises. Nevertheless, Kremer, Rao, & Schilbach (2019, p. 356) recently oppose a relevant counter-argument: "A given percentage informal "tax" leveled by extended family could potentially be more distortionary if it was levied on capital itself rather than simply on capital income, especially if they were particularly high for certain types of investment, for example, on more observable capital goods, but in general there is no reason to assume that informal taxation systems would be more distortionary than formal taxation systems used in developed countries, and in any case, even a 4% tax on capital would not be a big deterrent if gross returns were on the order of 150%." This argument raises the question of the conceptual framework used to measure these outcomes that led to such inferences.

inspection of the empirical literature reviewed above reveals that the economic consequences of redistributive pressure are measured in an implicit approach, and the use of a wide range of proxies is somewhat problematic.

A growing literature shows that agents are aware that being economically successful relative to others leads to predation of their wealth through abusive demands for money. In this approach, potential donors develop costly strategies to avoid redistribution because they anticipate money requests from relatives. Avoidance strategies can range from unnecessary borrowing, to pretend to be poor and send a signal that one cannot help kin and kith (Baland et al., 2011), to reducing interactions with potential requesters to one's own disadvantage (Di falco et al., 2018). Studies that measure the existence and effects of implicit redistributive pressure are mostly experimental. The experimental setting is a fertile ground for measuring social norms, especially sharing norms (Camerer & Fehr, 2004). For example, a RCT offers an interesting framework to detect that an agent lives in an environment with strong sharing obligations. Experimental studies commonly evaluate the Willingness-To-Pay to hide resources to measure the surrounding social pressure to share, since the experimental setting allows to measure the willingness to forgo profitable investment opportunities to keep income secret (see, e.g., Beekman et al., 2015; Boltz et al., 2019; Jakiela & Ozier, 2016). Some studies indeed show that the presence of a participant's relative during the experiment has an impact both inside and outside the experiment since sharing resources with relatives is partly related to the observability of income (Beekman et al., 2015; Boltz et al., 2019; Goldberg, 2017; Hadnes et al., 2013; Jakiela & Ozier, 2016). Two main concerns emerge. First, RCTs are expensive and thus constrain easy and large-scale replications. Second, they have primarily internal validity but more limited external validity, making inferences difficult. The need to address the identification problem raised by observational studies is therefore crucial.

Since redistributive pressure is positively correlated with some unobservable factors—for instance, degree of internalization and compliance with the sharing

norms, community-based ties intensity in the context of endogenous network formation, social interactions, unobserved heterogeneity—applied economists have to deal with endogeneity problem. To overcome this issue, they used specific proxies, and instrumental variables approach to identify exogenous variation on their economic outcomes when needed. For instance, Grimm et al. (2017) investigate the low reinvestment rates among tailors in Burkina Faso due to redistributive pressure exerted by kin using the number of living siblings of the tailor as a proxy of abusive demands for financial support from kin. Giné et al. (2018), in a field experiment in rural Malawi, test for the effect of social pressure to share on intertemporal choice revision. They used the number of relatives one reports having in the village to proxy pressure to share with social network members. Nordman & Vaillant (2014) use a measure of distance to the district of origin as a proxy for social pressure to share to study the gender performance gap among informal entrepreneurs in Madagascar. They assumed that the further away a person lives from his/her district of origin, the more difficult it is for the family to observe the entrepreneur's activity and thus exert redistributive pressure. Di Falco & Bulte (2015) explore whether traditional sharing norms within kinship networks affect education decisions of poor *Black* households in a South African province. Di Falco & Bulte used the number of relatives who regularly visited the household as a proxy of potential kinship pressure on household income. They instrumented this variable using the average "age of the community" and the value of the kinship proxy in the neighborhood.¹²

In sum, the most common proxy for redistributive pressure (right-hand-side variable) is *the number of living relatives* which denotes the social and kinship ties that can potentially induce income-sharing and distortions. This proxy takes into account the implicit rather than explicit feature of redistributive pressure. The presence of a relative can be interpreted in many ways. In short, there is no precise measure of redistributive pressure that helps to supports its effects strongly. In

¹²Di Falco & Bulte (2015) based their argument on a sociological theory, which argues that the older a community is, the more extensive the social interaction and social organization of its members and the stronger the social ties between them.

addition, studies rarely distinguish between the types of transfers made, making it difficult to assess the resulting taxes. In the following section, I will focus on the measurement of explicit redistributive pressure, trying to address all the caveats. In this approach, I am able to identify both the agents who are under pressure and the forced transfers (requests). The question of measuring implicit pressure is therefore ignored and awaits further research.

1.5 A new approach in measuring explicit redistributive pressure

As previously mentioned, existing empirical literature lacks an objective measurement that allows the analysis of its effects outside of field experiments, facilitates comparisons between and within-country, and allows welfare analysis among others. To fill this literature gap, I developed a new methodological approach. First, I propose indicators to measure the main components of redistributive pressure: (1) identify the agents forced to redistribute part of their income (i.e., under pressure to share), (2) evaluate taxes incurred. Second, I combine these two indicators to built (3) an index that accounts for the degree (intensity) of the pressure. The following subsection starts with a discussion of the issue of informal taxation and follows with the three measurement components.

1.5.1 How to target informal taxation?

The most salient incidence of explicit redistributive pressure is income taxation. Recall from the definition that explicit redistributive pressure manifests itself by not being able to decline a direct demand for financial support because of the prevailing social sanctions. In this context, economists point out that the resulting informal transfers should be considered as “involuntary giving” akin to an income tax that “grabs” money from the donor. Jakiela & Ozier (2016) and Boltz et al. (2019) both estimated the informal tax rate around 4 and 9 percent within experiments.

However, to my knowledge, no paper has estimated the informal tax rate in real-world settings.

One of the main reasons for the failure of informal tax assessment in other contexts is the difficulty of disentangling coercion from other informal transfer motives using standard survey data. There has long been plentiful evidence that inter-agent monetary informal transfers can be motivated by various reasons.¹³ Researchers are therefore confronted with this multiplicity of motives when studying private transfers. It is obvious that not all transfers captured in a survey follow a “single” logic. An agent may exhibit a specific reason for each transfer made during the recall period used in the survey data. Moreover, targeting informal taxation can be an arduous task. The easiest way to overcome the difficulties related to the multiple motives underlying a transfer is to look at its “nature”.

The nature of informal transfers

Figure 1.3 provides a simplified diagram to distinguish how one can find the motive and isolate the tax, using the nature of a transfer made. To describe a transfer, one must first consider whether it is a gift or an aid. Broadly speaking, the donor realizes two types of informal transfers: pure gift [A] and assistance [B]. These two types of transfers are non-mutually exclusive. For example, suppose an agent only cares about his siblings’ welfare but has to deal with the pressure for sharing from other kin. Such an agent can make transfers of the type [A] and [B] simultaneously. Each transfer made meets, therefore, a specific motive.

¹³See Cox & Fafchamps, 2007; Ligon & Schechter, 2012; Schokkaert, 2006 for a broad literature review of transfer motives.

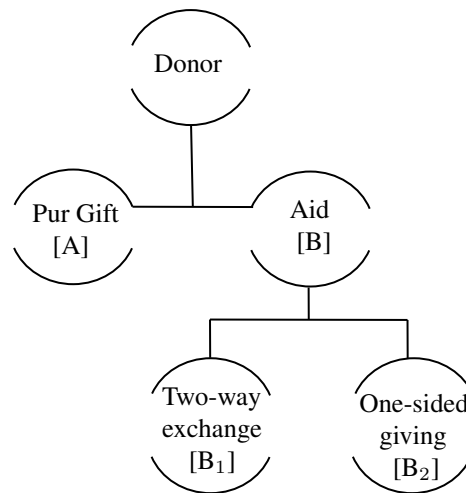


Figure 1.3: Distinguish between transfers

Source: Author.

[A] can be described as a voluntary and disinterested donation made without ostentation or expectation of any kind of this-worldly return, whether material or immaterial (see, e.g., Bloch & Parry, 1989, p. 66). [A] usually takes place within or between households and is part of the (im)pure altruistic models (see, e.g., Altonji, Hayashi, & Kotlikoff, 1997; Andreoni & Vesterlund, 2001; Becker, 1974; Bourlès, Bramoullé, & Perez-Richet, 2017; Cox, 1987; Fehr & Fischbacher, 2003; Ottoni-Wilhelm, Vesterlund, & Xie, 2017; Stark, 1993).

Let us now focus on assistance or aid [B], commonly referred to by the agents as “financial support.” One of [B]’s most striking features is that it takes place after the claims and requests of community-based network members. [B] takes place between a donor (solicitee) and a recipient (solicitor), hereafter denoted by the pair {solicitor, solicitee}. [B] has been analyzed in terms of mutual exchange, for example, when a community-based network smooths the consumption of its members by distributing income shocks across the network through cash and in-kind support (see, e.g., Angelucci & De Giorgi, 2009; Fafchamps & Lund, 2003; Townsend, 1994). However, further analysis of [B] reveals two types of transfers: those that are voluntary and those that are not. To better understand this pattern, it is necessary to take into account both the position of the solicitor and the solicitee in the social hierarchy and the strength of their ties. Therefore, within [B], two

types are distinguished: two-way exchange [B₁] and one-sided giving [B₂].

Solidarity arrangements and voluntary two-way giving: reciprocal exchange [B₁]

In reciprocal exchange, both solicitor and solicitee are from the same community-based network, no matter their status and their level of wealth endowment—i.e., {rich,rich}, {poor,rich} or {poor,poor}. What matters the most is to mitigate risks and shocks.¹⁴ [B₁] indeed refers to informal transfers that has been interpreted into gift-giving theory (Mauss, 1990), mutual insurance and risk-sharing through quasi-credit, informal loans and consumption smoothing mechanisms (e.g., Deaton, 1992; Fafchamps, 1999; Fafchamps & Gubert, 2007; Ferrara, 2003; Platteau & Abraham, 1987; Townsend, 1994; Udry, 1990). In sum, [B₁] represents monetary transfers resulting from informal agreements between agents who generally live in risky environments and where self- and social-enforcement allows sustainability (Fehr & Gächter, 2000), on a voluntary basis or not (e.g., Portes, 1998; Russell, 1984).¹⁵

Solidarity arrangements and involuntary unilateral giving: informal taxation [B₂]

Let us now consider the asymmetry of position between the solicitee and solicitor: both agents do not have the same level of wealth endowment. Focusing on the couple {*poor*₋, *poor*₊} and {poor,rich}, we suppose the solicitee have no incentive to share their income because being better insured against a specific risk and can incur the social sanctions costs associated with exit. Resulting transfers after a solicitation is *unilateral* because it has an almost zero probability of being reciprocated in monetary terms. Explanations fall into the two broad following arguments.

First, the term “relativity” mentioned in the definition of redistributive pressure makes sense in the understanding of unilateral giving—the tax: needy people rely

¹⁴For examples, see Dercon, De Weerd, Bold, & Pankhurst (2006) for evidence on mutual insurance in funeral societies in Ethiopia and Tanzania based on group membership, and Caldwell (1965) for the role of the extended family in financing the education of its members in Ghana.

¹⁵For instance, this kind of mutual informal arrangements scheme is self-enforced in the framework of people’s interactions allowing reputational effects that prevent free-riding temptation (Platteau, 2000, p. 192). Agents play such repeated games of indeterminate or infinite duration where cooperation appears as a sustained equilibrium (Coate & Ravallion, 1993; Fafchamps, 1992; Kimball, 1988; Ligon, Thomas, & Worrall, 2002).

on *relatively* wealthy agents. In fact, as stated above, needy people rely on those they “believe” are *more* better-off than they are. As a result, they attribute a financial capacity to their potential donors that does not always fits reality. In the case of financial hardship, the solicitee will not be able to rely on the solicitor because there is almost no reputation effect for a poor agent who defaults to reciprocate one who is supposed to be wealthy. Financial support to people belong to the needy agent and lower echelons of the social hierarchy can be interpreted as an act of moral justice and *normal* redistribution in societies where egalitarian norms prevail. This may partly explains the preference in sub-Saharan societies for hidden income—even between spouses. A counter-argument that can be opposed to this unilateral giving is the relationship of domination (e.g., “patron-client”) or prestige as a motivation for the transfer. This may be true if and only if the solicitee has the latitude to decline the solicitation without incurring any cost or sanctions. I turn to this issue for further development in Section 1.5.3.

Second, unilateral contribution stems from coercion wherein the solicitor seeking financial support to the solicitee uses “coercive solicitations”. *Coercive solicitations* mean that requests and claims for financial support come with the threat of sanctions or other harmful means that force potential donors to share their income despite their unwillingness to do so.¹⁶ Coercive solicitations act as a money grab as soon as they occur, and resulting transfers ($[B_2]$) must therefore be considered as taxes. This kind of unilateral giving that occurs in community-based network may adversely affect the solicitee’s welfare.

1.5.2 Identifying agents under pressure to share

Recall from Section 1.2.3 that agents facing explicit redistributive pressure are those who cannot avoid or decline coercive solicitations from their community-based network members. Coercive solicitations are effective when they induce forced

¹⁶Note that social sanctions are not presented directly with solicitations but are well known to all members of the community-based network. The solicitee predetermines them according to the link that the latter has with the solicitor.

(involuntary) transfers. Therefore, to identify agents under pressure to share, i.e., facing redistributive pressure, it is necessary to determine beforehand their degree of coercion incurred in all the transfers made. Every donor agent with a positive degree of coercion will be considered as being under pressure to share.

Measuring the Degree of Coercion

The degree of coercion should be understood as the degree of freedom that a relatively successful agent has regarding the number of potentially coercive solicitations s/he chooses to satisfy relative to the total number of solicitations s/he receives. By definition, the degree of coercion is given by the number of forced transfers to the total number of transfers *out*. This measure indicates to some extent whether the transfer is the result of a two-way exchange [B₁] or a one-sided giving [B₂] as described in Figure 1.3.

Let N_{it}^c be the total number of forced transfers made by an agent during a period t and N_{it}^τ be the total number of privates transfers made during the same period. The degree of coercion C an agent i in period t faces is given by

$$C_{it} = \frac{N_{it}^c}{N_{it}^\tau}, \quad C_{it} \in [0, 1] \quad (1.1)$$

Any agent i with a positive degree of coercion measure ($C_{it} > 0$) is therefore subject to redistributive pressure. One could use the same ratio but with the amounts of transfers, leading to a similar result, an indicator with values between 0 and 1. I use the number of transfers because, on the one hand, it limits recall bias in the collection of data on transfer amounts, and, on the other hand, it makes it easier for respondents to match each transfer made to relatives who applied abusive requests.

I do not measure coercion in an absolute way because the number of forced transfers alone is not a sufficient measure. To illustrate with an example, consider two agents $A_i, i = 1, 2$, having the same income endowment. A_1 makes four forced transfers, i.e., $N_1^c = 4$ while A_2 has $N_2^c = 2$. A_1 face a higher degree of coercion than A_2 . However, if we now look at the total transfers made by each agent, we

get a completely different perspective of the situation. Indeed, A_2 has made two transfers in total, $N_2^T = 2$, while A_1 has $N_1^T = 8$. All of A_2 's transfers are forced meaning that A_2 has a higher degree of coercion than A_1 , which is summarized by their degree of coercion $C_1 = 1$, and $C_2 = \frac{1}{2}$. Figure 1.4 provides an illustration. In sum, the greater the distance between an agent's position and the 45° line, the less coercion he faces. Any agent located on this line has a maximum degree of coercion. Coercion is a concept not addressed at all by traditional surveys that measure informal transfers. The following section goes further to propose ideas for introducing it into data collection.

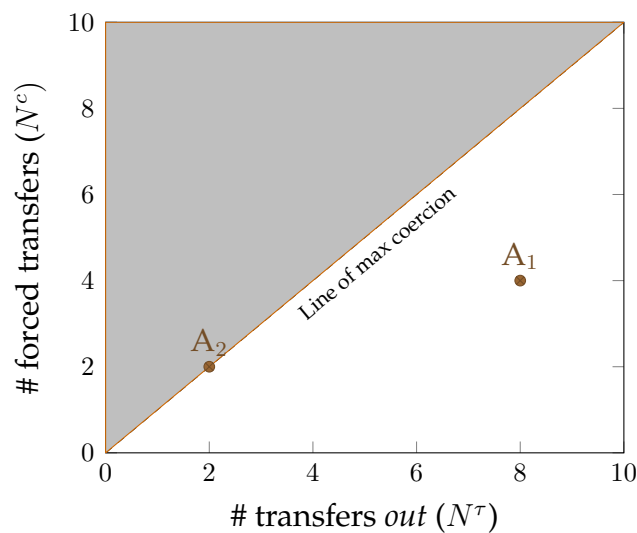


Figure 1.4: Designing the degree of coercion C_{it}

Source: Author.

Measuring Coercive Solicitations: Insights for data collection

Standard household surveys, designed as Living Standards Measurement Study (LSMS), are being implemented by National Statistical Office with the support of the World Bank in Sub-Saharan African countries and contain fairly extensive private transfer modules. In other words, the exact nature of the collected information (e.g., amount of transfers made during a recall period, the monetary equivalent of in-kind transfers, and link with the recipient) is the same from one country to another.¹⁷ Consequently, these surveys represent a good start to introduce the

¹⁷See M. Grosh & Glewwe (2000); M. E. Grosh & Glewwe (1998) for a discussion of how survey questionnaires are designed for developing countries.

notion of coercion

Empirical studies on private transfers rely on survey questions to evaluate the flow of monetary exchanges—including the monetary value of in-kind transfers—between agents. The typical questions recorded in surveys are as follow: “How much cash was given away to individuals outside your household?”; “What was the total value of in-kind assistance given to [person] living outside the household?”; “What is the relationship to the receiver?”.¹⁸ A very straightforward way to disentangle forced transfers—induced by coercive solicitations—from the informal transfers made is to ask two companion questions to the previous ones. [First] have you made this transfer as a response to a solicitation? [Second] if yes, could you have refused this solicitation? If the answer to this latter question is *no*, we now obtain the agents with strong sharing obligations. However, the third logical question, the *why*, is to be contextualized with the culturally specific means of coercion that prevail in a given place.

1.5.3 Assessing the Informal Tax rate

Having identified the agents under pressure to redistribute, it is now necessary to measure the monetary cost of this forced redistribution. A relevant and straightforward indicator that measures the incidence of facing coercive solicitations is the budget share devoted to it—the informal tax rate G in period t is given by

$$G_{it} = \frac{\tau_{it}^c}{R_{it}}, \quad G_{it} \in]0, 1] \quad (1.2)$$

¹⁸Below are some questions from nationally representative surveys in a few Sub-Saharan African countries: What is the amount of financial support sent to kin and kith during the last 12 months? (Côte d’Ivoire 2015); [What is the amount of] gifts for persons who are not members of this household? (South Africa 2010/11); What is the total amount of money sent or the value of the goods sent during the last 12 months? (Liberia 2016); [Total cost for the past 12 months] for gifts for persons who are not members of this household? (Namibia 2009/10); What was the total amount of cash given to this person [living outside the household in the last year without expecting to be repaid] in the last 12 months? (Ghana 2010/11); During the last 12 months, how much cash was given away any [ITEM] to individuals (friends/family) outside your household? (Malawi 2019). The questions are retrieved from the World Bank’s LSMS catalog and are available at <https://microdata.worldbank.org/index.php/catalog/lsm> (last accessed: 10/12/2020).

where τ^c is the total amount of money of all forced transfers sent by i , and R is the agent's total income or expenditure.

Let us now focus on the comparison between agents. Are two agents with the same level of taxation (G) equivalent in terms of the intensity of pressure they face? Judging the intensity of pressure between two agents by comparing their tax rates may be the simplest way to rank them. Tax rates do not, however, have much explanatory power for the overall phenomenon. Indeed, redistributive pressure has a moral component (the degree of coercion), and a material or even monetary component (the tax). The tax is intrinsically linked to coercive solicitations—it is the incidence of these solicitations on an agent's resources. For example, consider again our two agents A_1 and A_2 (see Figure 1.4), with different degrees of coercion $C_1 = 1$ and $C_2 = \frac{1}{2}$. Now suppose that A_1 and A_2 are both taxed at 10 percent (i.e., $G_1 = G_2 = 0.1$). Suppose we have to classify these agents according to the intensity of the redistributive pressure they face. Although the latter have the same tax rates, it is obvious that A_1 must be classified as having the highest degree of redistributive pressure. Therefore, I combine these two components to produce a synthetic index that better reflects the intensity of the pressure each agent concerned faces and ranks them without ambiguity.

1.5.4 Redistributive Pressure Intensity: An index

The economic literature does not provide an objective measure of explicit redistributive pressure that would allow an in-depth and unambiguous investigation of the effects of this pressure on several relevant outcomes at both the individual and social levels. As discussed above, a major challenge is to rank two agents with the same tax rates but different degrees of coercion. For this purpose, I propose a Redistributive Pressure Index (hereafter, RPI) that reflects the intensity of the explicit pressure.

Like any index, RPI summarizes a complex and bi-dimensional object by a single number. The main objective of such an approach is to help both researchers and

decision-makers be more effective in designing and implementing public policies.¹⁹ RPI includes both the two dimensions of *explicit* redistributive pressure, i.e., the degree of coercion C_i and its incidence on income G_i . These two indicators are intrinsically related and are not mutually exclusive. Therefore, RPI is defined as a simple arithmetic sum of the two indicators to which I assign a weight (θ) given by

$$RPI_{it} = \theta C_{it}^{\theta} + (1 - \theta) G_{it}, \quad RPI_{it} \in]0, 1[\quad (1.3)$$

From a purely economic point of view, what matters most is how the agent allocated his income concerning the coercive solicitations received. Therefore, I give more weight to the tax rate G . Both indicators $C = c$ and $G = g$ are continuous variables belonging to R_+ , where c and g represent the values they take. The RPI is designed to maintain the same distribution of agents as given by g . Thus, the addition of c will make it possible to distinguish two agents with the same value of g .²⁰ An illustration is provide in Figure 1.5. Finally, I normalize the distribution of RPI using the following formula:

$$I_i = \frac{X_i - X_{min}}{X_{max} - X_{min}} \quad (1.4)$$

where I_i is the transformed value of the RPI; X_i is the actual value; X_{max} and X_{min} are the maximum and minimum values of the index, respectively.

RPI is thus a dimensionless number and easier to interpret. A value of 0 indicates no pressure, and a value of 1 denotes the maximum intensity pressure

¹⁹This index may be a valuable tool from a policy intervention perspective. Suppose redistributive pressure is more intense among the poor, the policy implication is to improve minimum social safety nets; Suppose redistributive pressure is more intense among the better-off agents, the policy implication is to adjust government taxation.

²⁰To do this, I bounded the distribution of c by θ , i.e., $c \in]0; \theta]$. The new values of c are infinitely small, close to the theta value, without modifying the agents' distribution according to the values of c . Indeed, $\lim_{c \rightarrow 1} \theta c^{\theta} = \theta$, and $\lim_{c \rightarrow 0} \theta c^{\theta} = 0$. Based on the results obtained from the limits, the values of c lie between zero and θ . Then, these values will approach zero if and only if θ tends to zero. θ could be set to any very small value close to zero. For this purpose, θ is given by the standard error of mean following this formula: $\frac{\sigma(g)}{\sqrt{N}}$, where σ is the standard error of the tax rate in the sample, and N is the sample size. This gives a distribution of c values that is always close to zero because $\sigma(g) \in]0; 1[$. Therefore, $RPI \in [0, 1[$ because in practice no agent transfers all of its income, i.e., $g \ll 1$.

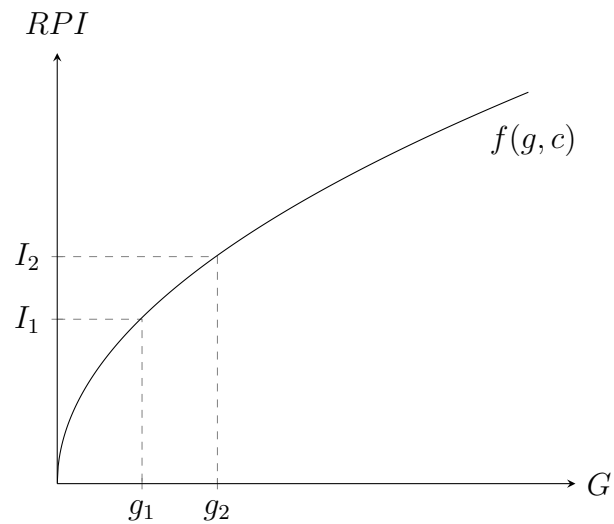


Figure 1.5: Designing the Redistributive Pressure Index

Source: Author.

level. RPI is a robust index that covers the most relevant aspects of the phenomenon it describes, namely coercive solicitations, forced transfers, and income at the agent level. For comparative purposes, given its structure, it can be easily replicated at a more aggregated level, i.e., at the community, ethnic group, region, or country level. Besides, the RPI can be, for instance, associated with the social gradient. This association would indeed help to invalidate or confirm the subjective hypothesis that people put pressure on those relatively well-off. For example, suppose it is found that the intensity of pressure is higher among unskilled workers and other lower classes than among middle and upper-class managers. In that case, it could confirm that redistributive pressure is not only a matter of redistribution from the rich to the poor.

A numerical example. Consider a society composed of five agents denote by A_i , for all $i = 1, \dots, 5$. These agents are relatively prosperous individuals from their respective community-based networks. They are all under pressure, i.e., they receive coercive solicitations that induce a redistribution of a part of their income. Each agent under pressure i is described by a degree of coercion c and tax rate g .

To apply the formula in equation (1.3), I need a measure of both c and g . This data are not available, so I have to make trade-offs and present a numerical example

using imputed data. Fictitious data summarized in Table 1.3 were generated with STATA. To illustrate the indicator’s relevance and robustness, I simulated the different parameters on a data set of from 10 to 10000 observations (see Figure A-1.1 in the Appendix). I retrieved five observations for the purposes of the illustration. The code is available in the Appendix A.2. Table 1.3 summarizes the distribution of parameters necessary to construct the index for redistributive pressure analysis in this society. As a matter of fact, the ranking of agents according to their degree of coercion or informal tax rates gives two different distributions. It is obvious that ranking these agents according to a single criterion does not provide a global understanding of the phenomenon. However, using the RPI to rank these agents from maximum to minimum intensity level of pressure, I obtain the following distribution: $A_3 \succ A_2 \succ A_5 \succ A_1 \succ A_4$.

Table 1.3: The Redistributive Pressure Index’s parameters

i	N_τ^c	N_τ	c	τ^c	R	g	RPI
1	6	10	0.6	132	391	0.338	0.375
2	9	16	0.562	283	557	0.508	0.535
3	5	11	0.454	224	355	0.631	0.650
4	6	10	0.6	90	287	0.314	0.353
5	1	9	0.111	128	349	0.366	0.397

Source: Author.

1.6 Concluding remarks, discussion, and directions for future research

This chapter has examined the issue of redistributive pressure to advance the understanding of economic research on this somewhat elusive concept. It has reviewed and synthesized the empirical literature analyzing its effects on a wide range of economic outcomes. It also proposes a conceptual framework for gaining a clearer picture of this phenomenon and reconciling its effects. This rapid development of the empirical literature on this topic is a real boon. It was time that the contours of this phenomenon were well defined to evaluate its effects in-

depth for a better understanding of agents' behavior and the household's inner workings. Moreover, the examination of this phenomenon argues for its inclusion in future economic analyses of agents. This will enrich academic knowledge on the perverse effects of the various coping mechanisms of agents in risky environments, particularly in sub-Saharan Africa.

To date, the body of empirical studies has sought to answer whether redistributive pressure impacts some economic outcomes and agents' behavior. While that are important questions, it is difficult to reconcile all results because of work environments—many studies use RCTs—, and measurement issues—as empirical studies use several “problematic” proxies of redistributive pressure. This chapter addresses the lack of objective measurement of redistributive pressure in the existing literature by introducing new measurement tools to detect and measure it at any level and in any context, taking into account its intensity as well at an individual level but can be easily extrapolated to more aggregated levels (e.g., households, villages, city and country). For this purpose, it also provides new data collection insights to test and eventually improve the proposed index. Moreover, these new measurement tools offer means that will allow a more refined analysis of the effects of redistributive pressure and the evaluation of development policies. For instance, understanding the overall effects of redistributive pressure would help assess the impact and magnitudes of introducing large-scale risk-management products and public redistribution in economies where it prevails.

I conclude with some general suggestions for further research. To date, social pressure to redistribute sounds exclusive as having disincentives effects. Such effects have been found in areas as diverse as education, consumption timing and decisions, productive investment in small and medium enterprises, effort and productivity in the workplace, migration, social interactions, and savings behaviors. From my point of view, it is time to re-evaluate its effects for three main reasons. First, as shown in this essay, empirical research faces measurement challenges. This literature is plagued by endogeneity problems, which cast doubt

on the strength of the results. Second, an agent who faces pressure exclusively from his friends will not necessarily behave the same way as an agent who faces pressure from his kinship network. It is necessary to disentangle these effects in future research. Third, an agent who must redistribute a fixed amount of income will not behave in the same way as an agent who must redistribute a fixed proportion of income. Indeed, if we consider the misperception of agents' status, some face increasing solidarity obligations that can be assimilated to a fixed share of income. Finally, another line of research is to address the issue of well-being in the analysis of redistributive pressure. One relevant issue is to assess how agents facing financial solidarity obligations cope with that over time. Indeed, one question that remains largely unanswered is the consequence of the redistributive pressure on individual and social welfare. To the best of my knowledge, only one study has highlighted the positive effect of redistributive pressure on education to date. Wantchekon, Klašnja, & Novta (2015) show that in Benin, having uncles and aunts educated remarkably improves the educational outcomes of nephews and nieces—they term it the *extended family tax on education*.

Appendix

A Redistributive Pressure Index

A.1 Graphical illustration

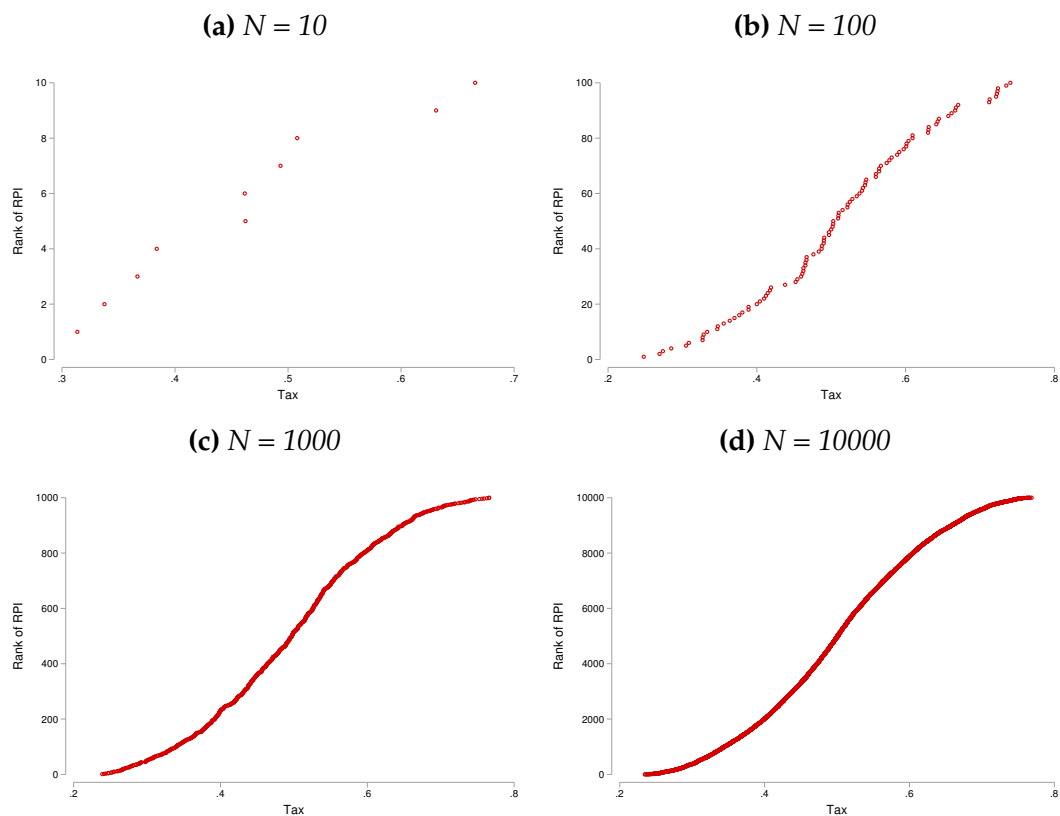


Figure A-1.1: RPI's rank following the tax rate distribution

Notes: This figure shows the ranking of agents according to the intensity of the redistributive pressure (I) they experience relative to their tax level (g). The Stata code used for this figure is provided below in Appendix A.2.

Source: Author.

Table A.2

A.2 Stata code

```
set scheme cleanplots
clear
set obs 10 //Change the number of observations
set seed 32759383

gen Nc = runiformint(1, 10) // Total # of forced transfers
gen Nt = Nc + runiformint(1,10) //Total # of transfers
gen c = Nc/Nt // Degree of coercion

gen tc = runiformint(90, 300) // Amount of forced transfer
gen r = tc + runiformint(90, 300) //Income
gen g = tc/r // Tax rate

local theta = r(sd)/sqrt(r(N)) //Standard error of means
dis `theta'

gen RPI = `theta'*c^`theta'+(1-`theta')*g
egen rank = rank(RPI) // Agents rank following RPI values
sort g c

tway (scatter rank g), ytitle("Rank of RPI") ///
xlabel(,nogrid) ylabel(,nogrid) xtitle("Tax")

sample 5, count //Draw a random sample of 5 obs.
```

Chapter 2

Under Pressure: Assessing the Cost of Forced Solidarity in Côte d'Ivoire

Contents

2.1	Introduction	54
2.2	Conceptual framework: informal taxation	56
2.3	Contextualization: Forced mutual help in Côte d'Ivoire	58
2.3.1	Background	58
2.3.2	Social sharing norms in Côte d'Ivoire	59
2.3.3	Qualitative evidence of forced solidarity in Côte d'Ivoire	60
2.4	Descriptive analysis: measuring redistributive pressure	62
2.4.1	Data	62
2.4.2	Who are under pressure?	63
2.4.3	Summarizing the data	68
2.4.4	How much does it cost to satisfy forced solidarity?	69
2.5	Correlates of being the under pressure to share	76
2.5.1	Econometric model	76
2.5.2	Regression results	77
2.6	Summary and concluding remarks	81
	Appendix	83

“One of my colleagues has found the right trick. At the end of each month, [...] he sets aside a certain amount from his wages and then, it is “first come, first served”. He helps the first person to call him and so on until there is nothing left of that amount. The last ones will wait until the end of the following month.”

—Young worker, Abidjan, 31 years old

2.1 Introduction

For many African households, sharing a part of their resources is not a choice. It is an obligation. In sub-Saharan societies, where giving rather than owning is valued, sharing or redistributive norms urge prosperous individuals to share the fruits of their economic success with their relatives (see e.g., Bernard et al., 2010; Lewis, 1955; Mahieu, 1989a; Platteau, 2000). This obligation to share refers to forced solidarity when it is accompanied by severe sanctions for those who want to shirk it.¹ Moreover, there is considerable evidence that such pressure distorts productive decisions, namely effort (Hadnes et al., 2013), investment (Grimm et al., 2017), and savings (Di Falco & Bulte, 2011; Dupas & Robinson, 2013), which can be a significant barrier to economic growth and development.

A substantial body of the literature in economics focuses on households strategies to avoid redistribution induced by forced solidarity.² Baland et al. (2011) find that some Cameroonian households resort to excessive borrowing as a signal for poverty in order to avoid requests from relatives. Di Falco & Bulte (2011) show that some Black households in South Africa try to evade their sharing obligations by accumulating durables that are non-sharable and reducing savings in liquid assets. From a field experiment in rural Malawi, Goldberg (2017) presents evidence of redistributive pressure on the timing of consumption. She runs public and private lotteries and finds that winners of public lotteries who anticipate possible taxation from their relatives are more likely to spend faster than those who receive equivalent transfers in private settings. Other field experiments find that participants facing strong sharing obligations are willing to forgo some of their gains in public to avoid redistribution (see Beekman, Gatto, & Nillesen, 2015, for Liberia, Jakiela & Ozier, 2016, for Kenya, and Boltz, Marazyan, & Villar, 2019, for Senegal). However, little

¹There are harsh sanctions such as stigma, social ostracism, including physical harm from witchcraft for the ‘deviants’ (see Platteau, 2000, p.201–206).

²In this chapter, I use the terms “forced solidarity” and “redistributive pressure” interchangeably.

is known about the households that cannot escape forced solidarity. The most elementary questions are still unanswered. How many households face pressure to share in a given country? How much does it cost to satisfy it? Which income class pays the most taxes? What are the correlates of complying with strong sharing norms? The answers to these questions are prerequisites for any in-depth studies of this phenomenon's effects and public policy recommendations.

In this chapter, I combine a nationally representative household data from Côte d'Ivoire with a qualitative survey I conducted in the country to attempt to answer these fundamental questions.³ I propose a conceptual framework for studying *explicit* redistributive pressure in which a household receives and agrees to meet requests for financial support from its networks without the choice of saying *no*.⁴ I refer to *households under pressure* as households in such a situation. To identify them, I use a unique and original module on the households' ability to reduce or suppress their financial support to cope with the bad economic situation. I define a *household under pressure* as one that provides financial support but cannot reduce or suppress it even in the case of economic hardship. Finally, I analyze the correlates of complying with strong sharing norms—being *under pressure*—through an econometric approach.

The main results can be summarized as follows. First, I find that one in five Ivorian households is under pressure to share. These households are net transfer donors (88%). Second, I evaluate for households under pressure the redistribution cost labeled the “social tax”. It corresponds to the budget share devoted to meet the requests for financial support from kin and kith. The average social tax represents 10% of households monthly expenditure and 17% of their monthly income. Third, according to the different measures of household living standards, the social tax rate is roughly constant, like a flat tax, for the middle and wealthy classes. Conversely, the poorest households exhibit higher tax rates. This finding contrasts with the widely held view that forced solidarity is a redistribution from the rich to the poor. Fourth, the econometric results show that religious beliefs, age, income, and mobile phone-owning are strong predictors of being under pressure to

³I adopt a mixed approach since it has the advantage of providing a better understanding of fairly complex social phenomena (Creswell & Creswell, 2017; Rossman & Wilson, 1985).

⁴Informal transfers can be motivated by various reasons (see Cox & Fafchamps (2007) for a survey). Here, it is assumed that informal transfers in this framework are realized under coercion, i.e., solidarity obligations.

share in rural areas. In addition, education, occupational status and marital status are the most important predictors in urban areas. Overall, the results are strongly driven by male-headed households, all else equal. This implies that female-headed households are more able to resist such pressure, in line with the recent literature (see e.g., Boltz et al., 2019).

This chapter presents a robust evidence on the extent of forced solidarity at the country level from a representative sample and fills the related literature gap in two ways. First, while the empirical literature provides numerous examples of its disincentive effects, many of these studies are either experimental or involve unrepresentative samples (see e.g., Carranza et al., 2018; Di falco et al., 2018; Dupas et al., 2019). Second, this literature mainly refers to inter-household transfers without distinguishing financial support—which most often responds to prior requests—from other transfers (see e.g., Fafchamps, McKenzie, Quinn, & Woodruff, 2014; Grimm et al., 2017). Therefore, it become problematic to disentangle coercion from other voluntary motives (e.g., altruism) and confidently assess its effects. Against this background, this chapter makes a methodological contribution that partially overcomes this difficulty by proposing a novel measure of the pressure to share.

The remainder of the chapter is structured as follows. Section 2.2 illustrates the conceptual framework of informal taxation. Section 2.3 provides relevant background on sharing norms in Côte d'Ivoire and the results of a qualitative survey. After presenting the household data, Section 2.4 deals with the descriptive analysis, i.e., identifying households under pressure, the evaluation and distribution of the social tax. Section 2.5 outlines the econometric approach and the main findings while Section 2.6 concludes.

2.2 Conceptual framework: informal taxation

In this section, I discuss how redistributive pressure works and how to target informal taxation.

In sub-Saharan Africa, customs, social and traditional sharing norms support moral obligations toward redistribution. This allows network members—especially extended family and friends—to seek financial support from relatively successful members in order to circumvent the inefficiency of financial services, the lack of public redistribution, and

pervasive shocks (Coate & Ravallion, 1993; Cox & Fafchamps, 2007). On the one hand, to some extent, informal transfers can be assimilated with involuntary givings made under some degree of coercion (Platteau, 2014). If potential donors are solicited for financial support, they cannot decline because a refusal can be severely sanctioned. Sanctions for those who shirk obligations include economic retaliation, stigmatization and social ostracism (Beekman et al., 2015; Hoff & Sen, 2006; Mahieu, 1989b). On the other hand, in many traditionally egalitarian societies, individual success is believed to stem from luck. Hence, redistribution towards the unlucky is strongly encouraged (Barr & Stein, 2008; Platteau, 2000). The internalization of said sharing norms prompts those who are relatively wealthy to provide financial supports to community members.

The two situations above illustrate how the forced solidarity mechanism works. In such cases, economists largely agree to consider income sharing as a tax. It is referred to as a community tax (Koulibaly, 1997; Mahieu, 1989a), or a informal redistributive tax (Platteau, 2000) which would act as a money grab. In this chapter, I will use the concept of “social tax” to encompass the sharing of resources, due to redistributive pressure, with friends and extended family members living outside the household.

The money requests that generate redistributive pressure on a household budget come in *implicit* and *explicit* ways. Implicit redistributive pressure corresponds to tacit expectations or anticipations of future demands for financial support resulting from the prevalence of strong sharing norms. Explicit redistributive pressure corresponds to direct requests for financial support from network members. A household has roughly two responses to the redistributive pressures: either it avoids redistribution, or it gets taxed. Here, because of the severe consequences of declining the solicitations, I assume that it cannot avoid redistribution for two main reasons: (i) the escape strategies are more costly than redistribution, and (ii) unemployment is an extreme and unlikely decision.

The informal taxation is derived from the explicit redistributive pressure framework as follows. Households live in an environment suitable for the emanation of informal transfer requests. There is indeed a failure of the credit and insurance markets, and a low level of public redistribution. Besides, non-market institutions such as sharing norms allow needy relatives to seek financial assistance from relatively successful network members to fix their current financial problems. Relatively better-off households receive and agree

to meet requests for financial support from their networks without the choice of saying *no* because of harsh social sanctions. These households cannot escape forced solidarity and are considered “under pressure.” The financial support they provide to requesters is characterized as involuntary giving. Therefore, the share of these transfers in their resources corresponds to the social tax.

2.3 Contextualization: Forced mutual help in Côte d'Ivoire

2.3.1 Background

Known as the world's largest producer of cocoa and cashew nuts and an oil exporter, Côte d'Ivoire has experienced record economic growth rates of around 7% in recent years, but remains vulnerable to external shocks such as the price volatility of agricultural products to climate change (World Bank, 2018). Côte d'Ivoire is a lower-middle-income country and ranks 165th out of 189 countries according to the Human Development Index in 2019.⁵

The level of public spending on social protection remains very low. Some authors point to the Ivorian state's inability to enhance the safety net systems since the Structural Adjustment Programs (see e.g., Akindès, 2001; Barrientos & Lloyd-Sherlock, 2002). Annual social expenditure as a percentage of GDP range from 1.9% in 2011 to 0.01% in 2016, ranking the country 23rd out of 34 countries in sub-Saharan Africa. Banerjee & Duflo (2007) show that no form of formal social protection covers workers absent from the formal sector in Côte d'Ivoire. Moreover, between 2002 and 2011 Côte d'Ivoire experienced a major political and military crisis that exacerbated the country's structural problems. Since the recovery of economic growth in 2012, the state's priorities have shifted away from social spending.

Due to this lack of public social safety net, a large part of the population have to use their networks to insure themselves against covariant and idiosyncratic shocks. For the period 1988-2015, on average, 74% of households reported their involvement in informal transfers (see Figure 2.1). Informal transfers play a major role as an informal redistribution. They are widespread in the country and are the main way to overcome institutional failures. I

⁵Available online at <http://hdr.undp.org/en/content/2019-human-development-index-ranking> (last consultation on 07/07/2020).

argue that this situation contributes to the emergence or intensification of the redistributive pressure that hangs over some households.

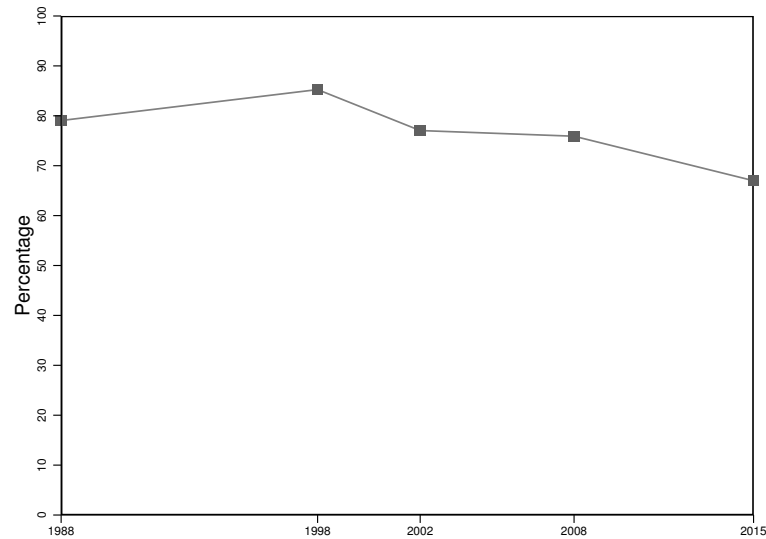


Figure 2.1: Informal redistribution in Côte d'Ivoire

Notes: This figure displays the percentage of households reporting at least one informal transfer sent to relatives living outside the household by survey year.

Source: Author, using Household Living Standard Survey (1988-2015).

2.3.2 Social sharing norms in Côte d'Ivoire

Calvès & Marcoux (2007) point out that solidarity expresses itself through duty and moral obligation, providing a crucial informal safety net for households in sub-Saharan Africa in the absence of public redistribution. Social relations in Côte d'Ivoire are presented in the literature as bonds of solidarity, embedded in a logic of “rights and obligations” (see e.g., Adjamagbo, 1997; Mahieu, 1989b). Aye, Champagne, & Contandriopoulos (2002) argue that solidarity arrangements among Ivorian households are one of the key components preserving the cohesion of society in the country. It takes several forms, such as financial or moral assistance, the hosting of a relative or a migrant, and child fostering.

Mahieu (1993) states that Ivorian household networks are deeply rooted in the community. This community—which may be based on blood, ethnic, adoptive, political, professional, or religious affiliation—establishes a system of rights and obligations that bind all members. Sanctions used to enforce the informal sharing rules are related to witchcraft accusations or retaliation, social ostracism, and non-economic assistance that

grip individuals who wish to circumvent social sharing norms in a state of persistent fear.⁶ Within these solidarity arrangements, one of the most striking features is the obligation to share income or to transfer goods and services or working time to rights holders (Odounfa, 1991).⁷ These obligations depend on the social status of the individual, including his/her employment status, birth rank and gender (male or female and first-born child, etc.), age, or role in the community (*griot*, wise, elder, mediator, etc.). This imbalanced situation can lead to inefficiency when some generations have more obligations than rights, as stressed by Baland, Bonjean, Guirkinger, & Ziparo (2016) in Cameroon.

2.3.3 Qualitative evidence of forced solidarity in Côte d'Ivoire

In light of social sciences studies on solidarity arrangements and the limited amount of papers about redistributive pressure in Côte d'Ivoire, I carried out a qualitative survey to emphasize how such pressure manifests in households' daily lives. Without laying claim to any statistical representativeness, this survey aimed to understand the outlines of redistributive pressure in order to identify the households with strong sharing obligations and empirically characterize them from the household survey data. I also want to grasp the extent to which financial support can be induced by sharing norms with a particular focus on the decision-making process of realizing such transfers.

Between August and September 2018, I collected information from 28 individuals about social and economic relations with their network members in five Ivorian cities. I use a semi-structured open interview approach. Besides, and most importantly, the number of interviews reached information saturation, with no new insights emerging from the interviews at this stage. The survey focused on the flow of transfers between respondents and their network members.⁸

⁶MacLean (2010) shows how witchcraft is used as a sanction mechanism for violating norms to enforce informal sharing rules. She summarizes this when she writes: "One sanction that was cited by villagers as occurring more frequently in the recent past was the use of witchcraft to punish a young nephew or niece who had succeeded but not helped his or her extended family member with needed financial support."

⁷In this logic of rights and obligations, rights holders ("*ayant-droits*") are younger generations—in the extended family system, for instance, they referred to young cousins, nieces, nephews—who can solicit any kind of support from older generations—i.e., uncles/aunts and grand-parents.

⁸Through the relationships and the history of money transfer flows between respondents and members of their networks, I was mainly trying to get answers to the following questions: How does the decision to give financial support occur? What is the nature of these transfers (i.e., loans, exchanges, or one-sided giving)? What is the relationship with the individuals requesting transfers? Why could some requests not be declined? Table A-2.1 in the Appendix presents some

In general, as stressed by the respondents, income sharing takes place after solicitations. Here I provide an illustrative anecdote:

“You are asked for money because their children have to go back to school or are sick; they need emergency aid. [...] When you know their problems, you feel emotionally obliged to help them. Then, they always ask for more, and you fall into bondage where you do not stop giving them your money.” (A retired woman, 57 years).

The motives given by the requesters tend to exert a form of coercion and seem to increase the potential donor's internal pressure to share.

“It's very difficult to tell them no [...], to the point where you feel like if helping them does not take precedence over some of your non-urgent expenditure, any misfortune that would befall them will haunt you for the rest of your life. [...] It's like manipulation.”
(A working woman, 53 years old)

These quotes highlight the sensitivity of the solicitations and the high costs the potential donor has to bear. The solicitations operate through a psychological channel such as emotions. The emergency of the requester's problem requires all the attention of the potential donor. The latter thus finds itself at an impasse. The least costly option is to redistribute part of the resource for at least two main reasons. First, a refusal can lead to harsh social sanctions. Second, if he/she succeeds in avoiding redistribution and misfortune befalls the requester, there is a psychological cost (feeling of shame or guilt).

A conclusion drawn from the field survey is that solidarity arrangements through financial support are deeply ingrained in Ivorian society. This preponderance of financial assistance in Ivorians' daily lives confers a prime position in their spending patterns. However, some network members take advantage of this system or use informal mechanisms to force potential donors to give, or to give more. Some respondents raised the issue of moral hazard they were experiencing. They believe that some of the solicitations they receive are often pretexts to “extort” money from them.

socio-demographic characteristics of the respondents.

2.4 Descriptive analysis: measuring redistributive pressure

In this section, I introduce the data and present a novel measure of the pressure to share. I provide the procedure used to identify households that cannot escaped forced solidarity. I then assess the social tax and analyze its distribution using different measures of household living standards. I also discuss the prevalence of forced solidarity across the regions and highlighted similarities and differences of household behaviors regarding the pressure to share and poverty.

2.4.1 Data

The analysis uses data from the Côte d'Ivoire Household Living Standards Survey 2015 (HLSS) collected by the *Institut National de la Statistique* (the National Statistical Office, INS) with support from the World Bank, between February and March 2015. The HLSS is a nationally representative survey of 12,899 rural and urban households in all 33 regions. The availability and quality of data from Côte d'Ivoire have attracted many empirical studies (see e.g., Banerjee & Duflo, 2007; Bargain, Donni, & Kwenda, 2014; Deaton, 1989b).

The survey provides information on households' socio-economic characteristics, covering topics such as sources of income, expenditure, health, education level, employment status, ethnicity, and household coping strategies to deal with the economic situation. This survey is suitable for studying redistributive pressure for two main reasons. First, the survey indicates financial support sent to kin and friends outside the household. Second, the survey includes a unique and original module on household strategies to cope with the economic situation that provides information on households' ability to remove or reduce such financial support.

For the purpose of this chapter, I drop households with no food expenditure and those with zero income—where income is defined to include transfers *in*. This trimming procedure yields a sample of 11,049 households.

2.4.2 Who are under pressure?

Within the conceptual framework, a household that receives and agrees to meet requests for financial support from their networks without the choice of saying *no* because of sanctions is *under pressure*. In the absence of such direct information, I use a strategy to elicit households facing sharing obligations from an original survey module described below. I then provide the selection procedure and the induced definition of “household under pressure.”

Transfer variable: the financial support

In this chapter, I retain a unitary model where household financial support sent to networks is made by at least one of the spouses. This is motivated by the fact that either the household head or both spouses make more than 80% of decisions on household expenditures in the data. While I do not ignore budget separation between spouses that could occur within the household, the survey questionnaire presents some structural limitations as it tends to aggregate many resources at the household level.

Table 2.1 reports the survey questions used to identify households that provide financial support and calculate the amount of transfers *out*. I create a dummy variable that takes a value of 1 if at least one spouse reports one of the selected items [1 - 2 - 3 - 4]. I exclude remittances to spouses [5] and other items [6 - 7 - 8]. These are part of informal mutual insurance mechanisms.⁹ For example, in the event of a death, each household in the community/village contributes to the bereaved family is mutually supported financially when the same happens to them. These transfers are also part of participation in rotating savings and loan associations or are made to finance development projects in the contributor’s locality of origin (see e.g., Grimard, 1997; Woods, 1994).

Households coping strategies survey module

Côte d’Ivoire has experienced political and economic crises that began with an armed conflict in September 2002 and ended in April 2011 with a post-election crisis in the aftermath of the October 2010 presidential elections. This decade of crises has had severe consequences for the economy, leading to the deterioration of households’ living conditions. The consequences include a decline in their ability to meet regular and

⁹See e.g., Dercon et al. (2006) for operating mechanisms of this type of informal insurance.

Table 2.1: The components of the transfer variable

Survey questions: What is the amount (CFA) of:

Transfers made to social and kinship networks

1. financial support in cash sent to kin and other people?
 2. the value of food items sent to kin and other people ?
 3. the value of non-food (education, health or other) sent to kin and other people?
 4. aid and support not yet mentioned?
 5. remittances to spouses living elsewhere?
 6. expenses for weddings and baptisms?
 7. funerals or other ceremonies?
 8. contributions in various associations?
-

Source: Côte d'Ivoire Household Living Standard Survey (2015)

necessary expenses, such as housing, children's education, health care, or investment in income-generating activities (Institut National de la Statistique, 2015, p. 75). As such, GDP per capita dropped by 30% between 1980 and 2013 (OECD, 2016, p. 40). Besides, the economy contracted by 4.7% at the end of the post-election crisis (Christiaensen & Premand, 2017).

To elicit households facing strong sharing obligations, I use a survey module that captures the households current strategies to deal with the economic situation—the tough economic recovery caused by the decade of crises of the 2000s. The module records fifteen strategies, framed as questions, in response to the following exact survey question: (1) *What are you doing to get out of the current economic situation?* Respondents are then asked to answer yes/no only if they implement such a strategy.¹⁰ I focus on the strategies that highlight a household's constraints concerning its social and kinship networks in terms of freedom or compliance with sharing norms as follows. First, I select households that answer "no" to one of the following exact survey questions: (1.a) *by reducing financial support to kin?*; (1.b) *by suppressing financial support to friends?* Second, I select households that reported economic hardship, those that answer "yes" to this exact survey question: (2) *Do you have difficulty coping with the economic situation?* This question captures whether the household is currently struggling to cope with the economic situation. Finally, I combine the above set of questions with information about whether they provide financial support to kin and kith in a step-wise approach, described below, to identify households under pressure.

¹⁰The survey records "not applicable" for respondents who are not concerned by a strategy.

2.4.2.1 Identifying households under pressure

Selection procedure: A step-wise approach

To identify households under pressure, I implemented a selection procedure using a step-wise approach summarized in Figure 2.2. In the first step (I), I restrict the whole sample to households that report providing financial support to kin and friends—items [1 - 2 - 3 - 4] reported in Table 2.1. This represents about half of Ivorian households (49%).

In the second step (II), among the latter, I keep those who report that they cannot reduce financial support to kin or suppress financial support to friends to deal with the tough economic recovery (question 1.a and 1.b). More than half (56%) are in situations where they have no flexibility regarding their transfer expenditure.

In the final step (III), I keep only those that also report economic hardship (76%). Therefore, I can identify 2,332 households under pressure to share their resources with their network members, representing 21% of the whole sample.

To check whether reporting economic hardship is not only the concern of poor households and the ability to reduce (remove) financial support that of wealthy households, I examine the distribution of responses to the above questions according to their position in the distribution of living standards in Figure A-2.1 in the Appendix. The percentage of households that meet these conditions are roughly evenly distributed across the income, expenditure and wealth deciles. This observation has two implications. First, the correlation between questions (1.a) and (1.b) indicates that households face binding demands from both kin and friends regardless of their income class. Second, the decade of crises acted as a covariant shock with heterogeneous effects on households. Recall that economic hardship indicates whether the household struggles to cope with the tough economic recovery induced by the decade of crises. Thus, question (2) captures, for some households, one-time problems in meeting their usual and necessary expenses, and for others, long-term difficulties that hinder their income prospects. This explains the constant share of households reporting economic hardship regardless of their position in the living standards distribution in Figure A-2.1 in the Appendix.

Defining household under pressure

According to the selection procedure, I define a *household under pressure* as one that provides

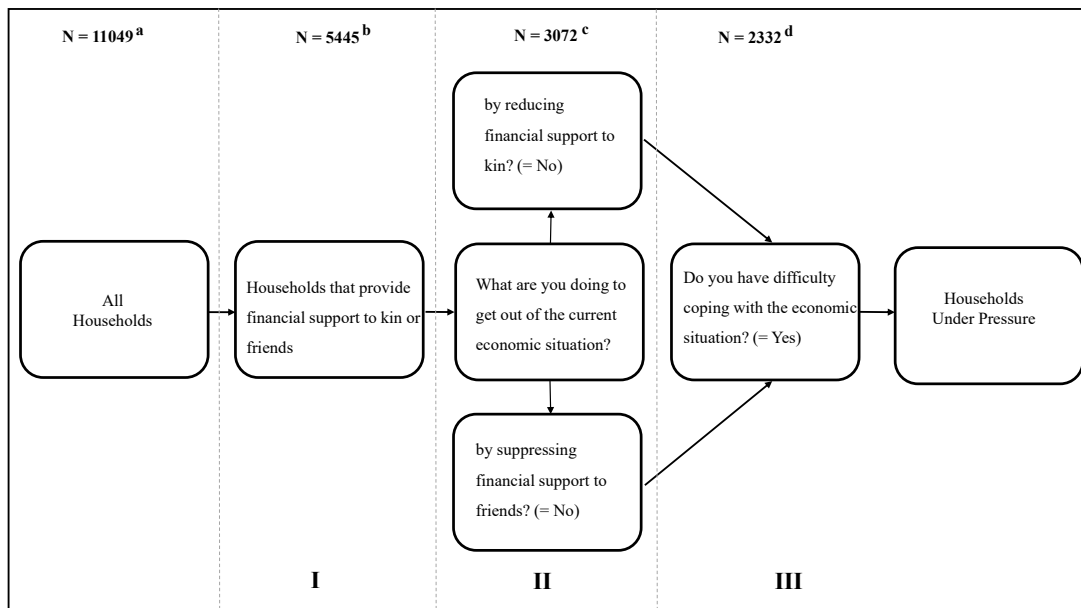


Figure 2.2: Identifying households under pressure

Notes: This figure shows how to identify households under pressure using the step-wise approach. In step **I**, I restrict the sample to households that report providing financial support to kin or friends. In step **II**, I keep the households that fulfill at least one of the following two conditions: they cannot reduce financial support to kin or suppress financial support to friends as strategies to deal with the bad economic situation. In step **III**, among this latter, I keep only those that also report economic hardship. This selection leads to the final sample of households under pressure. **a** 11049 corresponds to the total number of households. **b**. 5445 is the total number of households providing financial support to kin and friends. **c**. 3072 represents the total number of households that provide financial support to kin (friends) and cannot reduce (suppress) it as strategies to deal with the bad economic situation. **d**. 2332 represents the total number of households “under pressure” to share, i.e., those from **c**—step **II**—that also report economic hardship. In sum, I define a household *under pressure* as one that provides financial support to kin or friends but cannot reduce or suppress it even in the case of economic hardship.

financial support but cannot reduce or suppress it even in the case of economic hardship.¹¹ The implicit assumption is that if the household has no sharing obligations, it can reduce or suppress the financial support it provides to its relatives as a strategy for coping with bad economic times, especially when they are struggling to get by.¹²

Note that in step (II), the selection procedure captures all households that to some extent face some sharing obligations. Restricting the selection procedure to this step implies that a *household under pressure* will be defined as one that provides financial support but cannot reduce or remove it. This alternative definition has some limitations. It could indeed include households that redistribute with voluntary motives (e.g., altruism). For this

¹¹I then create a dummy variable (UP) indicating whether a household is under pressure based on this definition.

¹²This “strict” definition will be used throughout the document in reference to “household under pressure.”

reason, I add the condition of “reporting economic hardship” to distinguish coercion—solidarity obligations—from other motives. However, in the rest of the chapter, I check whether the results are sensitive to this alternative definition.

2.4.2.2 Prevalence of Redistributive Pressure by Regions

Is redistributive pressure a national or region-specific issue? Panel B in Figure 2.3 shows the geographic distribution of the “pressure rate” given by the fraction of the households under pressure in each region. In Panel A, I also plot the geographic distribution of the urbanization rate to explore whether the intensity of economic activities drives the pressure rate distribution. One striking observation is that redistributive pressure concerns all regions. The East, South-West, North-West, and Center areas with the highest pressure rates are not the most urbanized. One in three households is under pressure in these areas against one in five in other regions. This finding shows that redistributive pressure in Côte d’Ivoire is a national issue and not specific to a particular region or ethnic group.

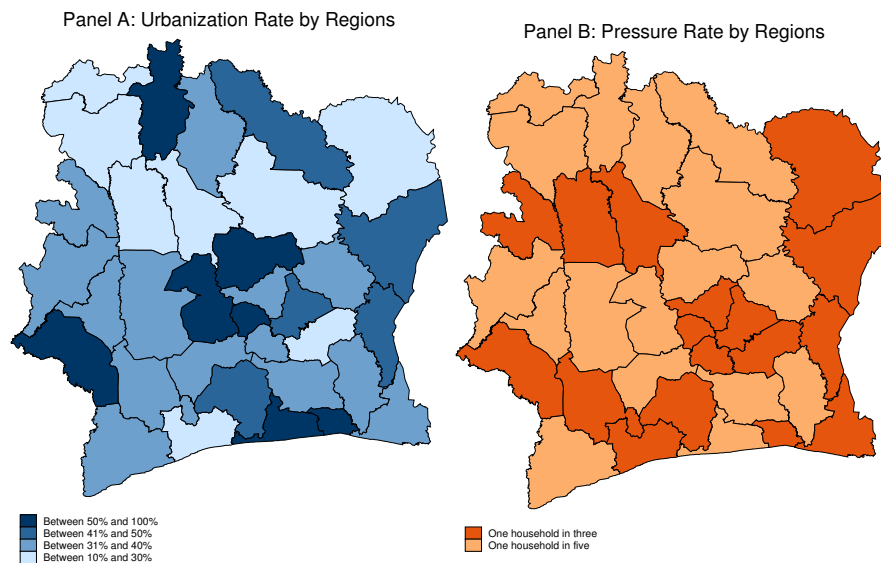


Figure 2.3: Geographical distribution of households under pressure in Côte d’Ivoire

2.4.3 Summarizing the data

Table 2.2 contains summary statistics across household types, i.e., under pressure *vs* no pressure.¹³ There is a clear difference between households under pressure and those facing no pressure. The percentage of households with married couples—religious or traditional marriage, completed primary education, and working spouses is much larger for those under pressure than the others. Households under pressure are also more likely to come from the Akan ethnicity (major ethnic group), have a higher proportion of children, and tend to have larger households. Conversely, they are less likely to be headed by females, live in urban areas, and the proportion of kin and adults who belong to the household does not vary across the two sub-samples.¹⁴

Table 2.3 shows the extent of financial support in Côte d'Ivoire. Following the conceptual framework of informal taxation (see Section 2.2), households under pressure are 100% donors. They spend a higher amount (CFA 12,780) on financial support than those who face no pressure (CFA 4,780), on average. They are principally net transfer donors (88.38%) and receive less on average (CFA 4,050) than the others (only CFA 6,720). This may be due to measurement error. Respondents under-report transfers received as recall biases are usually greater for transfers received than for transfers sent (as discussed in Baland et al., 2016). The idea that relatively successful individuals receive direct requests from their network members to share a part of their income leads to consideration of different measures of living standards: household total income, expenditure, and wealth.¹⁵ Households under pressure are substantially wealthier in terms of expenditure, income, and wealth than others. One might think that the sample of under pressure households is mainly composed of wealthier households. Yet, this is not the case here, since the gap between percentages of households under pressure in the richest and poorest income and expenditure deciles is not very high. Moreover, this gap closes when the household wealth index is considered as a measure of living standards (see Figure A-2.1 in the Appendix).

¹³The term “no pressure” refers to households that do not make transfers or do so for reasons other than the forced solidarity hypothesis.

¹⁴In the survey, an extended family member is recorded as a member of the household if he (she) usually lives in the dwelling and takes regular meals with the nuclear family.

¹⁵Section 2.6 in the Appendix provides details on the construction of total income, expenditure, and wealth index variables.

Table 2.2: Descriptive statistics—demographics and occupation

	All Households		Under Pressure (U)		No Pressure (N)		<i>t</i> test (N) - (U)
	Mean	SD	Mean	SD	Mean	SD	p-value
Head's characteristics (%):							
Age	41.05	14.47	41.13	12.70	41.02	14.91	0.729
Has at least primary school degree	42.16	49.38	46.87	49.91	40.90	49.17	0.000
Head has a formal job	2.43	15.38	3.13	17.42	2.24	14.79	0.023
Head has an informal job	64.67	47.80	70.41	45.65	63.13	48.25	0.000
Head is civil servant	5.95	23.65	7.76	26.76	5.46	22.72	0.000
Head is inactive or unemployed	26.96	44.38	18.70	39.00	29.17	45.46	0.000
Female head	19.17	39.36	13.68	34.37	20.64	40.47	0.000
Married	17.37	37.89	20.88	40.66	16.43	37.05	0.000
Polygamous	7.47	26.29	10.46	30.61	6.67	24.94	0.000
Practices a religion	89.70	30.40	91.30	28.20	89.27	30.95	0.003
Spouse's characteristics (%):							
Has at least primary school degree	14.11	34.81	17.02	37.59	13.33	33.99	0.000
Spouse has a formal job	0.43	6.58	0.69	8.26	0.37	6.05	0.081
Spouse has an informal job	24.28	42.88	29.16	45.46	22.98	42.07	0.000
Spouse is civil servant	0.81	8.99	0.77	8.75	0.83	9.05	0.792
Spouse is inactive or unemployed	74.47	43.61	69.38	46.10	75.83	42.81	0.000
Household characteristics (%):							
Household size	3.72	2.59	3.99	2.69	3.64	2.56	0.000
Kin dummy	23.57	42.44	23.97	42.70	23.46	42.38	0.607
Proportion of children aged 0-14	29.12	25.90	31.71	25.80	28.43	25.89	0.000
Proportion of adults aged 15-54	61.96	30.18	61.37	28.78	62.11	30.54	0.271
Proportion of adults aged over 54	8.92	22.09	6.93	18.99	9.45	22.81	0.000
Mobile phone owner	75.63	42.94	81.99	38.44	73.92	43.91	0.000
Urban dummy	45.90	49.83	44.00	49.65	46.40	49.87	0.038
Akan	29.64	45.67	33.23	47.12	28.68	45.23	0.000
Krou	8.02	27.16	8.28	27.56	7.95	27.05	0.610
Northern Mande	16.73	37.33	13.77	34.46	17.53	38.02	0.000
Southern Mande	5.59	22.98	4.25	20.17	5.95	23.66	0.000
Volataïc or Gur	18.57	38.89	16.64	37.25	19.09	39.30	0.005
Number of households	11049		2332		8717		

Notes: This table reports means (%) and standard deviations for individual and household characteristics. Two-tailed p-values for tests of equality of means across the two subgroups are reported in the last column. Full details for under pressure sample construction are in the notes of Figure 2.2. *Kin dummy corresponds to a household that hosts at least one extended family member. The spouse characteristics are those of the first wife in polygamous households.

2.4.4 How much does it cost to satisfy forced solidarity?

2.4.4.1 Assessment of the Social Tax

The financial support induced by redistributive pressure is akin to the social tax. I measure it quite straightforwardly using the ratio of the monthly transfers (financial support) made by both spouses to the household budget. I consider that the amount of the transfers *out* alone does not fully embody the nature of the social tax but rather its share in the household's budget. This share represents a tax only for households under pressure—

Table 2.3: Descriptive statistics—transfers and resources

	All Households		Under Pressure (U)		No Pressure (N)		<i>t</i> test (N) - (U)
	Mean	SD	Mean	SD	Mean	SD	p-value
Donor* (%)	49.28	50.00	100	-	35.71	47.92	0.000
Recipient* (%)	21.78	41.28	17.97	38.40	22.81	41.96	0.000
Monthly transfers sent (spouses)	6.47	24.72	12.78	32.57	4.78	21.84	0.000
Monthly transfers received (spouses)	6.16	68.89	4.05	40.18	6.72	74.71	0.021
Net amount transfers	0.31	72.07	8.73	51.56	-1.94	76.48	0.000
Net transfers donor (%)	43.73	49.61	88.38	32.05	31.79	46.57	0.000
Net transfers recipient (%)	18.66	38.96	11.15	31.48	20.67	40.50	0.000
Log of head income	10.42	2.14	10.77	1.88	10.33	2.20	0.000
Log of spouse income	2.69	4.38	3.36	4.66	2.51	4.28	0.000
Monthly household real expenditure	109.59	150.56	137.06	194.63	102.23	135.45	0.000
Monthly household total income	116.45	272.87	127.26	220.03	113.56	285.29	0.013
Household wealth index	-0.00	2.25	0.25	2.36	-0.07	2.22	0.000
Number of households	11049		2332		8717		

Notes: This table reports means (%) and standard deviations for individual and household characteristics. *A household is considered a donor (recipient) if at least one spouse provides (receives) financial support to the members of his/her social networks. Transfers received and sent are calculated at the household level, taking into account only the head and his/her spouse's self-reported amounts. Two-tailed p-values for tests of equality of means across the two subgroups are reported in the last column. Full details for under pressure sample construction are in the notes of Figure 2.2. Amounts are in 1000 of CFA. CFA 1000 \approx €1.5.

those that cannot avoid redistribution.

The evaluation of the Ivorian social tax is presented in Panel A of Table 2.4. On average, the social tax accounts for around 10% of households total expenditure and 17% of their income. These shares are statistically different from the budget share that households not under pressure devote to transfers. I also check whether this tax assessment is sensitive to the definition of households under pressure. I remove the condition of “reporting economic hardship” in the selection procedure and present the result in Panel B of Table 2.4. I find no variations for the average social tax. By contrast, I find a slight variation in the sub-sample of households under pressure. This implies that one in four Ivorian households faces pressure to share compared to one in five in Panel A, i.e., a roughly difference of seven percentage points.

Panel A in Figure B-2.1 in the Appendix examines the position of financial support in household expenditure patterns by plotting shares of primary consumption items. As discussed in Section 2.3.3, this share—the social tax—has a prime position in household expenditure patterns. It ranks fourth in these households' monthly consumption expenditure, with a slight difference from other essential items such as clothing and

Table 2.4: Social tax evaluation in Côte d'Ivoire

	Under Pressure (U)		No Pressure (N)		<i>t</i> test (N) - (U)	
	Mean	SD	Mean	SD	Diff.	p-value
Panel A: All conditions[†]						
Share of transfers in expenditure	9.56	9.59	3.30	7.43	-6.26	0.000
Share of transfers in income*	16.79	22.53	5.55	15.09	-11.24	0.000
Number of households	2332		8717		11049	
Panel B: Without economic hardship[‡]						
Share of transfers in expenditure	9.82	10.00	2.62	6.58	-7.20	0.000
Share of transfers in income	16.64	22.37	4.57	13.90	-12.08	0.000
Number of households	3072		7977		11049	

Notes: This table reports average shares of transfers in expenditure and income for “under pressure” and “no pressure” households. Mean coefficients are in percent (%). The shares of transfers in expenditure and income are considered the social taxes only for households under pressure. [†]In Panel A, “all conditions” denotes that the selection procedure of households under pressure in Figure 2.2 ends at step III. Here, a *household under pressure* is defined as one that provides financial support to kin or friends but cannot reduce or suppress it even in the case of economic hardship. [‡]In Panel B, “without economic hardship” denotes that the selection procedure of households under pressure in Figure 2.2 ends at step II. Here, a *household under pressure* is defined as one that provides financial support but cannot reduce or suppress it. See the main text for discussion about this alternative definition (Section 2.4.2.1). Differences in means and associated two-sided p-values from equality tests between the two subgroups are reported in the last two columns. *I set the share of transfers in income at 100% for 161 households with higher rates to avoid overestimating the average value.

housing. In contrast, it ranks third to last among households facing no pressure. This finding suggests that the consumption item of financial support may be an incompressible expense for households under pressure.

2.4.4.2 Social Tax distribution

Figure 2.4 depicts the social tax as a function of different living standards measures using a kernel smoothing function. Panel A presents the social tax on household expenditure. The social tax is higher among the poorest 20% of households, then decreases and stabilizes around the average tax rate of 10 percent for the rest of the distribution. Panel B shows that the association between social tax and household income is slightly different—the richest the household, the lower the social tax rate it faces. This may be due to the volatility of income at the bottom of the distribution or some measurement errors. Besides, this result seems to point to a threshold effect in the sense that large transfers would represent a smaller share of the income as the level of income increases. Panel C plots social taxes on expenditure and income for households under pressure across the wealth

distribution. The pattern does not vary substantially from that shown in Figure 3a. Social taxes on income and expenditure are higher among the poorest and flat for the rest of the distribution. This finding is consistent with the idea that “relatively” wealthy individuals would experience network pressure to share their resources—the needy rely on the member of their network who is better off than they are, regardless of their position in the overall income/spending/wealth distribution.

In sum, the overall pattern that emerges from these findings is that the social tax is higher among poorer households and a flat tax among the middle and wealthy classes regarding the different measures of living standards. This result suggests that households do not face social taxes proportional to their financial capacity.

Two households with the same taxation level will be roughly equivalent in terms of the degree of pressure they experience, even if they give a very different amount of money. The high social tax rates among the least wealthy households can be explained by what Mahieu (1989a) calls “community subjectivity”, which is also reflected in the qualitative survey. Mahieu draws attention to the fact that demands for financial support are based on an individual’s social status, which does not necessarily reflect his financial capacity.¹⁶ This illustration provides a better understanding of this situation:

“We advise people who have problems to ask for help from those who have more resources than themselves, which means that for many executives, even more, and more young managers like me, the pressure is real [...]. For example, I work in a hotel, whether I like it or not, if through me or someone else, the family network learns that I am a hotel manager, in their eyes, I can automatically give free rooms to whomever I want, whenever I decide it as if the hotel belonged to me. [...] It is the perception of African solidarity that does not account for the person’s realities. Being a director and earning director’s wage are two different things. They don’t ask themselves what your job is really about. They just think that, since you are a manager, you must, you must ... you must” [A 34 years old executive in a major hotel group in Abidjan]

¹⁶Recent empirical evidence from De Weerd et al. (2019) confirms this misperception. Using cross-reports on asset holdings, they study transfers within 712 extended family networks in Tanzania. They find that transfers co-move with the recipient’s misperception of the donor’s living standards. They interpret this finding as a situation in which the recipients have power and request transfers from the donor, either using pressure to give or in exchange for services.

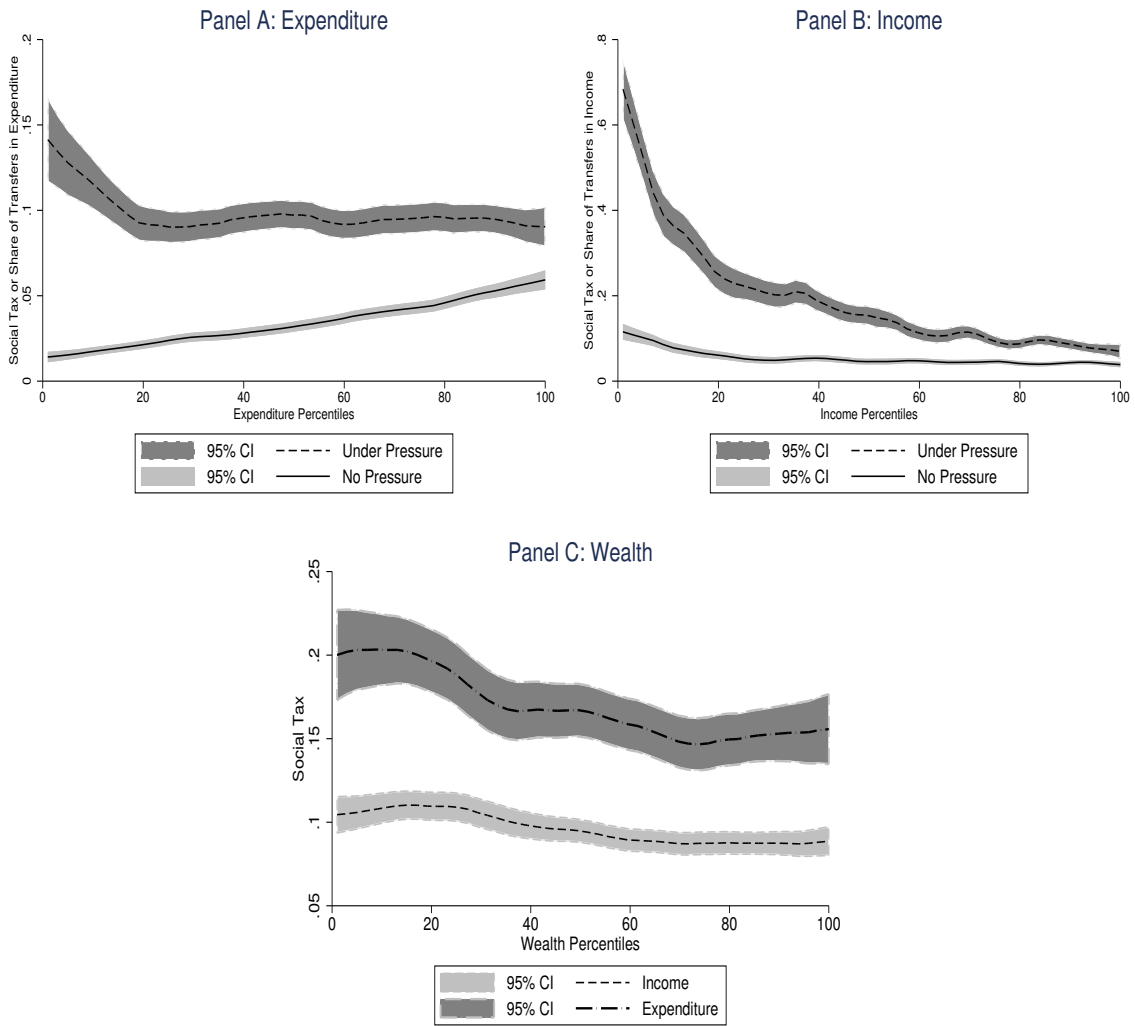


Figure 2.4: Household living standards and social taxation

Notes: This figure depicts the transfers share in income and expenditure against household expenditure, income, and wealth percentiles (kernel regression with the 95% confidence intervals). The dashed lines represent social taxes for households under pressure. The solid lines represent the budget share devoted to transfers for household facing no pressure. To avoid outliers issue, I set the share of transfers in income at 100% for 161 households with higher rates.

2.4.4.3 Forced solidarity, poverty and economic behavior

As seen above, some households face solidarity obligations beyond their financial capacity. This situation could increase vulnerability to downside shocks and lead, to some extent, to a poverty trap. For instance, suppose a farmer household that is close to (below) the poverty line. The latter that exhibits a high tax rate may (i) lack sufficient resources to make the investments needed to move out of poverty, (ii) its situation may also worsen if it faces a negative covariant shock, such as rainfall variability. As such, Di Falco & Bulte (2011) show that forced redistribution could lead to poverty traps by discouraging investments

and savings. Hoff & Sen (2006) and Bernard et al. (2010) demonstrate that such pressure can undermine welfare and prevent economic differentiation of some individuals (e.g., capital accumulation).

I now turn to the behavior of households under pressure to balance their budgets. To this end, I exploit the set of questions in the module of strategies to cope with the difficult economic recovery presented in Section 2.4.2. Table 2.5 presents the percentage of households that implement each strategy.¹⁷ It is striking to find that households under pressure roughly tend to make additional efforts to earn more money. They are more likely to implement related strategies ranging from diversifying their income source to extending working time. Besides, since the questions on whether to reduce or suppress financial support to family and friends are not mutually exclusive, it can be seen that very few households—20% and 16%, respectively—are able to do so. This suggests that since forced solidarity transfers are incompressible, many households have to find other ways and means to balance their budget in bad economic times. These findings reveal, to some extent, how sharing obligations are constraining some households and affect how they behave.

¹⁷As a reminder, these fifteen strategies are asked to all households regardless of whether they implement them or not.

Table 2.5: Household strategies to balance the budget in bad times

	Under	No	<i>t</i> test	
	Pressure (U)	Pressure (N)	(N) - (U)	
	Percent of "Yes"	Percent of "Yes"	Diff.	p-value
What are you doing to get out of the current economic situation? By:				
Diversifying your sources of income?	57.76	43.49	-14.27	0.000
Asking wealthier siblings for financial support?	26.76	31.59	4.84	0.000
Asking friends for financial support?	22.38	25.18	2.80	0.004
Buying household goods and foods in wholesale?	38.46	30.11	-8.35	0.000
†Reducing ceremonial expenses?	39.11	37.39	-1.72	0.130
Schooling children part time?	1.11	3.32	2.20	0.000
Sending children to labor market?	0.73	1.56	0.83	0.000
Extending working time?	28.39	21.00	-7.38	0.000
Starting a new business?	16.90	14.04	-2.85	0.001
Selling liquid assets (land area or livestock)?	3.56	2.99	-0.57	0.184
Taking advances on wages?	7.42	6.03	-1.38	0.021
Drawing from the saving account?	30.23	21.03	-9.20	0.000
Taking a loan?	27.96	24.10	-3.86	0.000
Reducing financial support to kin?	20.37	39.54	19.17	0.000
Suppressing financial support to friends?	16.47	38.87	22.40	0.000
Number of households	2332	8717	11049	

Notes: This table describes the fifteen strategies that households implement to deal with the bad economic situation. †Ceremonial expenses are those made for baptisms, weddings, funerals, and celebrations. Differences in means and associated two-sided p-values from equality tests between the two subgroups are reported in the last two columns.

To check whether these strategies do not reflect households' living conditions—i.e., poor household strategies—but rather the redistributive pressure they face, Figure 2.5 plots the odds ratio coefficients of the prevalence of these strategies against the poverty of the households and the fact that they are under pressure. The results confirm the previous observations in Table 2.5. In sum, a household under pressure is more likely to diversify its income sources, buy wholesale, take advances on wages, or draw on savings compared to a poor household.

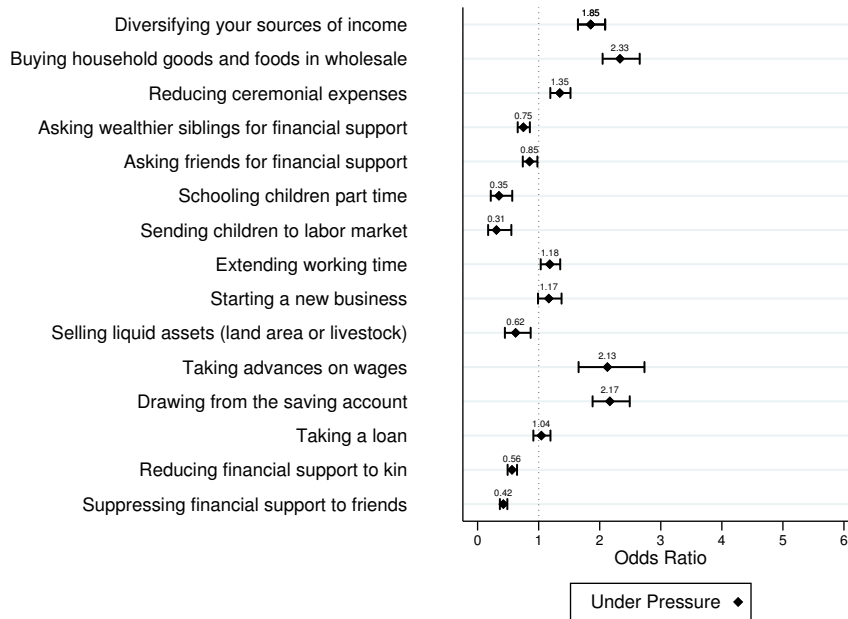


Figure 2.5: Poor *vs* under pressure households strategies to deal with economic hardship

Notes: This figure shows the odds ratios (with 95% confidence intervals) from a logistic regression that determine whether the probability of implementing a strategy differs across poor and under pressure households. Ceremonial expenses are those made for baptisms, weddings, funerals, and celebrations. I classify households as poor using a \$1.90 a day poverty line. This threshold is converted in the local currency units using the World Bank 2011 purchasing power parity (PPP) conversion factor (235.69) adjusted to 2015 prices.

2.5 Correlates of being the under pressure to share

2.5.1 Econometric model

Here, I analyze the determinants of being under pressure to redistribute. I estimate the following equation using a probit model:

$$UP_i = \gamma X_i + \omega_i \tag{2.1}$$

where UP_i is a dummy variable that takes the value of 1 if the household is under pressure to share and 0 otherwise, X_i is a vector of socio-demographic characteristics and ω_i the error term.

The main variables of interest are those related to demographics, cultural and socioeconomic factors. First, since being under pressure is highly correlated with sharing

norms, I use religious beliefs as a proxy for compliance.¹⁸ I include a dummy variable that takes the value of 1 if the head of household reports being Christian, Muslim, or Traditional and 0 otherwise. Second, I focus on socioeconomic variables such as the occupation of both spouses, head's age and age squared, head and spouse education level (dummies that indicate whether they have obtained at least primary school degree), and residence area (urban dummy). These variables are related to social status and may influence the perceived wealth of requesters for financial support to some extent. I also assume that polygamous practices signal an abundance of resources. Because it is costly to take care of larger families, this may increase the number of requesters. Other relevant characteristics such as the head and spouse income, the marital status—head currently married, the gender of the household head, mobile phone ownership, if the household is currently hosting an extended family member are examined throughout a set of dummies variables included in the model. Additional regressors include ethnicity and region dummies variables, the shares of children under 14 and adults aged 14-54, and the household size. Finally, this analysis is carried out at national, rural, and urban levels to consider their social and economic specificity. I also explore a gender issue since the literature stresses the heterogeneity of responses to social pressure to share.

2.5.2 Regression results

2.5.2.1 Main analysis

Table 2.6 reports the marginal effects of the binary regression of equation (2.1). Columns (1), (2), (3), (4), and (5) report the results for the entire sample, rural, urban, female-headed, and male-headed households, respectively.

As expected, polygamy and religious beliefs are strong correlates of being under pressure. The relationship with polygamous households is strong and significant across all sub-samples (significant at 1%). Rural households with religious beliefs are six percentage points more likely to be under pressure to redistribute (significant at 1%). Male-headed households drive this effect since the effect for female-headed and urban households are insignificant.

¹⁸See Hoff & Sen 2006, p. 98 for an example of the use of religious beliefs to enforce social obligations.

Given that transfers are income-dependent, head and spouse income (in log) are positively and significantly correlated with the propensity of being under pressure across all sub-samples. This effect is insignificant for the spouse when the household is female-headed (column (4)).¹⁹

Another important result is that the head's age is significantly related to the probability of being under pressure (columns (1)-(5)). The relationship is robust but non-linear and starts to decrease at 51.20 years of age (column (1)). This result is consistent with the idea that the burden of responsibility and the resulting obligations to the extended family network are age-dependent, as discussed in Vimard & N'Cho (1997). While younger generations must help others cope with multiple social risks in the absence of public redistribution, this pattern tends to fade among older generations.

Another interesting result is that female-headed households are negatively and significantly correlated with the propensity to be under pressure. They are, on average, five percentage points less likely to be under pressure to share in rural areas (column (3), significant at 1%). This effect is relatively small in urban areas (-0.03 percentage points, significant at 10%). It is well documented that Ivorian women are more likely to use household resources to a large extent for their children and the provision of household public goods (see Fofana, Antonides, Niehof, & van Ophem, 2015; Hoddinott & Haddad, 1995). By contrast, more surprisingly, this effect is positive and stronger in female-headed polygamous households. Since the polygamous union reflects wealth from a cultural perspective, this result is consistent with the idea that competition between co-wives in appearance through the purchase of conspicuous private goods makes them more subject to social taxation.²⁰ Besides, columns (1)-(2) and (5) show that being married is a significant predictor of facing pressure to share (significant at 1%). This result is in line with the findings of Luke & Munshi (2006) in urban Kenya. They show that marriage increases the extended family network size and income-sharing due to additional social obligations. This effect is insignificant for rural and female-headed households.

By controlling for the spouse's employment status, I find that the occupation of the household head turns out to be an important determinant of being under pressure. The

¹⁹I run the estimation with other specifications of household resources. The results hold when I use total expenditure (or normal household income), including (excluding) net transfers.

²⁰See Guérin (2008) for evidence from Senegal.

more employment is valued in society as “sustainable,” i.e., from working as a civil servant to having an informal job, the higher the likelihood of being under pressure to redistribute (significant at 5% at least). This effect is driven by a strongly positive effect in urban areas and male-headed households.

Furthermore, being an educated head is positively and significantly associated with the probability of being under pressure (except for female-headed households). In Côte d’Ivoire, as in other West African countries, educated aunts/uncles are solicited to support nephews/nieces to achieve a high level of education within extended family networks. Using data from Benin, Wantchekon, Klašnja, & Novta (2015) provide evidence of this mechanism consistent with redistributive pressure—they term it the *extended family tax on education*. Here, the data reveal that the share of financial support devoted to educational purposes sent to relatives tends to confirm this pattern (see Panel B, Figure B-2.1 in the Appendix). This share is second-highest on average among the different components of financial support variable (see Table 2.1).

Lastly, I use mobile phone ownership as a proxy for the channel for receiving “binding” solicitations. This variable is positively and significantly associated with the pressure to share for rural and male-headed households (significant at the 1%).

In summary, the estimation results show that the main predictors are driven by male-headed households with some slight differences in urban and rural areas, all else equal. These results are thus consistent with findings that women are more able to resist external pressures (see e.g., Boltz et al., 2019).

2.5.2.2 Alternative definition of being under pressure

The correlates of bearing the cost of forced solidarity are related to the definition of “household under pressure.” The main results presented in Table 2.6 uses the strict definition of household under pressure that includes economic hardship variable. One can argue that economic hardship may add more binding constraints on household resources and lead to a misclassification of households under pressure as discussed in Section 2.4.2.1. Here, I check the sensitivity of the results to changes in the definition of being under pressure. Recall that the alternative definition states that a *household under pressure* provides financial support to kin or friends but cannot reduce or suppress it.

Table 2.6: Correlates of being under pressure to share (Probit estimation)

	All Households (1)	Urban (2)	Rural (3)	Female (4)	Male (5)
Religious beliefs	0.038*** (0.014)	0.000 (0.023)	0.062*** (0.017)	0.011 (0.028)	0.045*** (0.015)
Polygamous	0.089*** (0.015)	0.105*** (0.026)	0.077*** (0.019)	0.132*** (0.039)	0.082*** (0.017)
Log of head income	0.010*** (0.002)	0.007** (0.003)	0.013*** (0.003)	0.015*** (0.006)	0.009*** (0.002)
Log of spouse income	0.004*** (0.001)	0.004** (0.002)	0.005*** (0.001)	0.009 (0.009)	0.004*** (0.001)
Female head	-0.042*** (0.012)	-0.028* (0.015)	-0.049*** (0.017)		
Married	0.029*** (0.010)	0.052*** (0.015)	0.010 (0.014)	0.016 (0.026)	0.031*** (0.011)
Head's age	0.009*** (0.002)	0.005** (0.002)	0.012*** (0.002)	0.011*** (0.003)	0.008*** (0.002)
Head's age ²	-0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Household size	-0.002 (0.002)	-0.005 (0.003)	0.001 (0.003)	-0.006 (0.005)	-0.001 (0.003)
Proportion of children aged 0-14	0.071** (0.033)	0.090* (0.049)	0.042 (0.043)	0.074 (0.054)	0.073* (0.040)
Proportion of adults aged 15-54	0.032 (0.027)	0.069* (0.041)	-0.001 (0.036)	0.043 (0.045)	0.029 (0.033)
Kin dummy	0.016 (0.010)	0.017 (0.014)	0.015 (0.015)	0.014 (0.018)	0.017 (0.012)
Head has at least primary school degree	0.032*** (0.009)	0.042*** (0.014)	0.023* (0.013)	0.029 (0.018)	0.031*** (0.011)
Head has a formal job	0.061** (0.026)	0.091*** (0.031)	0.045 (0.048)	-0.112 (0.111)	0.073*** (0.028)
Head has an informal job	0.047*** (0.011)	0.082*** (0.017)	0.021 (0.014)	0.037** (0.018)	0.049*** (0.013)
Head is civil servant	0.068*** (0.019)	0.127*** (0.024)	-0.015 (0.034)	0.109*** (0.033)	0.053** (0.022)
Spouse has a formal job	0.031 (0.055)	-0.032 (0.064)	0.278** (0.116)		0.036 (0.058)
Spouse has an informal job	-0.008 (0.011)	-0.017 (0.019)	-0.003 (0.014)	-0.033 (0.092)	-0.009 (0.012)
Spouse is civil servant	-0.087* (0.045)	-0.131*** (0.051)	0.048 (0.099)		-0.082* (0.046)
Mobile phone owner	0.044*** (0.010)	0.024 (0.016)	0.055*** (0.012)	0.021 (0.018)	0.047*** (0.011)
Urban dummy	-0.015* (0.009)			-0.003 (0.018)	-0.017* (0.010)
Mean of Dep. Var. (%)	21.11	20.23	21.85	15.07	22.54
Pseudo R ²	0.06	0.05	0.07	0.10	0.05
Number of households	11049	5071	5978	2117	8931

Notes: The dependent variable is a dummy equals to 1 if a household is under pressure and 0 otherwise. Here, a household *under pressure* is defined as one that provides financial support to kin or friends but cannot reduce or suppress it even in the case of economic hardship. Marginal effects are reported for coefficients. The omitted categories of both spouses' occupational status are unemployed and inactive. †Kin dummy corresponds to a household that hosts at least one extended family member. Additional controls, not display, are dummies for ethnicity, regions, and spouse primary school degree, and the shares of children under 14 and adults aged 14-54. The omitted category of household demographic composition is the proportion of adults aged over 54 years old. Robust standard errors are in parentheses. Level of significance denoted * p < 0.1, ** p < 0.05, *** p < 0.01.

I replicate the estimates of equation (2.1) using a probit model on the dependent variable that takes the value 1 if the household is classified as under pressure according to this alternative definition and 0 otherwise. Table A-2.2 in the Appendix presents the results. Overall the results remain qualitatively unchanged and consistent with the findings described in section 2.5.2.1. However, there are some noticeable slight differences in the coefficients' magnitude.

Moreover, to check whether the results do not differ according to the econometric approach, I also estimated the equation (2.1) by Ordinary Least Squares (OLS). The results remain qualitatively unchanged for both definitions of being under pressure (see Tables A-2.3 and A-2.4 in the Appendix).

2.6 Summary and concluding remarks

In this chapter, I study the forced solidarity phenomenon by focusing on households that cannot escape it. I attempt to answer the most fundamental questions regarding the prevalence of forced solidarity, assessing its cost as a tax, and the correlates of facing such pressure to share. To this end, I use a nationally representative household data from Côte d'Ivoire and provide a novel measure of the pressure to share. The results show that one in five Ivorian households are under pressure to share their resources. On average, these households allocate 10% and 17% of their expenditure and income, respectively, to provide financial support to members of their network. Moreover, redistributive pressure occurs across all income groups, with low-income households exhibiting the highest social tax rates. Lastly, female-headed households are less likely to face pressure to share. The strongest predictors of being under pressure are related to socio-demographic characteristics such as religious beliefs, age, income, and mobile phone-owning in rural areas. In addition, education, occupational status and marital status are the main predictors in urban areas. Due to data limitations, I cannot confidently assess whether social networks pressure on households' financial resources comes mainly from kin or friends.

From a policy perspective my findings suggest that policymakers should account for the issue of redistributive pressure, particularly in terms of targeting mechanisms in cash transfer programs. A recent Ivorian government pilot program of cash transfers—the

Programme National des Filets Sociaux Productifs aiming to reduce vulnerability and poverty—started in 2015 and is based on community consultation to target beneficiaries.²¹ This way of proceeding can lead to an adverse effect, as shown by de Sardan et al. (2014) in Niger.

Moreover, these findings also emphasize the need for social protection programs, as poor households exhibit higher social taxes. For instance, the extension of the national health insurance scheme to all districts in Ghana has led to a significant reduction in out-of-pocket health expenditures as well as the crowding out of informal transfers (Strupat & Klohn, 2018). While these results are important in the Ivorian context, they also highlight the similar experiences of other households in countries that share similar characteristics, namely the absence of social protection and the pervasiveness of non-market institutions conducive to redistributive pressure. The methodological approach proposed in this chapter can also be replicated in these contexts.

²¹“Mécanisme de ciblage”: available at <https://filetsociaux-ci.org/filets-sociaux/mecanisme-de-ciblage/> (last accessed: 12/06/2021).

Appendix

A Sensitivity of the procedure for identifying households under pressure

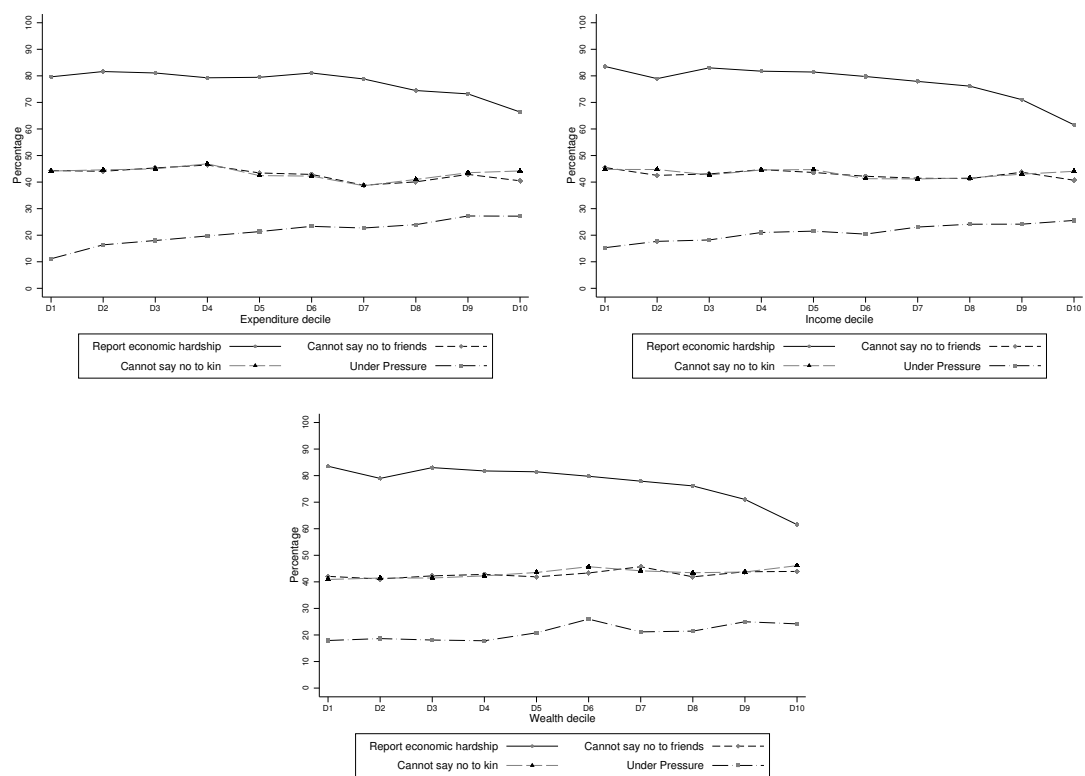


Figure A-2.1: Plausibility of the questions used to identify households under pressure

Notes: This figure shows the percentage of households that responded to the selection procedure's questions in Figure 2.2 and those classified under pressure by expenditure, income, and wealth deciles.

B Household expenditure patterns

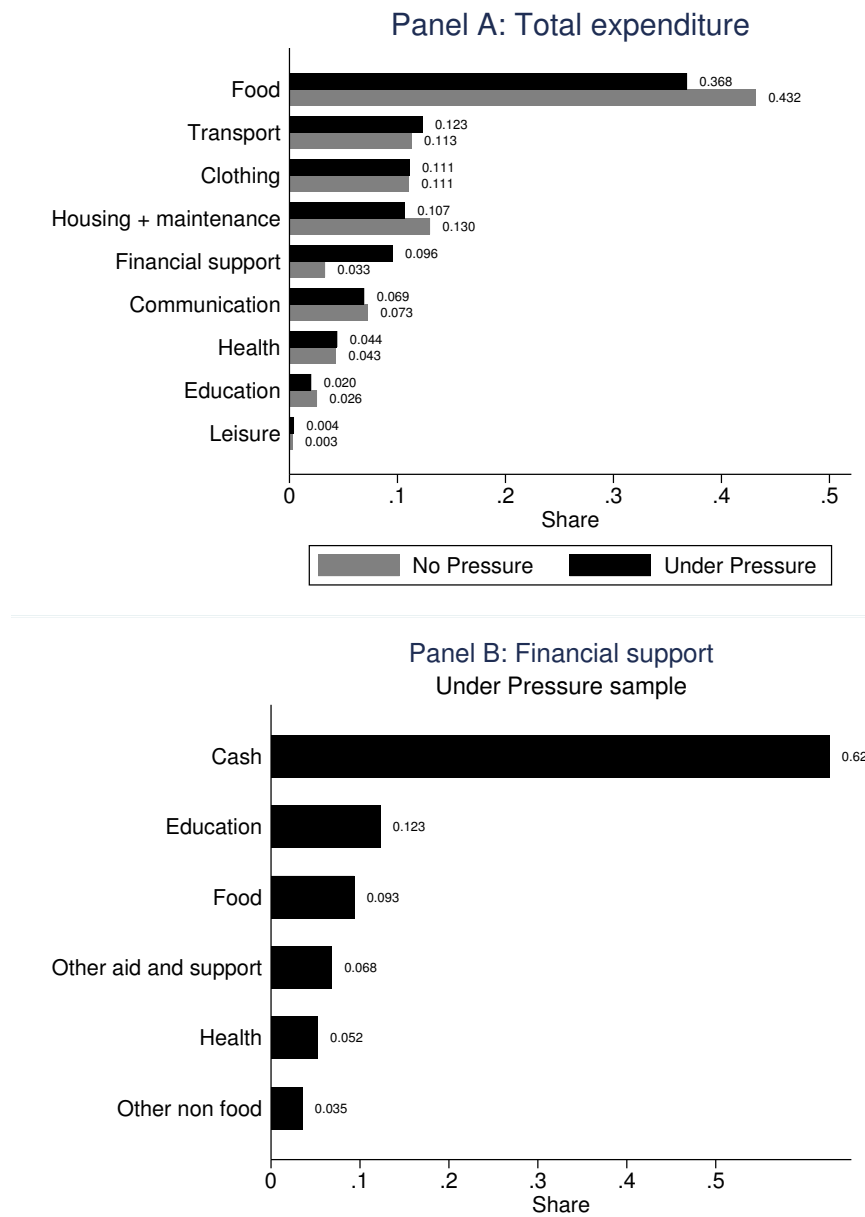


Figure B-2.1: Budget share per consumption item

Notes: This figure depicts the average budget share per consumption item for households under pressure *vs* no pressure. Panel A shows the average budget share of items included in household expenditure as reported in Section 2.6 in the Appendix. Panel B shows the average share of items included in the financial support variable in Table 2.1 for households under pressure.

C Measurement of total expenditure, income and wealth

Income

The total income is the sum of wage, premium, pensions, rent received, financial income (dividends, interest, shares), scholarships, monetary and in-kind transfers *in*, and other revenue received by the household's members.

Expenditure

Total expenditure is the sum of private and public goods expenditures made by household members. It mainly concerns frequent expenditures such as food, own food production, education, clothing, health, leisure, housing and maintenance (rent, electricity, water, fuel), communication, transportation, maid expenses and transfers *out*. I use a spatial deflator, provided by the Ivorian National Institute for Statistics (Institut National de la Statistique, 2015) to account for price differences between regions.

Wealth

Following Filmer & Pritchett (2001), I constructed a wealth index by exploiting the information on household assets available in the questionnaire, such as the number of durable goods in the household, access to utilities and infrastructure (e.g., water source), and some housing characteristics by using the first component in a principal component analysis (PCA). The variables used for this index are dummy variables that indicate if the household owns its accommodation, has access to running water, electricity, toilets, the quality of the walls and floor, and the number of rooms. For durable goods, I use the number of cars, motorcycles, bicycles, tractors, radios, televisions, telephones, refrigerators, freezers, DVD players, stereos, irons, fans, air conditioners, satellite dishes, sewing machines, computers, and gas stoves. For productive assets, I consider the area of cultivated land and the number of livestock heads. The resulting index calculated at rural and urban levels explains respectively 28% and 33% of the total variance.

D Additional tables

Table A-2.1: Background characteristics of qualitative survey's respondents

Occupation	Type	Age	Location	Zone	Gender
Manager of a cybercafé	Informal	28	Abidjan	urban	Male
Entrepreneur	Informal	25	Abidjan	urban	Male
High-school teacher	Formal	53	Abidjan	urban	Female
Nurse	Formal	36	Abidjan	urban	Female
Supermarket manager	Formal	31	Abidjan	urban	Female
Beautician	Formal	33	Abidjan	urban	Female
Retired	Formal	57	Abidjan	urban	Female
Care assistant	Formal	31	Abidjan	urban	Female
Taxi driver	Informal	42	Abidjan	urban	Male
Executive	Formal	34	Abidjan	urban	Male
Head waiter	Formal	31	Abidjan	urban	Male
Entrepreneur	Informal	37	Abidjan	urban	Male
Student (university degree)		24	Bingerville	urban	Female
Hotel employee	Informal	39	Bingerville	urban	Male
Unemployed	Informal	40	Bingerville	urban	Male
Director assistant	Formal	31	Bonoua	urban	Male
Student (university degree)		26	Bonoua	urban	Male
Accountant	Formal	33	Bonoua	urban	Female
Technical-sales	Formal	35	Abengourou	rural	Male
Farmer	Informal	45	Abengourou	rural	Male
Farmer	Informal	51	Abengourou	rural	Male
IT manager	Formal	29	Abengourou	rural	Male
Retired	Formal	66	Abengourou	rural	Male
Gardener	Formal	54	Yamoussoukro	rural	Male
Gardener	Formal	70	Yamoussoukro	rural	Male
Retired	Formal	68	Yamoussoukro	rural	Male
Hotel receptionist	Informal	30	Yamoussoukro	urban	Male
Hotel receptionist	Informal	30	Yamoussoukro	urban	Female

Note: N = 28.

Source: Author

Table A-2.2: Correlates of being under pressure to share (Robustness check)

	All Households (1)	Urban (2)	Rural (3)	Female (4)	Male (5)
Religious beliefs	0.042*** (0.015)	0.040 (0.026)	0.048*** (0.018)	0.007 (0.030)	0.050*** (0.017)
Polygamous	0.095*** (0.017)	0.124*** (0.029)	0.077*** (0.021)	0.123*** (0.043)	0.088*** (0.019)
Log of head income	0.016*** (0.003)	0.013*** (0.003)	0.018*** (0.004)	0.019*** (0.006)	0.015*** (0.003)
Log of spouse income	0.005*** (0.001)	0.005** (0.002)	0.005*** (0.002)	0.011 (0.010)	0.005*** (0.001)
Female head	-0.070*** (0.013)	-0.064*** (0.017)	-0.067*** (0.019)		
Married	0.019* (0.011)	0.051*** (0.016)	-0.008 (0.016)	0.011 (0.028)	0.020 (0.013)
Head's age	0.011*** (0.002)	0.008*** (0.003)	0.013*** (0.002)	0.009*** (0.003)	0.011*** (0.002)
Head's age ²	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)
Household size	0.001 (0.003)	-0.006 (0.004)	0.005 (0.003)	-0.009* (0.005)	0.003 (0.003)
Proportion of children aged 0-14	0.041 (0.035)	0.077 (0.053)	0.005 (0.046)	0.096* (0.057)	0.022 (0.043)
Proportion of adults aged 15-54	0.043 (0.029)	0.063 (0.045)	0.024 (0.038)	0.073 (0.047)	0.033 (0.035)
Kin dummy	0.011 (0.011)	0.013 (0.015)	0.012 (0.016)	0.009 (0.019)	0.012 (0.013)
Head has at least primary school degree	0.041*** (0.010)	0.065*** (0.015)	0.024* (0.014)	0.051*** (0.020)	0.036*** (0.012)
Head has a formal job	0.101*** (0.028)	0.137*** (0.033)	0.042 (0.053)	-0.164 (0.126)	0.117*** (0.030)
Head has an informal job	0.045*** (0.012)	0.074*** (0.018)	0.021 (0.015)	0.050** (0.020)	0.040*** (0.014)
Head is civil servant	0.106*** (0.020)	0.162*** (0.026)	0.010 (0.037)	0.164*** (0.036)	0.085*** (0.024)
Spouse has a formal job	0.012 (0.062)	-0.058 (0.072)	0.263** (0.131)		0.015 (0.065)
Spouse has an informal job	-0.005 (0.013)	-0.021 (0.022)	0.005 (0.015)	-0.011 (0.098)	-0.006 (0.013)
Spouse is civil servant	-0.065 (0.047)	-0.099* (0.054)	-0.005 (0.112)		-0.059 (0.049)
Mobile phone owner	0.050*** (0.011)	0.016 (0.017)	0.068*** (0.013)	0.026 (0.019)	0.054*** (0.012)
Urban dummy	-0.009 (0.010)			-0.001 (0.019)	-0.009 (0.011)
Mean of Dep. Var. (%)	27.80	27.69	27.90	18.47	30.02
Pseudo R ²	0.06	0.06	0.08	0.11	0.05
Number of households	11049	5071	5978	2117	8931

Notes: The dependent variable is a dummy equals to 1 if a household is under pressure and 0 otherwise. Here, a household *under pressure* is defined as one that provides financial support to kin or friends but cannot reduce or suppress it. See the main text for discussion about this alternative definition (Section 2.4.2.1). Same additional controls as in Table 2.6. Robust standard errors are in parentheses. Level of significance denoted * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A-2.3: Correlates of being under pressure to share (OLS)

	All Households (1)	Urban (2)	Rural (3)	Female (4)	Male (5)
Religious beliefs	0.035*** (0.013)	0.001 (0.024)	0.055*** (0.015)	0.006 (0.026)	0.042*** (0.014)
Polygamous	0.094*** (0.017)	0.113*** (0.032)	0.079*** (0.021)	0.149*** (0.055)	0.087*** (0.019)
Log of head income	0.009*** (0.002)	0.007*** (0.003)	0.012*** (0.002)	0.011*** (0.003)	0.009*** (0.002)
Log of spouse income	0.005*** (0.001)	0.005** (0.002)	0.006*** (0.002)	0.011 (0.011)	0.005*** (0.001)
Female head	-0.035*** (0.010)	-0.023* (0.014)	-0.038** (0.015)		
Married	0.032*** (0.011)	0.057*** (0.017)	0.013 (0.015)	0.017 (0.027)	0.033*** (0.012)
Head's age	0.008*** (0.001)	0.004** (0.002)	0.010*** (0.002)	0.009*** (0.002)	0.007*** (0.002)
Head's age ²	-0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Household size	-0.002 (0.002)	-0.005 (0.003)	0.001 (0.003)	-0.006 (0.005)	-0.001 (0.003)
Proportion of children aged 0-14	0.065** (0.029)	0.078* (0.043)	0.046 (0.039)	0.065 (0.048)	0.073** (0.037)
Proportion of adults aged 15-54	0.027 (0.024)	0.059 (0.036)	0.006 (0.031)	0.038 (0.039)	0.028 (0.030)
Kin dummy	0.016 (0.010)	0.019 (0.014)	0.015 (0.015)	0.011 (0.019)	0.019 (0.012)
Head education dummy	0.032*** (0.010)	0.042*** (0.014)	0.024* (0.014)	0.034* (0.021)	0.031*** (0.011)
Head has a formal job	0.064** (0.029)	0.084** (0.033)	0.063 (0.060)	-0.118* (0.071)	0.076** (0.031)
Head has an informal job	0.045*** (0.010)	0.071*** (0.014)	0.023* (0.014)	0.039** (0.018)	0.046*** (0.012)
Head is civil servant	0.069*** (0.020)	0.126*** (0.025)	-0.015 (0.035)	0.159*** (0.048)	0.051** (0.022)
Spouse has a formal job	0.041 (0.071)	-0.037 (0.075)	0.369** (0.151)	-0.129 (0.134)	0.046 (0.072)
Spouse has an informal job	-0.009 (0.012)	-0.017 (0.021)	-0.004 (0.015)	-0.039 (0.108)	-0.010 (0.012)
Spouse is civil servant	-0.090** (0.044)	-0.131*** (0.048)	0.057 (0.122)	0.000 (.)	-0.082* (0.044)
Mobile phone owner	0.043*** (0.009)	0.023 (0.015)	0.054*** (0.011)	0.022 (0.017)	0.046*** (0.011)
Urban dummy	-0.017* (0.009)			-0.004 (0.018)	-0.018* (0.010)
R ²	0.06	0.05	0.07	0.08	0.05
Number of households	11049	5071	5978	2118	8931

Notes: The dependent variable is a dummy equals to 1 if a household is under pressure and 0 otherwise. Here, a household *under pressure* is defined as one that provides financial support to kin or friends but cannot reduce or suppress it even in the case of economic hardship. Same additional controls as in Table 2.6. Robust standard errors are in parentheses. Level of significance denoted * p < 0.1, ** p < 0.05, *** p < 0.01.

2.6. Summary and concluding remarks

Table A-2.4: Correlates of being under pressure to share (OLS–Alternative definition)

	All Households (1)	Urban (2)	Rural (3)	Female (4)	Male (5)
Religious beliefs	0.039*** (0.014)	0.041 (0.025)	0.043*** (0.016)	0.002 (0.028)	0.047*** (0.016)
Polygamous	0.100*** (0.019)	0.134*** (0.034)	0.079*** (0.023)	0.138** (0.056)	0.092*** (0.020)
Log of head income	0.015*** (0.002)	0.012*** (0.003)	0.017*** (0.003)	0.015*** (0.004)	0.014*** (0.002)
Log of spouse income	0.005*** (0.001)	0.006** (0.002)	0.006*** (0.002)	0.013 (0.011)	0.005*** (0.001)
Female head	-0.059*** (0.011)	-0.055*** (0.016)	-0.052*** (0.016)		
Married	0.021* (0.012)	0.055*** (0.018)	-0.006 (0.016)	0.014 (0.029)	0.021 (0.013)
Head's age	0.009*** (0.001)	0.007*** (0.002)	0.011*** (0.002)	0.008*** (0.003)	0.010*** (0.002)
Head's age ²	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Household size	0.001 (0.003)	-0.006 (0.004)	0.005 (0.004)	-0.009* (0.005)	0.003 (0.003)
Proportion of children aged 0-14	0.036 (0.032)	0.068 (0.049)	0.007 (0.042)	0.082 (0.051)	0.023 (0.041)
Proportion of adults aged 15-54	0.039 (0.026)	0.058 (0.041)	0.028 (0.033)	0.066 (0.041)	0.035 (0.033)
Kin dummy	0.011 (0.011)	0.013 (0.015)	0.010 (0.016)	0.008 (0.020)	0.013 (0.013)
Head education dummy	0.041*** (0.010)	0.065*** (0.015)	0.024 (0.014)	0.057*** (0.022)	0.036*** (0.012)
Head has a formal job	0.112*** (0.031)	0.141*** (0.037)	0.056 (0.062)	-0.162** (0.072)	0.126*** (0.034)
Head has an informal job	0.043*** (0.011)	0.067*** (0.016)	0.022 (0.015)	0.052*** (0.019)	0.040*** (0.013)
Head is civil servant	0.114*** (0.022)	0.171*** (0.028)	0.010 (0.038)	0.228*** (0.051)	0.089*** (0.025)
Spouse has a formal job	0.017 (0.074)	-0.066 (0.083)	0.308** (0.148)	-0.087 (0.135)	0.020 (0.075)
Spouse has an informal job	-0.004 (0.013)	-0.021 (0.023)	0.006 (0.016)	-0.016 (0.113)	-0.006 (0.013)
Spouse is civil servant	-0.068 (0.051)	-0.104* (0.058)	-0.007 (0.124)	0.000 (.)	-0.062 (0.052)
Mobile phone owner	0.048*** (0.010)	0.016 (0.017)	0.067*** (0.013)	0.027 (0.019)	0.052*** (0.012)
Urban dummy	-0.012 (0.010)			-0.002 (0.020)	-0.011 (0.011)
R ²	0.07	0.07	0.08	0.09	0.06
Number of households	11049	5071	5978	2118	8931

Notes: The dependent variable is a dummy equals to 1 if a household is under pressure and 0 otherwise. Here, a household *under pressure* is defined as one that provides financial support to kin or friends but cannot reduce or suppress it. See the main text for discussion about this alternative definition (Section 2.4.2.1). Same additional controls as in Table 2.6. Robust standard errors are in parentheses. Level of significance denoted * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Chapter 3

Child Fostering and Consumption Inequality: Evidence from Côte d'Ivoire

Contents

3.1	Introduction	92
3.2	Child fostering overview	95
3.2.1	Definition and motives	96
3.2.2	Caregivers treatment and child status in the literature	96
3.2.3	Background on Côte d'Ivoire	97
3.3	Theoretical and empirical frameworks	98
3.3.1	Theoretical framework	98
3.3.2	Empirical procedure	100
3.4	Data and descriptive statistics	103
3.4.1	Data	103
3.4.2	Descriptive statistics	104
3.5	Estimation results	107
3.5.1	Testing for status-gender discrimination: Basic results	107
3.5.2	Testing for status-gender discrimination: Disaggregated results	109
3.6	Sensitivity and robustness analysis	117
3.6.1	Handling data censorship	117
3.6.2	Age decomposition	117
3.6.3	Age limit	118
	Appendix	122

3.1 Introduction

In much of West Africa, many children are found to live with others at any given time and probably over half in the course of their upbringing (Caldwell & Caldwell, 1987). This refers to child fostering, a social institution where parents send their children to live with kinship network members or close relatives (Isiugo-Abanihe, 1985; Serra, 2009). Economists well understand the motivations related to child fostering. The economic literature emphasizes labor and human capital investment opportunities, risk-sharing, and consumption smoothing as the main motives for fostering children (Ainsworth, 1996; Akresh, 2009; Zimmerman, 2003).

However, little is known about how foster children are treated in the household in terms of consumption. There is also no consensus in the social sciences literature. In lineage-based societies, the treatment of children in terms of their status remains highly debated. A body of the literature posits that family ties override the distinction between children of the same lineage, implying equal treatment (see, e.g., Caldwell & Caldwell 1988; Jonckers 1997; Serra 2009.) In contrast, another strand of the literature states that parents have strong preferences for their own-birth children. As a consequence, they are more likely to favor their biological children in resource allocation (see, e.g., Akresh 2005; Case, Paxson, & Ableidinger 2004; Desai 1995).¹

Despite the prevalence of child fostering in sub-Saharan countries, there is a lack of empirical support on whether parents favor children regarding their status in intrahousehold resource allocation. As shown in Figure 3.1, the percentage of households hosting a non-orphan foster child does not decline over the two recent decades and remains high. It can be observed that this percentage varies between 20 and 38 percent of households in the selected countries, which implies a considerable number of households and children involved in this informal living arrangement. The issue is, therefore, fundamental since a great concern for the effectiveness of public policies towards children, especially to achieve the Sustainable Development Goals (Marguerit, Cohen, & Exton, 2018; Unicef, 2018). In addition, a large body of research shows that investments in early childhood development are critical to understanding the outcomes of individuals at later stages of their lives.

¹Another argument that supports this literature is that of parental altruism toward their offspring (Case, Lin, & McLanahan, 2000), which would be stronger between genetically related individuals as postulated by Hamilton (1964).

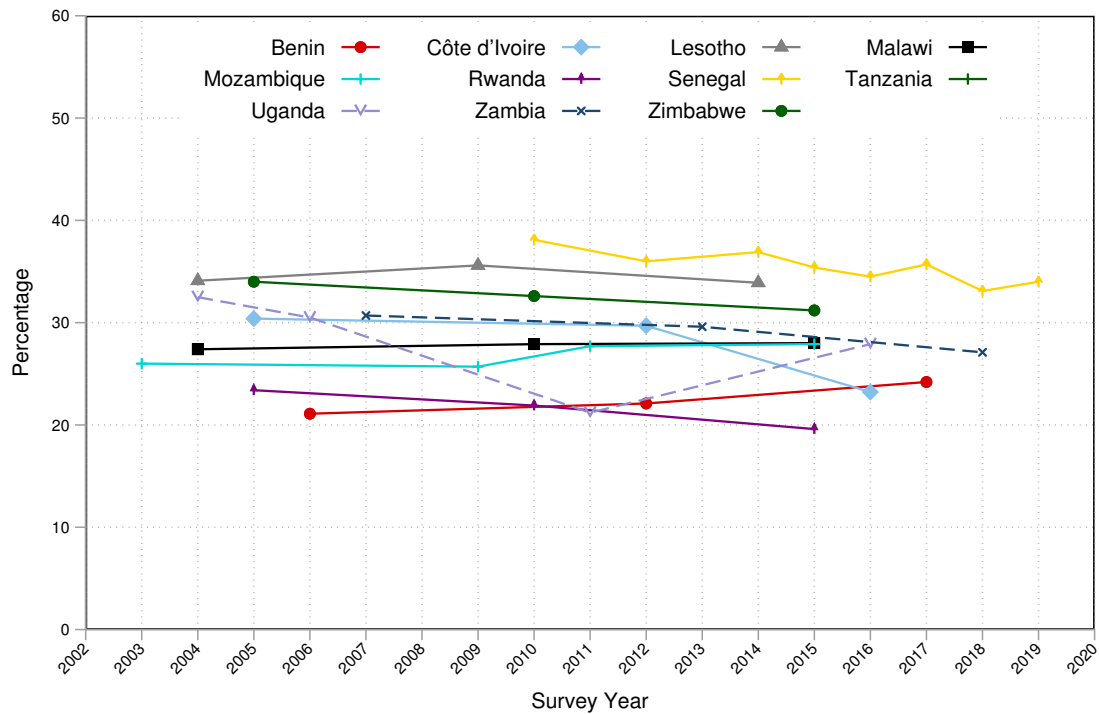


Figure 3.1: Child fostering prevalence in selected sub-Saharan countries

Notes: This figure depicts the percentage of households in which at least one foster child lives (excluding orphans) in certain countries where the data was available for at least three survey years.

Source: Author, using Measured DHS/MICS on Statcompiler retrieved from (<https://www.statcompiler.com/en/>).

Deprivation due to, for example, low resource allocation in childhood would threaten well-being in adulthood through deteriorating health outcomes (see, e.g., R. Poulton et al., 2002).

In this chapter, I study consumption inequality among foster and biological children. I investigate whether caregivers discriminate against a specific type of child. I do not merely account for the average difference in status discrimination but also examining heterogeneous effects regarding the composition of sibship and the role of transfers in the household resource sharing rule. For two main reasons, inter-household transfers and sibship composition are likely to affect intrahousehold resource allocations. First, some parents who foster-out their children provide the material resources necessary to meet their needs, such as school fees, clothing, and leisure expenses, etc. (see, e.g., Isiugo-Abanihe, 1985; Shapiro & Tamashe, 2001). Second, resource constraints may lead parents to favor a particular type of child in intrahousehold resources allocation (Garg & Morduch,

1998). For example, parents may have strong preferences for certain children if they anticipate a higher probability of benefiting from their returns, especially in the form of old-age insurance. This could drive parental allocation of resources toward children with good (initial) endowments and strong abilities. In addition, sibling rivalry may be more intense in this kind of setting. Ignoring these facts while studying consumption inequality between foster children and their host siblings can distort the inference on intrahousehold distribution.

To examine consumption inequality, I apply the “Outlay Equivalent Ratio” approach (hereafter, OER) developed by Deaton et al. (1989) using a household survey from Côte d’Ivoire. This method allows inferring discrimination in consumption expenditure allocated to children. For a given income level, children exerted a “pure” negative income effect on the demand of parents’ consumption on “adult” goods (e.g., adult clothing). The bias is revealed by the extent to which parents reduce their consumption to offset the cost of raising a specific type of child. For the purpose of this study, I use the age range of school-aged children to fit the issue of child fostering, namely 6 to 14 years.

The main results can be summarized as follows. First, in the 6-10 age group, there is no evidence of inequality in consumption between girls and boys. Second, in the 11-14 age group, I find little evidence of bias among children. Parents are less likely to forgo some of their consumption of adult goods for foster boys. This implies discrimination against foster boys compared to other children regardless of their gender and status. Moreover, the bias occurs in households where foster children live with or without their host siblings and when the household is not involved in child-related transfers.

This chapter makes at least three contributions to the related literature. First, it expands the small literature on child fostering and intrahousehold resources allocation bias by analyzing how resources are shared among children in terms of their status. For instance, using the OER approach, Haddad & Hoddinott (1994) show that fostered girls under six suffer discrimination in Côte d’Ivoire while Arndt, Barlund, Nhate, & den Broeck (2006) find evidence of discrimination in poor households towards foster children in Mozambique. Additionally, Penglase (2021) recently documented the absence of inequality between foster and biological children in Malawi using the collective household framework.

Second, this chapter contributes to another literature studying the effect of sibship

composition on household resource allocation. This literature has focused primarily on education and health outcomes, partially ignoring effects on consumption. Marazyan (2015) finds that host girls aged six to nine at the arrival of the foster sibling significantly benefit in terms of school enrollment. Morduch (2000) shows that moving from all brothers to all sisters scenario in the household sibling composition raises completed schooling by nearly half a year in Tanzania. Similarly, Garg & Morduch (1998) show that the same previous scenario would result in 25-40% better outcomes on their measured health indicators. This study provides empirical evidence on the treatment of foster children regarding sibship composition, focusing on consumption.

Finally, it also adds to the literature on child welfare depending on their living arrangements in developing countries. Some papers point to under-investment in non-biological children (Case et al., 2000; De Vreyer & Nilsson, 2019). In contrast, my results suggest that non-biological children are not systematically disadvantaged when their biological parents are not co-residents in the household. These findings contribute, to some extent, to the debate of child treatment in lineage-based societies.

The remainder of the chapter is structured as follows. Section 3.2 presents the context of child fostering in Sub-Saharan Africa, with a brief focus on Côte d'Ivoire, and reviews the existing literature on the difference in treatment between biological children and foster children. Section 3.3 presents the theory behind the OER approach and outlines its empirical procedure. Section 3.4 describes the household survey data used and presents some summary statistics. Section 3.5 presents the empirical results. Section 3.6 performs sensitivity analyses and some robustness checks. Section 3.6.3 concludes.

3.2 Child fostering overview

In this section, I briefly summarize the literature on the child fostering practice, including the definition, prevalence, underlying motives, and empirical results on unequal treatment between children regarding their status.

3.2.1 Definition and motives

Child fostering is an informal institution whereby biological parents send their children to live in another household, usually with relatives or close friends, either temporarily or for longer (Ainsworth, 1996; Isiugo-Abanihe, 1985; Nsamenang, 1992). Motivations for fostering *in* or *out* children are manifold. However, the related literature can be divided into two broad streams, *voluntary* and *involuntary* motives (Serra, 2009).

Voluntary or ‘purposive’ child fostering plays an important role in household livelihoods and is roughly based on reciprocity. It is mainly intended to strengthen kinship and social ties, open up opportunities for education or apprenticeship through placement with better off relatives or with those who live near better-quality schools (C. Bledsoe, 1990; Goody, 1982; Grant & Yeatman, 2012; Zimmerman, 2003). Moreover, it includes the demand for domestic labour, emotional bonds and companionship, social or political prestige, and job prospects of the child (Ariyo, Mortelmans, & Wouters, 2019).

Non-voluntary or ‘crisis’ fostering refers to a situation in which households have an obligation to become caregivers for children. Hence, child fostering is the result of the death of the children’s parents (Ainsworth & Filmer, 2006; Arndt et al., 2006; Kasedde, Doyle, Seeley, & Ross, 2014), family breakdown (Isiugo-Abanihe, 1985), or a risk-coping mechanism in response to exogenous income shocks and to offset economic hardship (Akresh, 2009). One motivation that has received little attention in the literature is coercion—when households are forced to incur the costs of childbearing regardless of the children’s orphan status. Platteau (2014, p. 158) documents that in some parts of West Africa, individuals sometimes—in the absence of the household head without notice—leave their children to relatives for an indefinite time, without bothering to offer compensation or giving them a choice to refuse to adopt the children.²

3.2.2 Caregivers treatment and child status in the literature

Education. A relatively small body of work has analyzed the difference in school enrollment between foster children and their host siblings. Zimmerman (2003) shows that there is no difference between children regarding this premise in South Africa. Foster

²Therefore, future research on this specific case would be essential in measuring its impact on children’s well-being.

children are not less likely than others to attend school, and they tend to move from homes that have difficulty enrolling them in school to homes that are more apt to do so. Using representative panel data from KwaZulu-Natal province in South Africa, Cichello (2003) confirms Zimmerman's findings and provides additional evidence that casts doubt on the existence of a lasting negative impact for foster children. Bose-Duker (2019) finds evidence of unequal treatment between biological and foster children in Jamaica. While there is no difference in school attendance, foster children are less likely to complete more years of schooling than their host siblings. Akresh (2004) reaches the same conclusion in Burkina Faso. By contrast, Hampshire et al. (2015) show that foster children have lower school enrollment and attendance than their biological peers in Ghana.

Domestic work. Foster children are encouraged to participate in household chores in the fostering household since this help is highly valued and is believed to contribute to the welfare of the family (Nsamenang, 1992). However, a body of literature highlights some abuses to which these children are subjected and gives a different interpretation of the involvement of foster children in domestic work.³ In this respect, the time spent doing household chores is considered an indicator of inequality between children. However, the related literature offers scanty empirical evidence. The exception is the work of Beck, Vreyer, Lambert, Marazyan, & Safir (2015). Using nationally representative data from Senegal, they conclude an absence of unequal treatment in domestic work. They show that fostered girls are not overloaded with domestic tasks and spent equal time as their host sisters in household chores.

3.2.3 **Background on Côte d'Ivoire**

The issue of child fostering is not new in Côte d'Ivoire. As with other sub-Saharan countries, ethnic and regional disparities involve many forms of child fostering (see, e.g., Ainsworth, 1996; Antoine & Guillaume, 1986; Etienne, 1979; Jonckers, 1997). However, kinship care appears to be the most dominant form of fostering in Côte d'Ivoire. This is in line with the classic motivations outlined above, notably the strengthening of kin ties through the socialization of the children with their extended family members in the values

³See Bourdillon (2009), Blagbrough (2008), and Edmonds & Pavcnik (2005) for a survey and discussion.

and traditions of the kinship (Adjamagbo, 1997). School enrollment, as well as market and domestic work, are also stress by the literature (Jacquemin, 2004; Pilon, 2003).

No papers have stressed the dominant strand of motives in sub-Saharan Africa, leaving the voluntary or compliant motives as dominant in the literature to date.

3.3 Theoretical and empirical frameworks

This section describes the framework I use to examine the issue of intrahousehold resource allocation bias. The first part briefly presents the OER approach's theoretical framework and discusses how to detect discrimination in the allocation of goods between foster and biological children. The second part presents the empirical procedure.

3.3.1 Theoretical framework

3.3.1.1 OER approach

To investigate intrahousehold consumption inequality between foster and biological children, I use the OER approach developed in Deaton et al. (1989). The key strength of this method is that it overcomes two main well-known problems with consumption data collected at the household level and the presence of public goods. These issues make it hard to get the individual shares that make up the total household resources and thus prevent a direct measure of bias.

The OER approach quantifies how much parents depress their welfare—measured by the goods they exclusively consumed, say adult goods—to buffer the cost of a child. This welfare reduction is modeled as a direct effect of an additional child on demand for adult goods. The idea is that an additional child reduces such expenditures because the family budget is held constant. This acts as a negative income effect and can be represented in terms of OER (π -ratio). π -ratio measures the equivalent income induced by marginal changes in the demographic structure of the household members. Discrimination is detected by looking at how the π -ratios systematically varying for a specific type of child compared to another in a given age category, all else equal.

3.3.1.2 Model

Deaton et al. (1989) provides a theoretical framework that relates adult welfare measured by good i to the household's budget and other characteristics:

$$p_i q_i = g_i(x, n, z) \quad (3.1)$$

where $p_i q_i$ is expenditure on good i , x is a household total expenditure, n is a vector of the demographic composition of the household, z is a vector of other individual and household characteristics. For any normal good, consumption should decline since child arrival acts as a negative income effect for a given level of income.

How does the response of expenditures on adult goods to additional children detect evidence of a bias in favor of a specific type of children? For any normal good i and any age category r , the π -ratio is given by:

$$\pi_{ir} = \frac{\partial(p_i q_i) / \partial n_r}{\partial(p_i q_i) / \partial x} \frac{n}{x} \quad (3.2)$$

Each π_{ir} is similar to a coefficient of elasticity. It gives the effect of an additional child of type r on the demand for adult good i . It is measured as the amount of additional expenditure that would have been required to produce the same effect on the demand for good i . This extra expenditure is expressed as a per capita expenditure.⁴

Hence, for goods that adults exclusively consume, the corresponding π_{ir} for children would expect to have a negative value. The discrimination (bias) can be captured according to how much the household would decrease its expenditure on adult goods relative to the status of the 'newcomer.' For instance, if biological children are favored over foster children, a bigger decrease in expenditure on adult goods in favor of biological children compared to foster children should be expected. To fix the idea, consider a household of three members, two parents, and one biological child. This household has a monthly budget of \$1,000. If the arrival of a new biological child reduces spending on parents' fabric by \$90 and assuming that the marginal propensity for fabric consumption is 0.6,

⁴All else equal, the effect of a child of type r is given by $\partial(p_i q_i) / \partial n_r$. Income effects are given by the marginal propensities to spend, $\partial(p_i q_i) / \partial x$. The ratio $\frac{\partial(p_i q_i) / \partial n_r}{\partial(p_i q_i) / \partial x}$ denotes by how much the total budget would have to be increased to generate the same additional expenditure on good i as would the addition to the household of one child of type r .

then $\pi_{fabric} = \frac{-90}{0.6} \times \frac{3}{1000} = -0.45$. Thus, the new child's arrival in the household will reduce fabric consumption by 45% of per capita expenditure. Now, for a family of two adults and one biological child with the same preferences and utility for fabric and the same budget as the first one, if the arrival of a new foster child reduces fabric expenditure by \$60, $\pi_{fabric} = -0.30$. Then, the gap between the π coefficients measures discrimination based on the status of the children.

3.3.2 Empirical procedure

The empirical procedure for measuring bias in allocating resources among children is broadly divided into three main steps: selecting adult goods, estimating π -ratios, and testing the difference between π -ratios. The validation test results that underlie this procedure are presented in the Appendix.

3.3.2.1 Adult goods selection

I start by relying on the consumption expenditure module, examining some goods that adults could plausibly consume exclusively. This step is done by tapping and using the concept of demographic separability proposed by Deaton et al. (1989).

Demographic separability formalizes the idea that there are groups of goods with little or no relationship to a specific set of children's demographic variables. Empirically, the test of demographic separability between the candidate adult goods and children's demographic groups is fitted by ordinary least squares (OLS) using the following linear estimation:

$$p_i q_i = b_0 + b_1 x_g + \sum_{j=1}^J c_{ij} n_j + d_i z + \epsilon_i \quad (3.3)$$

where $p_i q_i$ is expenditure on the candidate adult good i , x_g is total expenditures on adult goods, n_j is the number of household members in J age–status groups (i.e., under six, 6-10, 11-14, 15-20, 21-54 and over 54); z denotes wealth index, head's and spouse's ages and their squares, and a number of dummy variables that allow for possible effects of other individual and household characteristics, such as a regular job for the head and spouse, female headship, head and spouse education (whether s/he has at least a primary school degree), ethnicity, urban location, head and spouse living in the household, net recipient of child transfers, regions, and date of interview; and ϵ_i is the error term. The main reasons

identified in the economic literature for fostering in (out) children are educational and labour purposes. Thus, this analysis focuses on school-age children, who fall into the two age categories of 6-10 and 11-14, further split by gender.

The fact that x_g is the sum of $p_i q_i$, I could observe possible econometric complication for the estimation of equation (3.3) i.e., $E(x_g | \epsilon_i) \neq 0$.⁵ If Wooldridge's (1995) robust test score of endogeneity is rejected, two-stage least squared estimation (2SLS) with per disposable capital income as an instrument for x_g is used.⁶ A second demographic separability test is performed, providing a robustness test for the validity of the adult goods selected from equation (3.3) in the Appendix 3.6.3. If demographic separability holds, the coefficient c_{ij} should be jointly insignificant, and the candidate adult good can be considered as a 'true' adult good.

3.3.2.2 OERs estimates

After identifying adult goods, I turn to the OER estimates. π -ratios from equation (3.2) can be obtained by using the estimated parameters from OLS regression of any Engel curve in the Working-Leser specification as follows:⁷

$$w_i = \frac{p_i q_i}{x} = \alpha_i + \beta_i \ln\left(\frac{x}{n}\right) + \eta_i \ln(n) + \sum_{j=1}^{J-1} \gamma_{ij} \left(\frac{n_j}{n}\right) + \delta_i Z + \mu_i \quad (3.4)$$

where w_i is the budget share for the i^{th} adult good, x is the value of total household consumption, n is household size, n_j is the number of people in the j^{th} demographic group, Z represents the same vector of control variables as in equation (3.3) that allow for possible effects of other household characteristics, and μ_i is the error term. The estimates

⁵Here, OLS estimates are seriously biased by the simultaneity between the total expenditure on adult goods and its components. If a component of total adult expenditure is slightly lower than it (x_g), the resulting correlation will cause bias in OLS (Deaton, 1989a).

⁶The instrument is strong in predicting the bundle of adult goods expenditure. The F-statistic on the excluded instrument is 59.25. The result of the appropriate estimator for each adult good is provided in Table A-3.2 in the Appendix.

⁷Working and Leser's specification (Working 1943; Leser 1963) has the advantage of being consistent with a utility function, and their assumption of a linear relationship between the budget share allocated to a good and the logarithm of total expenditures is consistent with the data in a broader range of circumstances (Deaton, 1997, p. 231). Deaton points out that the inclusion of household demographic composition tells us the effects of changing composition while holding household size constant, such as replacing a man with a woman or a young child with an older child.

π -ratios are then calculated using the following formula:

$$\pi_{ir} = \frac{(\eta_i - \beta_i) + \gamma_{ir} - \sum_{j=1}^{J-1} \gamma_{ij} \left(\frac{n_j}{n}\right)}{\beta_i + w_i} \quad (3.5)$$

for $r = 1, \dots, J - 1$, where γ_{ij} is defined to be zero for π_{iJ} . Estimates of the π -ratios are obtained by replacing the parameters by their estimates (3.4) and substituting w_i and the n_j/n ratios by their values at the sample mean of the data. Unlike the general procedure described in Deaton et al. (1989), I derive the standard errors of the non-linear function π by using the non-parametric bootstrap methodology that accounts for survey design effect (Cameron & Trivedi, 2005, p. 255). This consists of drawing N synthetic samples of the same size, with replacement from the original sample, on which I run an OLS regression using equation (3.4) and calculate the π -ratios in each instance. Standard errors are then calculated from the sample of 100 π -ratios.

3.3.2.3 Measuring discrimination

The π -ratios are then used to test the null hypothesis that there is no bias in the intrahousehold allocation of resources between the biological and foster children of the same age group and for all goods i consumed by adults:

$$H_0 : \Delta_i = \pi_{ij} - \pi_{ik} = 0 \quad (3.6)$$

where j refers to biological children and k refers to foster children in the same age group. The test is performed by testing the equality of the demographic coefficients in (3.4) via a t -test. Gibson & Rozelle (2004) show that the failure of the OER approach in some studies to detect discrimination is because they have ignored survey design effects while applying statistical tests. Therefore, the induced adjusted WALD test of equation (3.6) controls for clustering, sampling weights, and stratification.

In this analysis, I move beyond looking at average discrimination in terms of child status that, at a large scale, may often conceal some differences. To do so, I consider heterogeneity in fostering arrangements that can impact the intrahousehold consumption allocation, namely the sibship composition and interhousehold transfers (see Section 3.5.2 for motivation).

3.4 Data and descriptive statistics

3.4.1 Data

My empirical analysis is based on nationally representative cross-sectional data from the Côte d'Ivoire Household Living Standard Survey (HLSS, 2015). The survey was conducted by the National Institute of Statistics between February and March 2015. It covered a random sample of 12,899 rural and urban households in all 33 regions for 47,635 individuals. The survey employs a two-stage cluster design. At the first stage, 1075 clusters were drawn and constitute the primary sample units. At the second stage, 12 households were randomly surveyed within each cluster without replacement.

The survey provides information on various households' socio-economic characteristics, such as sources of income, expenditure on many items, health, education, employment status, and ethnicity. The data fit the scope of the analysis since it allows to identify of both foster children and adult goods. All household members were asked to provide their relationship to the household's head. Moreover, enumerators are able to link each child to their parents if they reside in the same household. Household members were also asked to report expenditure on many consumption items across different recall periods to avoid a large number of zeros due to the infrequency of certain purchases.⁸

Sample selection. For the purpose of the analysis, sample selection is necessary. I start by excluding households with abnormal and no food expenditures (3.28% of the initial sample). I then exclude single-person households and childless couples (28.92%).⁹ I then restrict the data to households with children under 15 (44.55%). This includes parents, i.e., either a single adult or a (un)married couple, who often lived with other household members.

In this chapter, I adopt the predominant definition of child fostering based on the residence criterion. Hence, a foster child is defined as *a non-orphaned child aged under 15 living away from both of their biological parents*. This definition fits well with the data since I

⁸For the analysis, I convert all expenditures to a monthly basis.

⁹Following general practice, single-person households and childless couples are excluded since their life-style are sufficiently distinct to suggest that the effects of adding a child would be quite different from the marginal effect of an additional child in a household that already has children (Deaton et al., 1989).

do not have information about the reasons for the presence of a non-biological child in a given household.¹⁰ Based on this definition, I exclude households in which non-biological children of the household head/spouse lived with their biological parents. The entire procedure leads to a sample size of 7,281 households for 35,613 individuals.

Adult goods. The OER approach requires a set of goods exclusively consumed by adults. The survey records hundreds of food and non-food items. It makes it possible to distinguish between goods purchased for parents and children separately.

The selection of goods is based on the possibility that each chosen good has no or at least negligible association with the children's demographic groups. I paid close attention to the goods selected for the analysis. Indeed, Haddad & Hoddinott (1994) point out that the traditional goods frequently used in the OER analysis, such as alcohol, tobacco, or gambling, apply more to male adults and can lead to biases in the detection of potential discrimination. These goods may reflect male rather than 'parental' preferences. Additionally, Strauss, Mwabu, & Beegle (2000) stress that these goods are potentially addictive, and their consumption represents tiny budget shares, making it difficult to use them for inference.

However, the advantage of recent surveys is to record the consumption of a wide range of goods. It abstracts the problem of traditional goods whose consumption in this context is very gendered. Thus, I retain four 'neutral' commodities that can plausibly be candidates for adult goods: transportation, clothing, adult health, and personal care.¹¹

3.4.2 Descriptive statistics

Table 3.1 reports the descriptive statistics of the main variables used in the OER analysis. On average, adults with children spend 14% of the household budget on their personal welfare. Numerous studies using the OER method have obtained similar results with a share of adult goods in proportion to the total budget between 10% and 16%.¹² The share

¹⁰Enumerators asked children or their caregivers whether their biological parents were still alive for children aged five or under. I used this information to distinguish foster children from double orphans. Note that there are only 18 children who do not know whether both biological parents are still alive. However, they were not excluded from the analysis.

¹¹Personal care good is the collection of miscellaneous goods as follows: hair, jewels, razors, and magazines.

¹²See Haddad & Reardon (1993) for Burkina Faso, Gibson & Rozelle (2004) for Papua New Guinea, Arndt et al. (2006) for Mozambique, Lee (2008) for China and Hori, Mitsuyama, & Shimizutani (2016)

of goods that make it up varies between 1% and 6% on average, for personal care and transportation, respectively.

Since the survey recorded information only on individuals living in the household, my data contained only foster-in families in a given fostering exchange. Households involved in child fostering account for 20% of the total sample. Of these, half of the foster children live in households without biological children (Homogeneous Sibship), and half live in households where the biological children of the foster parents reside (Composite Sibship).

Table C-3.1 presents descriptive background on fostering for the child sample. Foster children represent 18% of total children. Kinship care is indeed the most dominant arrangement in Côte d'Ivoire, with grandchildren and nephews/nieces the most foster-in (see Section 3.2.3 for a discussion). Foster children who have no direct relationship with the head or the spouse are negligible (<1%). Foster children are, on average, two years older than their host siblings, 7.56 years vs. 5.5 years. This is consistent with domestic work and education as the main reasons for fostering (see Section 3.2).

for Japan.

Table 3.1: Summary Statistics for household sample

	Mean	Std. Dev.	Min.	p50	Max.	p-(0) [†]
Budget shares:						
Total (4) candidate adult goods	0.14	0.13	0	0.11	0.93	0.94
Transport	0.06	0.09	0	0.02	0.78	0.56
Clothing	0.05	0.05	0	0.03	0.61	0.80
Personal care	0.01	0.01	0	0.01	0.40	0.76
Adult health	0.02	0.07	0	0	0.92	0.28
Children aged under 6	0.24	0.18	0	0.25	0.80	
Biological children aged 6-10	0.13	0.16	0	0	0.80	
Foster children aged 6-10	0.02	0.08	0	0	0.75	
Biological children aged 11-14	0.06	0.11	0	0	0.75	
Foster children aged 11-14	0.02	0.08	0	0	0.85	
Children aged 15-20	0.05	0.10	0	0	0.60	
Adults aged 21-54	0.39	0.18	0	0.40	0.83	
Adults aged over 54	0.05	0.12	0	0	0.80	
Sibship structures:						
Parent(s) & biological children only	0.80	0.40	0	1	1	
Parent(s) & foster children only	0.10	0.31	0	0	1	
Parent(s) & both types of children	0.10	0.29	0	0	1	
Household types[‡]:						
Non-transfers HHs	0.14	0.35	0	0	1	
Transfers HHs	0.06	0.23	0	0	1	
Net receivers HHs	0.10	0.31	0.	0	1	
HH characteristics:						
Head has regular income	0.08	0.27	0	0	1	
Spouse has regular income	0.01	0.11	0	0	1	
Head has at least primary school degree	0.22	0.41	0	0	1	
Spouse has at least a primary school degree	0.18	0.38	0	0	1	
Female head	0.19	0.40	0	0	1	
2-parent household	0.76	0.43	0	1	1	
Polygamous	0.08	0.26	0	0	1	
Urban	0.43	0.49	0	0	1	
Akan	0.28	0.45	0	0	1	
Krou	0.07	0.26	0	0	1	
Northern Mande	0.18	0.38	0	0	1	
Southern Mande	0.06	0.23	0	0	1	
Voltaïque or Gur	0.20	0.40	0	0	1	
Per capita expenditure (log)	9.69	0.92	3.10	9.72	13.37	
Per capita income	23,983.89	70,659.06	0	11,168.06	3,361,111	0.90
Wealth index*	0.05	2.30	-5.32	0	15.03	
Household size	4.89	2.27	2	4	27	
Number of households	7,281					

Notes: [†]p-(0) denotes the proportion of households with non-zero expenditure. [‡]'Non-transfer HHs' corresponds to households that do not send or receive any transfers while 'Transfer HHs' denotes the opposite case. *Wealth index is constructed using dwelling characteristics and household assets by taking the first component in a principal components analysis (Filmer & Pritchett, 2001).

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

3.5 Estimation results

3.5.1 Testing for status-gender discrimination: Basic results

The inference about the possible discrimination between children of different types is made from the aggregate adult good results.¹³ Here, I analyze whether adults forgo part of their consumption to favor a specific type of child. For the sake of simplicity, I present the π -ratios results graphically. Figure 3.2 presents the π -ratios for the aggregated adult good. Panel 1 reports π -ratios regarding the child status, while Panel 2 splits by status and gender within each age category. The results of the equality test of the π -ratios between biological and foster children (equation (3.6)) that capture the bias in the intrahousehold allocation of resources are displayed in Table 3.2.

In Figure 3.2, the overall effects of adding a child, regardless of his status-gender, on the consumption of adult goods are largely negative, consistent with the interpretation of the negative effect on income. In Panel 1, the pattern observed is that for all demographic groups, adding a foster child lowers expenses for the aggregate adult good to roughly the same level as it does for a biological child, all else equal. In particular, for the 6-10 age category, the negative income effect of adding a biological child is slightly larger than that of a foster child, $\pi = -0.30$ (std err: 0.05) vs. $\pi = -0.25$ (std err: 0.10), respectively. The gap is about five percentage points but not statistically significant (Table 3.2, column (1)), which is expected when examining the standard errors. This gap narrows for the 11-14 age group.

In Panel 2, the same conclusion holds when considering the status-gender issue within each age category. For all age and status-gender groups, the results are nearly identical. Moreover, the test p-values show sharp rejections (Table 3.2, column (2) to (7)). In short, these findings suggest that there is no discrimination in the intrahousehold allocation of resources among children based on status within each age group, even disaggregated by gender.

¹³The plausibility of the aggregate adult good is reflected in the ability of each candidate good to satisfy the theoretical and test conditions of validity. The main regression results of Engel curves presented in Table B-3.1 that allow the effects of household structure in these regressions are more readily interpreted from OERs. π -ratios for each adult good and their combination forming the “aggregate adult good” are presented in Table B-3.2 in the Appendix. Here, I present the π -ratios for the children, which are the coefficients of interest. Adult coefficients are not presented since they play no role in this analysis—they explained the demand pattern for adult goods (Deaton, 1989a).

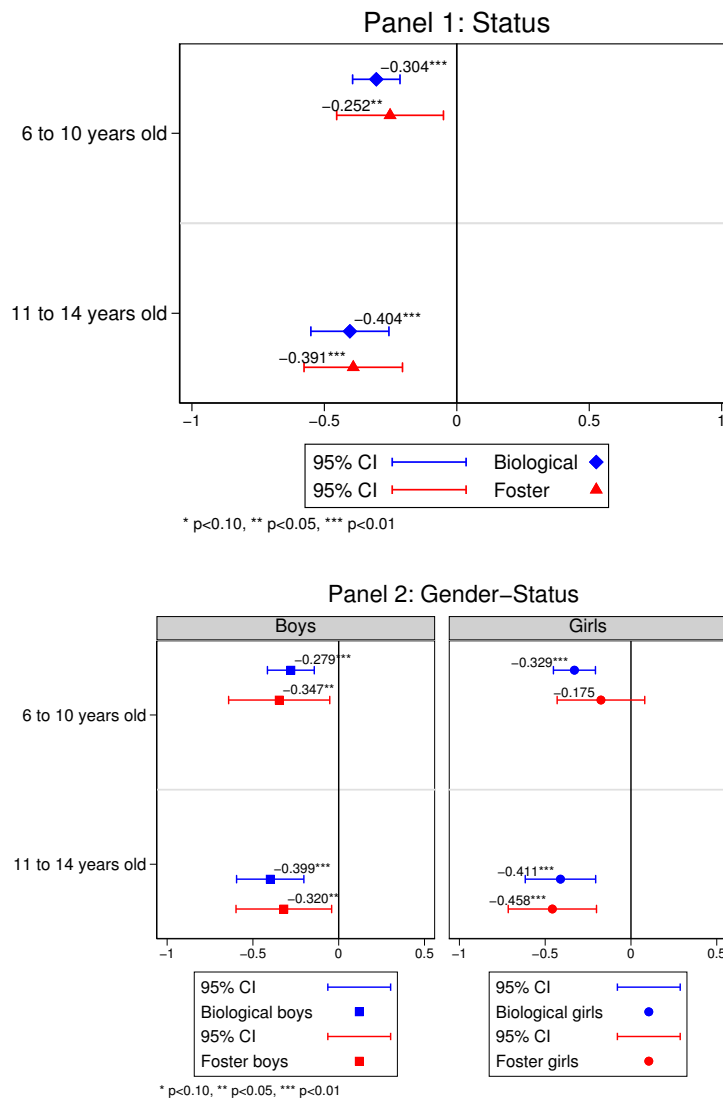


Figure 3.2: π -ratios for the aggregated adult good

Notes: This figure shows the π -ratios estimated from equation (3.5) for the aggregated adult good on the sample of 7,281 households (95% confidence interval). In Panel 1, coefficients are estimated regarding children’s status—foster vs. biological. In Panel 2, coefficients are estimated regarding both children’s status and gender.

Source: Author’s calculations using Côte d’Ivoire Household Living Standard Survey (2015).

Table 3.2: P-values for test of equal π -ratios, by status and gender

Age group	Panel 1	Panel 2					
	Foster vs. Biological (1)	B. Boys vs. F. Boys (2)	B. Girls vs. F. Girls (3)	F. Girls vs. B. Boys (4)	B. Girls vs. F. Boys (5)	F. Girls vs. F. Boys (6)	B. Girls vs. B. Boys (7)
Children 6-10	0.49	0.34	0.91	0.66	0.52	0.66	0.62
Children 11-14	0.88	0.21	0.24	0.56	0.51	0.13	0.45

Notes: N= 7,281. This table contains the results of the test of equality of π -ratios from equation (3.6). Reported p-values are corrected for survey design effects. B. and F. stand for biological and foster, respectively.

Source: Author’s calculations using Côte d’Ivoire Household Living Standard Survey (2015).

3.5.2 Testing for status-gender discrimination: Disaggregated results

The basic results suggest no difference in consumption between children within each status-gender and age category. Here, I investigate whether fostering arrangements may imply a difference in child treatment. The results are presented in two subsections. The first explores status-gender bias based on sibship composition. The second examines the potential role of transfers in detecting discrimination. The main OLS results of estimating the effects of demographic composition on aggregate adult good consumption share from equation (3.6) are reported in Table B-3.3.

3.5.2.1 Sibship composition

It is well known that family structure affects a wide range of child outcomes.¹⁴ My primary focus is on foster children, who by definition do not reside with their biological parents. Thus, the family structure I consider here is that of sibship composition to allow for heterogeneity in fostering arrangements.¹⁵ I distinguish the three following types of sibship composition: (A) parent(s) living with biological children only; (B) parent(s) living with foster children only; and (C) parent(s) living with both biological and foster children.¹⁶ (A) and (B) represent “homogeneous” sibship while (C) refers to “composite” sibship.

A current problem in assessing the differential treatment between foster children and their host siblings is the lack of solid counterfactuals. Indeed, the researcher cannot observe a child before and during the fostering arrangement. The literature provides few answers to that question. The exception is the work of Akresh (2004). Using tracked data, he shows that foster children in Burkina Faso are more likely to be enrolled in school than their biological siblings non-fostered. In the absence of such data—enables to

¹⁴For example, it has been shown that family structure, as expressed by the demographic composition of the parents in the household—presence of both parents or single-parent—affects children’s educational attainment (Ginther & Pollak, 2004) or their economic mobility (McLanahan & Percheski, 2008).

¹⁵There is ample evidence that child treatment within the household differs by initial endowments at birth (Almond & Mazumder, 2013; Becker & Tomes, 1976), and birth rank (Jayachandran & Pande, 2017; Mechoulan & Wolff, 2015), just to name a few. In addition, there is a large body of research that shows that sibling composition influences parents’ resource allocation decisions, known as siblings rivalry (Akresh, Bagby, De Walque, & Kazianga, 2012; Marazyan, 2015; Morduch, 2000).

¹⁶Note that ‘parent(s)’ represents caregiver(s), i.e., either the head and his/her spouse(s) or a single-head household.

control for household and child unobservable time-invariant characteristics and identify the causal effect of the household structure on resources allocation—I assume that the situation of foster children in (B) can serve as a benchmark. This implies that a foster child, living without rivalry from any host siblings, will capture the same fraction of household resources, to some extent, that s/he would have in his/her household of origin.¹⁷

Results

In Figure 3.3, Panel A and Panel B display the π -ratios of the aggregate adult good for children living in a homogeneous sibship. The results of the equality test of the π -ratios between biological and foster children from equation (3.6) are presented in Table 3.3. As hypothesized above, Panel A gives the benchmark of π -ratios for biological children while Panel B shows foster children “hypothetical” consumption in their native households. The pattern of the negative income effect of children on the consumption of adult goods is quite striking. Moreover, the findings indicate a slight difference in treatment of the children regarding their status-gender in the household.

First, in the 6-10 years old category, Panel A presents no significant difference between biological girls and boys living in households with no other children (Table 3.3, column (6)).¹⁸ Second, in Panel B, the results show that foster girls aged 11-14 consumed more parental resources than foster boys (column (5), $p = 0.04$) when they did not live with biological children in the same household. There is also little evidence that biological boys aged 11-14 (Panel A) consumed more than foster boys (Panel B) within the same age category. However, the null hypothesis of equality of π -ratios for the cross-comparison of the coefficients (Table 3.3, Panel A vs. Panel B) is borderline rejected, $p = 0.10$. In sum, I can conjecture weak sibship rivalry in gender composition within the household. Moreover, it appears that child consumption is positively correlated with age which is

¹⁷It is plausible, to some extent, that children in (B) receive the same treatment as they would have received. There is indeed anthropological and sociological evidence that certain ethnic beliefs in Côte d’Ivoire encourage the fostering of young children to stimulate fertility among less fertile women (Antoine & Guillaume, 1986; Etienne, 1979). This could indeed reinforce the hypothesis of consumption at least at the same level as that enjoyed by the foster child in his/her native household. However, since I do not have data on the fertility of foster-in parents, I cannot examine such hypotheses. Therefore, I do not know whether foster children fill the emotional gap of biological children who do not live in the household or whether the parents are infertile.

¹⁸Although the purpose of this analysis is not to examine gender bias within each status and age category, these results offer some interesting insights into any cultural gender preferences in society.

consistent with differential needs (i.e., younger children consume fewer resources than older children). Now, it turns that the crucial comparison is that of composite households, where I expected stronger sibship rivalry between children in terms of their status and gender within each age category.¹⁹

Panel C in Figure 3.3 displays the π -ratios for children within composite sibship. The results of the equality test of the π -ratios between foster and biological children are also presented in Table 3.3. The results indicated that when both types of children live in the same household, there is no status-gender discrimination in the 6-10 years old category. In contrast, parents discriminated against boys within the 11-14 age category. Foster boys get fewer resources than biological boys (column (1), $p = 0.04$). I can argue that biological boys are favored against foster boys aged 11-14.²⁰

¹⁹There is indeed a selection in child fostering. For example, suppose education is the main reason for fostering. In that case, it is very likely that fostered children are excellent students and compete with their host siblings within the household for the parents' material resources. Indeed, suppose parents are paying for good educational outcomes. In that case, there is likely to be intense rivalry between foster children and biological children for household resources.

²⁰Besides, there is also a gender bias toward biological girls who consumed less than their biological sibling boys in the 11-14 aged category (column (6), $p = 0.05$).

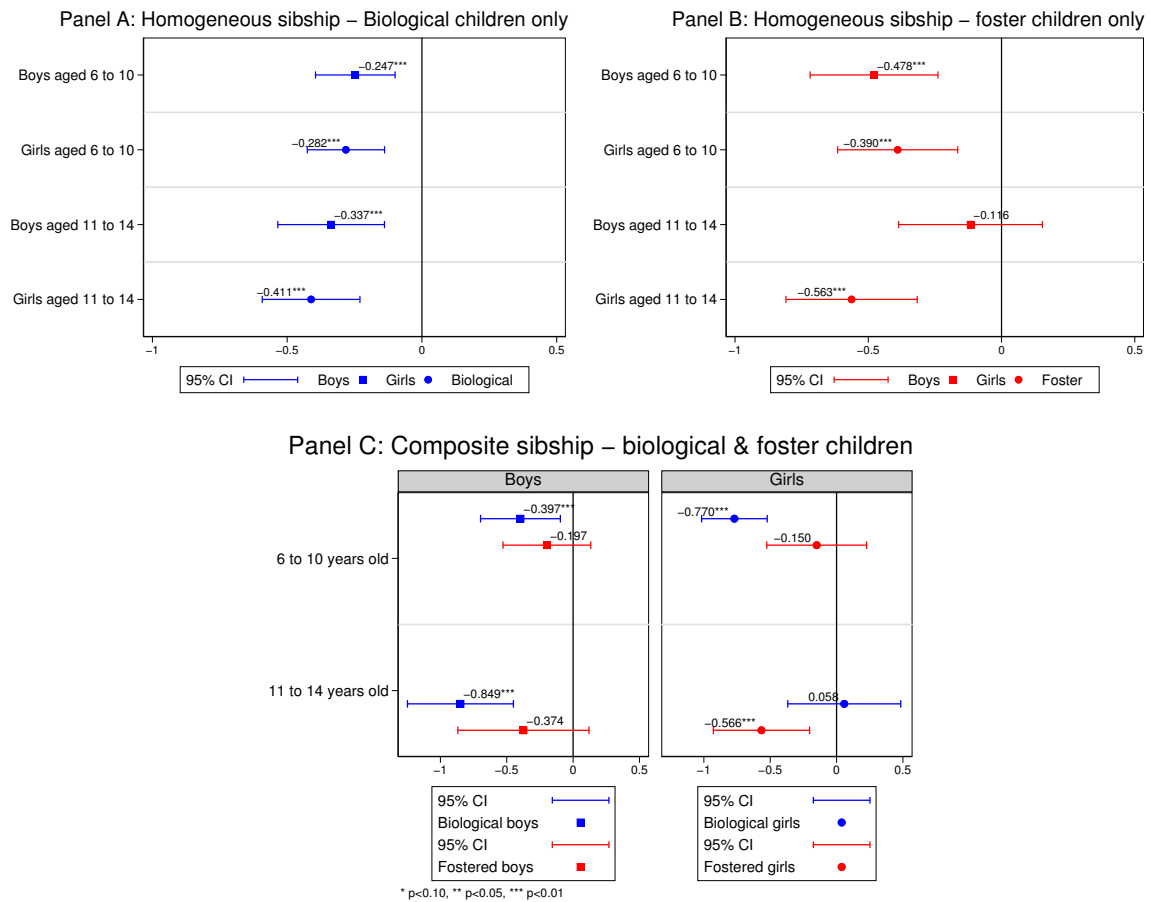


Figure 3.3: π -ratios for the aggregated adult good, by sibship composition

Notes: This figure shows the ratios estimated from equation (3.5) for the aggregated adult good by sibship composition (95% confidence interval). In Panel A, coefficients are estimated on a sample of 5,822 households in which only biological children reside. In Panel B, coefficients are estimated on a sample of 760 households in which only foster children reside. In Panel C, coefficients are estimated on a sample of 799 households in which both foster and biological children reside.
Source: Author’s calculations using Côte d’Ivoire Household Living Standard Survey (2015).

3.5.2.2 The role of transfers

I now turn to the role of transfers in intrahousehold resource allocation between foster and biological children. Inter-household transfers in fostering arrangements have been emphasized by previous research but receive less attention in empirical studies. Isiugo-Abanihe (1985) points out that grandparents are more likely to foster-in their grand-child because they can use children’s needs as a reason to request transfers from their biological parents. Shapiro, Simons, & Tamashe (1995)—cited in Shapiro & Tamashe (2001)—stress that there is a considerable degree of interhousehold transfers in support of foster children and their education in Kinshasa (Congo, DRC). More recently, Marazyan (2015) shows that

Table 3.3: P-values for test of equal π -ratios for children

Age group	B. Boys vs. F. Boys	B. Girls vs. F. Girls	F. Girls vs. B. Boys	B. Girls vs. F. Boys	F. Girls vs. F. Boys	B. Girls vs. B. Boys
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Parent(s) with biological children only (N=5,822)						
Children 6-10						0.81
Children 11-14						0.66
Panel B: Parent(s) with foster children only (N=760)						
Children 6-10					0.59	
Children 11-14					0.04	
Panel C: Parent(s) with both foster and biological children (N=799)						
Children 6-10	0.55	0.16	0.45	0.27	0.99	0.40
Children 11-14	0.04	0.43	0.25	0.75	0.18	0.05
Cross-comparison between Panel (A) and Panel (B)						
Children 6-10	0.78	0.78	0.85	0.85		
Children 11-14	0.10	0.75	0.93	0.16		
Wald test p-value of equality of π-ratios across sibship types						
	Boys	Girls				
Children 6-10	0.38	0.32				
Children 11-14	0.11	0.12				

Notes: This table contains the results of the test of equality of π -ratios from equation (3.6). Reported p-values are corrected for survey design effects. P-values reported in the two last rows are derived from adjusted Wald tests calculated from equation (A.3) and distributed as χ^2 with four degrees of freedom. B. and F. stand for biological and foster, respectively.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

foster children are more likely to belong to households that send or receive more transfers in Senegal. It is also evident that not all foster children are dependent on the resources of the foster household. Thus, examining the role of transfers in consumption allocation adds consistency to the analysis.

I consider that a foster household is involved in transfers if it is either a net donor/recipient of child-related transfers. The amount of transfers sent corresponds to financial support provides to kin or kith for child education. Unfortunately, I do not have the information of the beneficiary child, e.g., whether s/he is a child of the donor household that is foster-out. Transfers received correspond to cash or in-kind for child purposes. I observed only 60 households where the transfers received are directly recorded at the child level in the data. For sample size purposes, I also include foster households with positive food aid received from relatives. I assume that this food aid is intended to take care of children, particularly fostered, either directly or by helping parents to address liquidity constraints.²¹ I then distinguish two following types of households. On the one

²¹In Figure C-3.1 in the Appendix, I compare foster vs. non-foster households food aid received

hand, *Non-transfer households* or fostering only, i.e. those hosting a foster child and do not sent/receive any child-related transfers. *Transfer households* i.e. those hosting a foster child and engaged in child-related transfers. For this analysis, the sample size is therefore restricted to foster-in households.

Results

Figure 3.4 presents the π -ratios for the aggregate adult good by household types. Panel D presents the results for *non-transfers households* and Panel E shows the opposite situation. The results of the equality test of the π -ratios between foster and biological children from equation (3.6) are presented in Table 3.4.

Table 3.4: P-values for test of equal π -ratios, by household types

Age group	B. Boys vs. F. Boys (1)	B. Girls vs. F. Girls (2)	F. Girls vs. B. Boys (3)	B. Girls vs. F. Boys (4)	F. Girls vs. F. Boys (5)	B. Girls vs. B. Boys (6)
Panel D: Non-transfers households (N= 1,047)						
Children 6-10	0.72	0.32	0.74	0.79	0.32	0.56
Children 11-14	0.01	0.10	0.28	0.62	0.04	0.02
Panel E: Transfers households (N= 410)						
Children 6-10	0.49	0.38	0.72	0.06	0.16	0.34
Children 11-14	0.40	0.97	0.84	0.45	0.16	0.89
Cross-comparison between Panel (D) and Panel (E)						
Children 6-10	0.70 [0.79]	0.38 [0.81]	0.41 [0.97]	0.27 [0.56]	0.92 [0.61]	0.34 [0.79]
Children 11-14	0.99 [0.06]	0.44 [0.35]	0.27 [0.56]	0.65 [0.41]	0.86 [0.05]	0.38 [0.64]
Wald test p-value of equality of π-ratios across household types						
	Boys	Girls				
Children 6-10	0.60	0.63				
Children 11-14	0.00	0.26				

Notes: This table contains the results of the test of equality of π -ratios from equation (3.6). Sample is restricted on foster households. Reported p-values are corrected for survey design effects. P-values reported in the two last rows are derived from adjusted Wald tests calculated from equation (A.3) and distributed as χ^2 with two degrees of freedom. B. and F. stand for biological and foster, respectively.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Non-transfer households

In the 6-10 age group, the results do not suggest systematic discrimination against any to check the plausibility of this assumption. The results show that households living with both types of children or foster children only receive more foods aid than non-foster households.

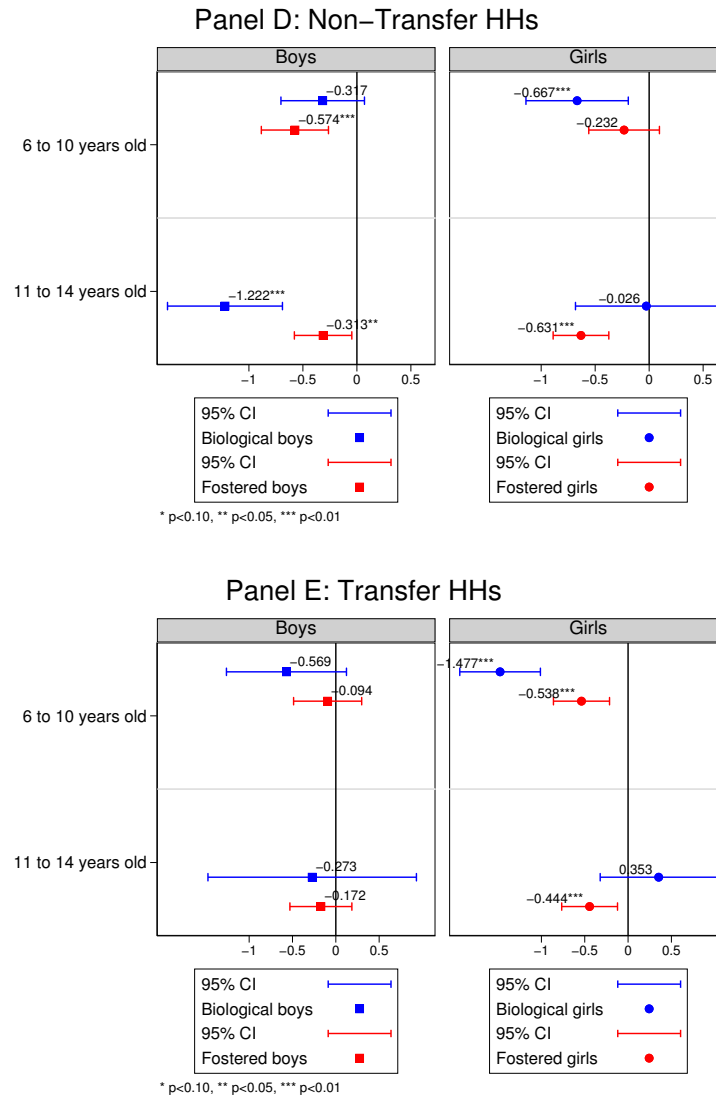


Figure 3.4: π -ratios for the aggregated adult good, by household types

Notes: This figure shows the π -ratios estimated from equation (3.5) for the aggregated adult good by household types (95% confidence interval). In Panel D, coefficients are estimated on a sample of 1,047 foster households not involved in child-related transfers. In Panel E, coefficients are estimated on a sample of 410 foster households involved in child-related transfers.

Source: Author’s calculations using Côte d’Ivoire Household Living Standard Survey (2015).

particular type of child according to his status. In Panel D of Table 3.4, the equality test p-values in the first row of columns (1) to (6) show sharp rejections.

In the 11-14 age group, I found little evidence of discrimination against foster boys. Indeed, parents significantly reduce their consumption of adult goods by a greater amount for the other children, regardless of their status—foster girls (-0.63, std err: 0.24) and biological boys (-1.22, std err: 0.28)—compared to the foster boys (-0.31, std err: 0.14). Besides, the results indicate discrimination against biological girls in favor of biological boys

of the same age interval (column (6), $p = 0.02$). There is also possible reverse discrimination against the biological girls aged 11-14 in favor of foster girls. Nonetheless, the π -ratio coefficients for biological girls are not significant, surrounded by large standard errors, and the test is on the borderline of rejection (column (2), $p = 0.10$).

Transfers households

For all age groups, there are no significant differences between the π -ratios for boys. In the 6-10 age group, while π -ratios for girls show a large shift from parental consumption to biological girls, the difference is not statistically significant. The p-values of the tests of difference between the coefficients support these findings, with failure to reject the null hypothesis of equality (Panel E in Table 3.4, columns (1) to (6)). Moreover, the results show little evidence of inequality of treatment among biological and foster children in the 6-10 age group. Parents devote fewer resources to foster boys than their host sisters in the same age interval.

The overall result suggests a better consumption for foster girls in Panel E compared to the foster boys. Furthermore, the evidence of discrimination observed in *non-transfers households* (Panel D) within the 11-14 age group is canceled out in the *transfers households* (Panel E). This finding suggests a compensatory role for transfers that I, unfortunately, cannot confidently assess. Indeed, these results must be taken with caution. Due to data limitations on origin/destination and purpose of the transfers, these results are only suggestive.

Transfers vs. Non-transfers

To grasp the role of transfers, I now examine the cross-comparison of the π -ratios between Panel D and Panel E. The results of the equality tests are presented at the bottom half of Table 3.4. There is mixed evidence on the children's consumption by status split by gender within each age category.

In the 6-10 age group, the π -ratios are roughly similar for biological children across household types within each age-gender group with some slight differences that are not statistically significant.

In contrast, in the 11-14 age group, there are noticeable differences among foster children. The consumption of boys is getting worse while that of girls is relatively *stable*.

The results of the equality of coefficients tests indicate statistically significant differences between foster boys and foster girls. Indeed, foster girls in *transfers households* are better treated than foster boys who live in *non-transfers households* (column (5), $p = 0.05$).²²

3.6 Sensitivity and robustness analysis

3.6.1 Handling data censorship.

The model is fitted, as is conventional, on the sample of all households with a child aged 14 and under, regardless of whether the household incurs a zero or positive budget share of a particular expenditure. As such, Table 3.1 shows that 28% of households do not purchase the aggregate adult goods, the dependent variables in equation (3.4) are therefore censored at 0. I then test whether the results are robust to different estimation methods to account for the data structure. Table B-3.1 in Appendix reports the Tobit estimation results that account for the problem of censoring (column 6). The results do not differ qualitatively from OLS estimates. They are roughly similar in terms of the sign with a slight change in terms of magnitudes between columns (5) and (6) but allow to maintain the claims from the baseline findings.

3.6.2 Age decomposition

Here, I test whether the results are sensitive to the selection of children's age interval that makes up the two groups. I thus re-estimated π -ratios from equation (3.5) for two-year age interval, namely 6-8, 9-10, 11-12, and 13-14. The results are presented in Table C-3.2 in the Appendix. The main OLS results of estimating the effects of demographic composition on aggregate adult good consumption share from equation (3.4) are reported in Table C-3.3.

The results remain unchanged in the 6-10 age group, split into 6-8 and 9-10. However, it appears that in the composite sibship, biological girls are treated better than foster girls in the 9-10 age group (column (2) in Panel C, $p = 0.01$).

The results also remain unchanged in the 11-14 age group, broken down into 11-12 and 13-14. Nevertheless, the results indicate that a foster girl aged 11-12 gets more of

²²Another significant bias against foster boys in favor of biological boys cannot be valid insofar since the assumption underlying equation (A.2) is violated, with $p = 0.00$ (Table 3.4, column (1)).

the parental resources than a foster boy when the household is engaged in child-related transfers (column (5) in Panel E, $p = 0.04$), which was weakly detected in Table 3.4 (column (5) in Panel E, $p = 0.16$).

3.6.3 Age limit

In Côte d'Ivoire, as in many developing countries, children may often be enrolled in productive activities earlier in exchange for payment—e.g., domestic work such as maids for young girls (Jacquemin, 2004) and some informal jobs including fieldwork for young boys (see, e.g., Francavilla & Lyon, 2002; Nkamleu & Kielland, 2006). Moreover, the fact that all the goods used here are normal, a positive π -ratio implies that an additional child in the given age category acts like an increase in total expenditure. This frequently occurs in the 11-14 age group and thus raises the question of the age limit of 14 years used in this analysis, which can be high in such contexts (Gibson & Rozelle, 2004). The age interval of 6-14 years, divided into two groups, was set to reflect the minimum age for enrollment in primary school (6 years) and at least the start of secondary school enrollment, which generally refers to the 12-14-year-old population. Besides, the bias in intrahousehold resource allocation between children of different status, documented above, is only statistically detected in the 11-14 age category. Thus, I examine whether age cut-off drives these results. I therefore re-estimates equation (3.5) for each Panel by considering the age groups of 11-13. The results are presented in Table C-3.4. I then perform the equality tests from equation (3.6) to check whether the bias holds following the reduced age intervals. The p-values for equality tests of results are presented at the bottom half of Table C-3.4. The main OLS results of estimating the effects of demographic composition on aggregate adult good consumption share from equation (3.4) are reported in Table C-3.5.

The results remain globally unchanged. However, there are some new findings to report. Concerning status-gender treatment, compared to the results in Table 3.2, the new threshold of 13 years as the cut-off age shows consumption differences. Biological boys consume more than foster boys (column (2), $p = 0.02$). This finding holds when comparing foster girls to foster boys (column (6), $p = 0.01$). This result reinforces the findings against foster boys when considering heterogeneity in fostering arrangements.

With regard to sibship composition, foster girls in composite households consume less

than their host sisters. This result is somewhat difficult to explain and a bit confusing because it had been seen before in boys (Table 3.3, column (1)).

A notable change in *non-transfers households* is noteworthy. When using this new cut-off, biological boys and foster boys are treated equally (column (1), $p = 0.99$). As for the role of transfers, as in Table 3.4, the same conclusions apply.

The results are therefore slightly sensitive to the definition of the age groups of children. This suggests that the age cut-off explains a slight variation in detecting bias in consumption between foster and biological children. However, this result requires further analysis, which is possible with sufficient sample sizes by age for each status-gender.

Summary, discussion and concluding remarks

This chapter investigates whether there is consumption inequality among children of school-age regarding their status-gender within the household. The measure of discrimination given by the compression of expenditures on adult goods to additional children indicates no evidence of a bias in favor of a particular type of child on average, all else equal. In contrast, I find heterogeneous effects by sibship composition and whether households are involved in child-related transfers. Parents are less likely to give up some of their consumption of adult goods for foster boys, implying discrimination against them compared to other children regardless of their status-gender, in the 11-14 age group. These results hold when households are not involved in child-related transfers and also within homogeneous and composite sibship. In addition, these findings are supported by the robustness exercise that indicates a more widespread consumption bias after the age of ten.

How do these findings echo the literature on the treatment of foster children? The absence of inequality observed in the 6-10 age interval support the view that “a child is a child” in the literature on child fostering in Sub-Saharan Africa. To better understand this concept, Verhoef (2005) provides an illustrative quotation drawn on her qualitative field work in Cameroon: “A child is only its mother’s in the womb’ (i.e. a child belongs to the wider family). ‘When we share children, we build up the family.’ ‘A child is a child’ (i.e. treat all children as you would your own).” In this sense, Caldwell & Caldwell (1988)

argue that “In much of West Africa [...] it is an offense against the lineage and against the children’s grand-parents to distinguish between cousins, even when some are one’s own biological children.” The fact that foster children are not fully discriminated against also raises the issue of the sustainability of this institution. In my view, child fostering is still widespread in sub-Saharan Africa, especially in Côte d’Ivoire, because this social institution continues to serve its original purpose of addressing income fluctuations and providing foster children with better opportunities.

By contrast, the observed status-gender disparity for the 11-14 age group in consumption indicates that parents discriminated against fostered boys. Biological boys and foster girls consume more than foster boys in the composite and homogeneous sibships, respectively. This finding is more pronounced in the *non-transfers households* and is in line with the issue of potential discrimination within the household that Desai (1995) raises. She argues that “In societies in which fostering is widespread, it cannot always be assumed that parental resources are all that are available to the child and, conversely, that parents invest all their resources in their natural children.” However, why foster boys aged over ten are not treated equally to their siblings in foster households is an issue that requires particular attention in further research.

Overall, the solidarity mechanism studied here remains complex. On the one hand, I can argue that the findings support that child fostering remains a social institution that provides a response to various idiosyncratic shocks for fostering-out parents and guarantees equality of treatment in terms of resources between school-age foster and biological children. On the other hand, fostering arrangement induced an additional cost for host parents. As suggest by the results, households not involved in transfers are more likely to discriminate against foster boys compared to *transfers households*. However, data limitations prevent me for going further in exploring this important issue.

Data with additional information on foster children’s household origin and the purpose of transfers sent and received will provide a better understanding of child consumption patterns. Moreover, it is essential to know the context underlying each fostering decision. Future research on the treatment of foster children should analyze the effects of sibship density and size, the voluntary and involuntary nature of fostering arrangements, and the potential compensatory role of transfers. These analyses should be enhanced with more

precise data collected for this purpose. Any public policy concerned with the welfare of children should account for these prerequisites.

Appendix

A Validation Tests

A.1 Normal good test

A main assumption of the OER approach is that each adult good must be a normal good. To check if this condition is satisfied, I derive the expenditure elasticity of each candidate good at the sample mean. The elasticity parameter, say θ , is provided in table 2 using an OLS regression of equation (3.3). A positive value the θ less than 1 indicates that the good is normal while the opposite indicates a luxury good. All goods are estimated to be normal, especially the combination of all four goods with a value of $\theta = 0.98$. 'Adult health' and 'transport' are luxury goods.

Table A-3.1: Candidates Adult Goods and Expenditure Elasticity

Adult goods	Description	Expenditure Elasticity
Transport	Shared transport and travel	1.10
Clothing	Adults males and females clothes	0.74
Other [†]	Hair, jewels, razors and newspapers	0.86
Adult Health	Modern and traditional medication fees	1.19
All adult goods	Aggregate of all four goods	0.98

Notes: This table presents the candidates' adult goods used in the OER analysis. Expenditure elasticity is evaluated at the sample mean from the OLS regression of equation (3.4). The regression includes per capita expenditure (log), household size (log), and the following demographics age-status categories: under 6, 6-10, 11-14, 15-20, 21-54, and over 54. Additional controls include wealth index, head's and spouse's ages and their squares, and a number of dummy variables that allow for possible effects of other individual and household characteristics, such as a regular job for the head and spouse, female headship, head and spouse education (whether s/he has at least a primary school degree), ethnicity, urban, head and spouse living in the household, net recipient of child transfers, regions, and date of interview.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

A.2 Demographic separability test

One of the main condition in the OER approach is the demographic separability, between adult good and child demographics, that allow the negative income affect. This concept posits that children have no or negligible relationship with the demand of a 'true' adult good. A parametric test is provided by ensure that the c_{ij} coefficients in equation (3.3) are jointly null.

A second demographic separability test is performed, Deaton et al. (1989) provide

a robustness test for the validity of the adult goods selected from equation (3.1). If demographic separability holds, the π -ratios within each child demographic category across goods should be of equal quantity. This test is implemented for a group of goods v by testing the following null hypothesis that for each good:

$$H_0 : \Delta_{ir} = \pi_{ir} - \frac{\sum \pi_{jr}}{v} = 0 \quad (\text{A.2})$$

with $i = 1, 2, \dots, v$

The construction of the appropriate Wald statistics test of equation (A.2) is as follows. Let π_k and G , be respectively the vectors of π -ratios in demographic group k , and the vector of all adult goods. Then, testing the equality of π -ratios is similar to testing the $G - 1$ linear restriction: $\pi_{ik} = \bar{\pi}_k$ for all $i = 1, \dots, G$ and $\bar{\pi}_k$ the mean value of the π -ratios over the G goods. To obtain the appropriate Wald statistics, I construct the matrix $A = I - (ii'/G)$ where I is an $M \times M$ identity matrix and i is a unit vector. The set of linear restrictions can now be expressed as $A\pi_k$. If equation (3.6) is true, the Wald statistic is asymptotically distributed as χ^2 with $G - 1$ degrees of freedom and is given by

$$W_r = \pi_k' A' [A' V(\pi_k) A]^{-1} A \pi_k \quad (\text{A.3})$$

where $V(\pi_k)$ is the variance-covariance matrix for the G π -ratios for demographic group k and is obtained empirically from the bootstrap sample of 100 π -ratios.

Table A-3.2 presents the p-values from the tests for identification of adult goods based on equation (3.1). The null hypothesis test is to check that neither the status nor the children's age affects the expenditure pattern for the good. From the results of the F-test present in the last column, I cannot reject the null hypothesis. Not all child demographic groups influence the expenditure pattern for the selected goods. This indicates that all five candidates are "plausible" adult goods. The p-values from the Wald tests of equality for π -ratios across adult goods derived from equation (A.3) are provided in the last row of Table A-3.2. Once again, I do not reject the null hypothesis.

Table A-3.2: Testing for true adult goods

	Score test (1)	Estimator (2)	Biological children		Foster children		F-test (7)
			6-10 (3)	11-14 (4)	6-10 (5)	11-14 (6)	
<i>Candidates adult goods</i>							
Transport	0.05	OLS	0.56	0.13	0.49	0.17	0.55
Clothing	27.61	IV	0.03	0.92	0.64	0.80	0.32
Other†	42.60	IV	0.04	0.76	0.73	0.41	0.29
Adult Health	7.02	IV	0.06	0.38	0.20	0.31	0.35
			Wald test p-value of equality of π -ratios across goods				
			0.32	0.18	0.39	0.21	

Notes: This table presents the results of identification tests for adult goods. Column (1) presents the endogeneity tests results of total adult goods expenditures x_g in equation (3.3). Wooldridge's (1995) score test is robust to heteroskedasticity and asymptotically distributed as χ^2 with one degree of freedom under the null hypothesis. Column (2) presents the appropriate estimator that fits each regression. Columns (3) to (6) present the p-values from t -test under the null that the coefficient c_{ij} is insignificant in equation (3.3). Column (8) presents the p-values from F-test that all demographic coefficients are jointly equal to zero. The last row presents p-values from equation (A.3) derived from adjusted Wald tests calculated distributed as χ^2 with five degrees of freedom, as a robustness test. Per capita income is used as an instrument for expenditure on adult goods (x_g). F-statistic on the excluded instrument is 59.25. Regressions included the same covariates as in Table A-3.1.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

B The Engel curves and OERs

According to the theory, a negative π -ratio indicates a reduction in expenditure on the associated adult good due to the addition of a child in a given age category. Table B-3.1 presents the results of the main regression from equation (3.4) by ordinary least squares (OLS) and Table B-3.2 presents the full results of the π -ratios for all goods, according to the children status, respectively. Table B-3.1 shows that the effects of adding a child in a given age category on the consumption of goods by adults are mostly negative, which is consistent with the interpretation of the negative effect on income. Then, I used the estimate coefficients in Table B-3.2 to compute the π -ratios. There are five adult goods, two status, and two age classes of interest (split by gender), resulting in 20 (40) comparisons overall for the basic (disaggregated) results. The π -ratios reported in Table B-3.2 present are also consistent with the interpretation discuss in Section 3.3.1.

Table B-3.1: Engel curves estimates, main results

	Transport	Clothing	Personal care	Adult Health	All four goods	
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	Tobit (6)
Per capita expenditure (log)	0.0084*** (0.0022)	-0.0069*** (0.0012)	-0.0032*** (0.0007)	0.0134*** (0.0022)	0.0118*** (0.0031)	0.0174*** (0.0035)
Household size (in log)	0.0126*** (0.0048)	0.0021 (0.0023)	-0.0021*** (0.0008)	0.0138*** (0.0035)	0.0264*** (0.0061)	0.0323*** (0.0065)
Children aged under 6	-0.0429*** (0.0159)	-0.0211*** (0.0065)	0.0016 (0.0022)	-0.0250** (0.0103)	-0.0875*** (0.0189)	-0.0907*** (0.0200)
Biological children aged 6-10	-0.0438*** (0.0151)	-0.0248*** (0.0065)	0.0003 (0.0022)	-0.0222** (0.0105)	-0.0905*** (0.0185)	-0.0936*** (0.0196)
Foster children aged 6-10	-0.0584*** (0.0209)	-0.0320*** (0.0090)	0.0010 (0.0030)	-0.0167 (0.0170)	-0.1061*** (0.0272)	-0.1124*** (0.0294)
Biological children aged 11-14	-0.0579*** (0.0174)	-0.0340*** (0.0073)	-0.0003 (0.0025)	-0.0223* (0.0121)	-0.1144*** (0.0217)	-0.1177*** (0.0229)
Foster children aged 11-14	-0.0575*** (0.0201)	-0.0259*** (0.0091)	-0.0035 (0.0035)	-0.0241 (0.0149)	-0.1110*** (0.0265)	-0.1195*** (0.0290)
Children aged 15-20	-0.0480** (0.0190)	-0.0092 (0.0083)	0.0054* (0.0030)	-0.0114 (0.0126)	-0.0631*** (0.0232)	-0.0652*** (0.0244)
Adults aged 21-54	0.0175 (0.0128)	0.0149** (0.0060)	0.0067*** (0.0018)	-0.0111 (0.0084)	0.0279* (0.0159)	0.0308* (0.0170)
Head has regular income	-0.0122** (0.0048)	0.0054** (0.0021)	0.0006 (0.0009)	-0.0069*** (0.0024)	-0.0131** (0.0059)	-0.0146** (0.0062)
Spouse has regular income	-0.0055 (0.0085)	-0.0048 (0.0038)	-0.0006 (0.0016)	0.0010 (0.0055)	-0.0100 (0.0100)	-0.0106 (0.0103)
Head education	-0.0034 (0.0036)	-0.0048*** (0.0016)	-0.0004 (0.0006)	0.0052* (0.0027)	-0.0035 (0.0047)	-0.0034 (0.0049)
Spouse education	-0.0010 (0.0040)	0.0008 (0.0017)	0.0006 (0.0006)	-0.0005 (0.0026)	-0.0001 (0.0049)	0.0000 (0.0050)
Female head	-0.0048 (0.0062)	-0.0034 (0.0023)	0.0003 (0.0008)	0.0109*** (0.0030)	0.0030 (0.0070)	0.0032 (0.0075)
2-Parents family	-0.0239 (0.0170)	0.0093 (0.0079)	0.0003 (0.0026)	0.0148 (0.0120)	0.0004 (0.0219)	0.0046 (0.0229)
Urban	-0.0173*** (0.0034)	-0.0142*** (0.0014)	0.0009* (0.0005)	-0.0163*** (0.0026)	-0.0468*** (0.0043)	-0.0501*** (0.0046)
Net receiver HH	0.0101** (0.0047)	-0.0048*** (0.0018)	0.0003 (0.0007)	0.0002 (0.0024)	0.0058 (0.0056)	0.0072 (0.0059)
Constant	-0.0339 (0.0312)	0.1246*** (0.0171)	0.0429*** (0.0080)	-0.1232*** (0.0280)	0.0103 (0.0430)	-0.0572 (0.0471)
Observations	7,281	7,281	7,281	7,281	7,281	7,281
R^2	0.06	0.14	0.09	0.06	0.11	

Notes: The dependent variable is the share of the total consumption of adult goods in total household expenditures. Additional controls not displayed are the full set of dummies for head ethnicity, regions, and date of the interview. Standard errors in parenthesis are corrected for clustering, sampling weights, and stratification. Level of significance denoted * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Table B-3.2: OERs for each Adult Good

	Transport (1)	Clothing (2)	Personal care (3)	Adult health (4)	All four adult goods (5)
<i>Status-age</i>					
6-10					
Biological	-0.42*** (0.08)	-0.18** (0.08)	-0.17 (0.11)	-0.22** (0.10)	-0.30*** (0.05)
Foster	-0.43** (0.17)	-0.28** (0.14)	0.09 (0.25)	0.05 (0.27)	-0.25** (0.10)
11-14					
Biological	-0.53*** (0.12)	-0.35*** (0.11)	-0.17 (0.22)	-0.27 (0.18)	-0.40*** (0.07)
Foster	-0.43*** (0.15)	-0.28** (0.13)	-0.82*** (0.25)	-0.35* (0.21)	-0.39*** (0.09)
<i>Status-gender-age</i>					
6-10					
Biological boys	-0.35*** (0.12)	-0.14 (0.12)	-0.12 (0.17)	-0.32** (0.14)	-0.28*** (0.07)
Foster boys	-0.63*** (0.23)	-0.24 (0.20)	0.09 (0.39)	-0.01 (0.46)	-0.35** (0.15)
Biological girls	-0.50*** (0.11)	-0.23** (0.11)	-0.23 (0.17)	-0.12 (0.13)	-0.33*** (0.06)
Foster girls	-0.27 (0.24)	-0.32* (0.19)	0.10 (0.32)	0.10 (0.35)	-0.18 (0.13)
11-14					
Biological boys	-0.51*** (0.15)	-0.34** (0.14)	0.06 (0.34)	-0.34 (0.25)	-0.40*** (0.10)
Foster boys	-0.36 (0.22)	-0.32* (0.19)	-1.25*** (0.28)	-0.06 (0.32)	-0.32** (0.14)
Biological girls	-0.56*** (0.18)	-0.36** (0.15)	-0.43* (0.23)	-0.19 (0.24)	-0.41*** (0.10)
Foster girls	-0.49** (0.20)	-0.24 (0.19)	-0.40 (0.43)	-0.64** (0.27)	-0.46*** (0.13)
p-values for test of equal π -ratios					
<i>Status</i>					
Children 6-10	0.38	0.31	0.78	0.70	0.49
Children 11-14	0.98	0.28	0.33	0.89	0.88
<i>Status-Gender</i>					
Boys 6-10	0.22	0.32	0.93	0.66	0.34
Girls 6-10	0.91	0.74	0.59	0.97	0.91
Boys 11-14	0.58	0.33	0.07	0.28	0.21
Girls 11-14	0.55	0.59	0.91	0.05	0.24

Notes: $N=7,281$. π -ratios are calculated according to equation (3.4) in the text. Standard errors in parenthesis are corrected for clustering, sampling weights, and stratification. Level of significance denoted * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Table B-3.3: Engel curves estimates for the aggregated Adult Good, disaggregated results

	Panel 2 (1)	Panel A (2)	Panel B (3)	Panel C (4)	Panel D (5)	Panel E (6)
Per capita expenditure (log)	0.0119*** (0.0032)	0.0103*** (0.0035)	0.0158* (0.0094)	0.0264*** (0.0088)	0.0183** (0.0077)	0.0328*** (0.0118)
Household size (in log)	0.0270*** (0.0061)	0.0222*** (0.0075)	0.0203 (0.0147)	0.0463** (0.0186)	0.0369*** (0.0136)	0.0115 (0.0197)
Biological boys aged 6-10	-0.0848*** (0.0206)	-0.0869*** (0.0248)		-0.0872 (0.0689)	-0.0340 (0.0678)	-0.0561 (0.0990)
Biological girls aged 6-10	-0.0952*** (0.0214)	-0.0922*** (0.0257)		-0.1370** (0.0663)	-0.0870 (0.0623)	-0.1479 (0.0974)
Fostered boys aged 6-10	-0.1145*** (0.0350)		-0.0986** (0.0494)	-0.0343 (0.0875)	-0.0979* (0.0519)	-0.0084 (0.0717)
Fostered girls aged 6-10	-0.0976*** (0.0319)		-0.0717 (0.0461)	-0.0355 (0.0714)	-0.0510 (0.0486)	-0.1058* (0.0540)
Biological boys aged 11-14	-0.1228*** (0.0243)	-0.1189*** (0.0284)		-0.1772** (0.0822)	-0.1494** (0.0747)	-0.0282 (0.1612)
Biological girls aged 11-14	-0.1014*** (0.0270)	-0.1055*** (0.0313)		-0.0157 (0.0932)	0.0573 (0.0861)	-0.0076 (0.1431)
Fostered boys aged 11-14	-0.0783** (0.0360)		-0.0241 (0.0478)	0.0140 (0.0845)	-0.0295 (0.0503)	0.0461 (0.0763)
Fostered girls aged 11-14	-0.1414*** (0.0307)		-0.1210*** (0.0444)	-0.0870 (0.0751)	-0.1237*** (0.0450)	-0.0439 (0.0643)
Children aged under 6	-0.0855*** (0.0189)	-0.0922*** (0.0234)	-0.0127 (0.0429)	-0.0411 (0.0581)	-0.0056 (0.0406)	0.0186 (0.0539)
Children aged 15-20	-0.0629*** (0.0233)	-0.0608** (0.0291)	-0.0315 (0.0489)	-0.0740 (0.0655)	-0.0297 (0.0478)	-0.0616 (0.0607)
Adults aged 21-54	0.0303* (0.0159)	0.0107 (0.0199)	0.0473 (0.0290)	0.1009* (0.0541)	0.0950*** (0.0300)	0.0463 (0.0479)
Observations	7,281	5,822	760	699	1047	410
R^2	0.11	0.11	0.20	0.28	0.21	0.31

Notes: The dependent variable is the share of the total consumption of adult goods in total household expenditures. Additional controls not display included are the full set of dummies for head ethnicity, head and spouse primary education, female headship, urban, net receivers, head and spouse age and age square, 2-parents family, regions, and date of the interview. Columns (2)–(4) split the sample by the sibship composition and Columns (5)–(6) by the indicator for child-related transfers. Standard errors in parenthesis are corrected for clustering, sampling weights and stratification. Level of significance denoted * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

C Additional tables and figures

Figures

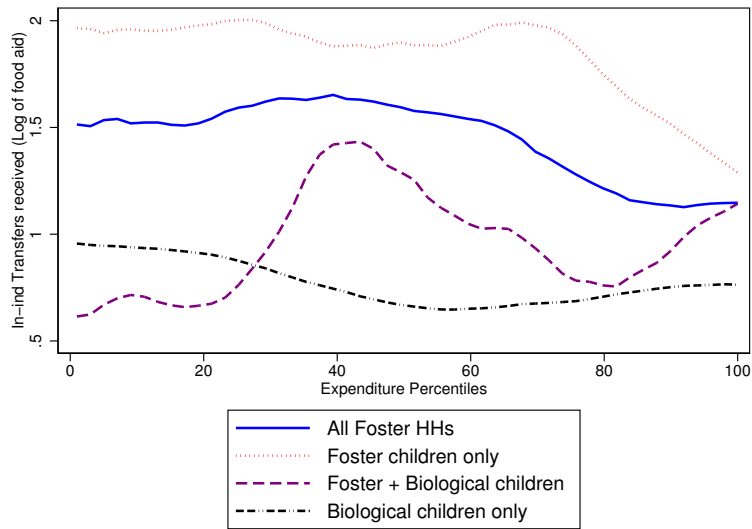


Figure C-3.1: Food aid receives, by sibship composition

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Tables

Table C-3.1: Summary statistics for child sample, by sibship structure

	Pooled		Biological children only (BC)		Foster children only (FC)		Composite sibship BC + FC	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	9.49	2.53	9.33	2.48	10.14	2.62	9.79	2.59
Female	0.49		0.48		0.50		0.49	
Foster child	0.18				1.00		0.42	
Urban	0.44		0.40		0.52		0.54	
Prop. of half-orphaned foster	0.03				0.19		0.07	
Nb. of biological under 6	0.94	1.07	1.07	1.08		0	0.94	1.05
Nb. of biological aged 6-10	1.33	1.12	1.55	1.08		0	1.22	1.05
Nb. of biological aged 11-14	0.67	0.77	0.76	0.78		0	0.68	0.76
Nb. of foster under 6	0.14	0.47		0	0.48	0.83	0.48	0.76
Nb. of foster aged 6-10	0.26	0.72		0	1.28	1.17	0.73	0.99
Nb. of foster aged 11-14	0.24	0.70		0	1.12	1.41	0.67	0.85
Relationship to the head								
Son and daughter	0.82		1.00				0.58	
Grand-child	0.07				0.56		0.07	
Siblings	0.01				0.09		0.03	
Niece and nephew	0.06				0.20		0.19	
Other relative	0.03				0.09		0.10	
Not related	0.01				0.05		0.03	
Enrolled in school	0.58		0.55		0.64		0.64	
Observations	9012		6452		919		1641	

Note: This table presents detailed descriptive statistics on the sample of 6-to-14-years old children.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Table C-3.2: P-values for test of equal π -ratios, age decomposition

Age group	B. Boys vs. F. Boys (1)	B. Girls vs. F. Girls (2)	F. Girls vs. B. Boys (3)	B. Girls vs. F. Boys (4)	F. Girls vs. F. Boys (5)	B. Girls vs. B. Boys (6)
Panel 2: (N=7,281)						
Children 6-8	0.87	0.99	0.76	0.65	0.73	0.61
Children 9-10	0.24	0.83	0.23	0.98	0.89	0.08
Children 11-12	0.03	0.05	0.35	0.23	0.01	0.17
Children 13-14	0.57	0.76	0.98	0.81	0.63	0.70
Panel A: Parent(s) with biological children only (N=5,822)						
Children 6-8						0.55
Children 9-10						0.17
Children 11-12						0.40
Children 13-14						0.79
Panel B: Parent(s) with foster children only (N=760)						
Children 6-8					0.37	
Children 9-10					0.84	
Children 11-12					0.00	
Children 13-14					0.88	
Cross-comparison between Panel (A) and (B)						
Children 6-8	0.91	0.50	0.37	0.74		
Children 9-10	0.99	0.86	0.55	0.53		
Children 11-12	0.00	0.54	0.95	0.02		
Children 13-14	0.66	0.58	0.89	0.98		
Panel C: Parent(s) with both foster and biological children (N=799)						
Children 6-8	0.35	0.68	0.69	0.39	0.58	0.97
Children 9-10	0.88	0.01	0.54	0.14	0.63	0.12
Children 11-12	0.37	0.08	0.84	0.48	0.20	0.12
Children 13-14	0.01	0.43	0.06	0.19	0.45	0.27
Panel D: Non-transfers households (N=1,047)						
Children 6-8	0.65	0.97	0.82	0.80	0.81	0.83
Children 9-10	0.46	0.25	0.87	0.70	0.30	0.32
Children 11-12	0.07	0.01	0.90	0.24	0.01	0.01
Children 13-14	0.70	0.69	0.80	0.80	0.82	0.57
Panel E: Transfers households (N=410)						
Children 6-8	0.76	0.67	0.87	0.89	0.47	0.83
Children 9-10	0.94	0.35	0.43	0.13	0.25	0.20
Children 11-12	0.52	0.83	0.76	0.18	0.04	0.65
Children 13-14	0.78	0.41	0.92	0.33	0.68	0.55
Cross-comparison between Panel (D) and (E)						
Children 6-8	0.80	0.83	0.38	0.72		
	[0.81]	[0.43]	[0.70]	[0.69]		
Children 9-10	0.35	0.25	0.63	0.28		
	[0.67]	[0.52]	[0.59]	[0.27]		
Children 11-12	0.95	0.77	0.37	0.74		
	[0.01]	[0.12]	[0.48]	[0.52]		
Children 13-14	0.69	0.22	0.43	0.21		
	[0.70]	[0.81]	[0.65]	[0.81]		

Notes: This table contains the results of the test of equality of π -ratios from equation (3.6) for the the 6-14 age groups, broken down into four 2-year age categories. Reported p-values are corrected for survey design effects. B. and F. stand for biological and foster, respectively.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Table C-3.3: Engel curves estimates for the aggregated Adult Good, age decomposition

	Panel 2 (1)	Panel A (2)	Panel B (3)	Panel C (4)	Panel D (5)	Panel E (6)
Per capita expenditure (log)	0.0119*** (0.0032)	0.0102*** (0.0035)	0.0155* (0.0093)	0.0284*** (0.0089)	0.0181** (0.0078)	0.0318*** (0.0118)
Household size (in log)	0.0263*** (0.0060)	0.0220*** (0.0076)	0.0183 (0.0146)	0.0475*** (0.0181)	0.0348** (0.0136)	0.0097 (0.0193)
Biological boys aged 6-8	-0.0834*** (0.0234)	-0.0851*** (0.0270)		-0.0945 (0.0780)	-0.0261 (0.0825)	-0.0990 (0.1176)
Biological girls aged 6-8	-0.0704*** (0.0247)	-0.0695** (0.0288)		-0.0973 (0.0731)	-0.0445 (0.0690)	-0.0724 (0.1018)
Fostered boys aged 6-8	-0.0910* (0.0473)		-0.0979* (0.0592)	0.0046 (0.1099)	-0.0652 (0.0598)	-0.0555 (0.0877)
Fostered girls aged 6-8	-0.0698 (0.0445)		-0.0350 (0.0608)	-0.0595 (0.0815)	-0.0471 (0.0656)	-0.1198* (0.0665)
Biological boys aged 9-10	-0.0850*** (0.0297)	-0.0889*** (0.0334)		-0.1074 (0.1029)	-0.0464 (0.1121)	0.0325 (0.1729)
Biological girls aged 9-10	-0.1454*** (0.0286)	-0.1371*** (0.0321)		-0.2837*** (0.0880)	-0.1858* (0.0967)	-0.2535 (0.1549)
Fostered boys aged 9-10	-0.1440*** (0.0468)		-0.1053 (0.0649)	-0.0878 (0.1050)	-0.1416** (0.0668)	0.0180 (0.0976)
Fostered girls aged 9-10	-0.1364*** (0.0381)		-0.1210** (0.0507)	-0.0398 (0.0826)	-0.0660 (0.0524)	-0.1099 (0.0679)
Biological boys aged 11-12	-0.1434*** (0.0286)	-0.1367*** (0.0323)		-0.1619* (0.0930)	-0.1721** (0.0829)	-0.0124 (0.2039)
Biological girls aged 11-12	-0.0922*** (0.0352)	-0.1040*** (0.0393)		0.0156 (0.1171)	0.1396 (0.1163)	-0.1108 (0.1653)
Fostered boys aged 11-12	-0.0273 (0.0500)		0.0694 (0.0604)	-0.0621 (0.1051)	0.0015 (0.0626)	0.1246 (0.0894)
Fostered girls aged 11-12	-0.1798*** (0.0365)		-0.1435*** (0.0513)	-0.1808** (0.0785)	-0.1617*** (0.0511)	-0.0740 (0.0726)
Biological boys aged 13-14	-0.0982*** (0.0330)	-0.0978*** (0.0366)		-0.2193** (0.1044)	-0.1166 (0.1072)	0.0125 (0.2112)
Biological girls aged 13-14	-0.1137*** (0.0331)	-0.1089*** (0.0371)		-0.0826 (0.1135)	-0.0437 (0.1081)	0.1635 (0.1944)
Fostered boys aged 13-14	-0.1253*** (0.0444)		-0.1112** (0.0548)	0.0942 (0.0906)	-0.0733 (0.0560)	-0.0484 (0.0861)
Fostered girls aged 13-14	-0.0994** (0.0416)		-0.1019* (0.0576)	0.0142 (0.0928)	-0.0881 (0.0582)	-0.0105 (0.0823)
Children aged under 6	-0.0859*** (0.0190)	-0.0923*** (0.0233)	-0.0096 (0.0422)	-0.0501 (0.0572)	-0.0079 (0.0402)	0.0157 (0.0522)
Children aged 15-20	-0.0611*** (0.0233)	-0.0601** (0.0292)	-0.0174 (0.0485)	-0.0832 (0.0660)	-0.0297 (0.0485)	-0.0490 (0.0614)
Adults aged 21-54	0.0287* (0.0159)	0.0105 (0.0199)	0.0460 (0.0286)	0.0943* (0.0545)	0.0886*** (0.0298)	0.0422 (0.0470)
Observations	7281	5822	760	699	1047	410
R ²	0.11	0.11	0.21	0.30	0.21	0.33

Notes: The dependent variable is the share of total consumption of adult goods in total household expenditures. Additional controls not displayed included are the full set of dummies for head ethnicity, parents primary education, female headship, urban, net receivers, parents age and age square, 2-parents family, regions, and date of the interview. Columns (2)–(4) split the sample by the sibship composition and Columns (5)–(6) by the indicator for child-related transfers. Standard errors in parenthesis are corrected for clustering, sampling weights and stratification. Level of significance denoted * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Table C-3.4: P-values for test of equal π -ratios, age limit

Age group	B. Boys vs. F. Boys (1)	B. Girls vs. F. Girls (2)	F. Girls vs. B. Boys (3)	B. Girls vs. F. Boys (4)	F. Girls vs. F. Boys (5)	B. Girls vs. B. Boys (6)
Panel 2 (N= 7,281)						
Children 11-13	0.81	0.11	0.02	0.18	0.01	0.28
Panel A: Parent(s) with biological children only (N= 5,822)						
Children 11-13						0.26
Panel B: Parent(s) with foster children only (N= 760)						
Children 11-13					0.01	
Cross-comparison between Panel (A) and (B)						
Children 11-13	0.58	0.20	0.03	0.14		
Panel C: Parent(s) with both foster and biological children (N= 799)						
Children 11-13	0.72	0.05	0.78	0.29	0.28	0.29
Panel D: Non-transfers households (N= 1,047)						
Children 11-13	0.99	0.00	0.40	0.06	0.02	0.26
Panel E: Transfers households (N= 410)						
Children 11-13	0.93	0.85	0.46	0.49	0.08	0.61
Cross-comparison between Panel (D) and (E)						
Children 11-13	0.46 [0.37]	0.38 [0.08]	0.96 [0.19]	0.89 [0.64]	0.91 [0.00]	0.91 [0.87]

Notes: This table contains the results of the test of equality of π -ratios from equation (3.6) for the 11-13 age group. Reported p-values are corrected for survey design effects. B. and F. stand for biological and foster, respectively.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

Table C-3.5: Engel curves estimates for the aggregated Adult Good, age limit

	Panel 2 (1)	Panel A (2)	Panel B (3)	Panel C (4)	Panel D (5)	Panel E (6)
Per capita expenditure (log)	0.0122*** (0.0032)	0.0106*** (0.0035)	0.0163* (0.0093)	0.0266*** (0.0087)	0.0186** (0.0077)	0.0321*** (0.0119)
Household size (in log)	0.0219*** (0.0060)	0.0151** (0.0075)	0.0206 (0.0146)	0.0465** (0.0181)	0.0361*** (0.0131)	0.0064 (0.0201)
Biological boys aged 6-10	-0.0403* (0.0212)	-0.0341 (0.0234)		-0.0140 (0.0663)	-0.0007 (0.0760)	-0.0753 (0.1210)
Biological girls aged 6-10	-0.0494*** (0.0187)	-0.0393* (0.0213)		-0.0698 (0.0552)	-0.0556 (0.0572)	-0.1148 (0.0925)
Fostered boys aged 6-10	-0.0585* (0.0322)		-0.0750* (0.0445)	0.0169 (0.0791)	-0.0792* (0.0464)	0.0168 (0.0654)
Fostered girls aged 6-10	-0.0406 (0.0295)		-0.0466 (0.0429)	0.0146 (0.0605)	-0.0323 (0.0438)	-0.0795 (0.0486)
Biological boys aged 11-13	0.0008 (0.0325)	-0.0022 (0.0334)		-0.0008 (0.1132)	-0.0126 (0.1343)	0.1436 (0.2068)
Biological girls aged 11-13	-0.0450* (0.0269)	-0.0517* (0.0293)		0.1567* (0.0895)	0.1817* (0.0966)	0.0114 (0.1547)
Fostered boys aged 11-13	0.0127 (0.0391)		0.0302 (0.0473)	0.0482 (0.0823)	-0.0114 (0.0487)	0.1249* (0.0718)
Fostered girls aged 11-13	-0.1044*** (0.0304)		-0.1177*** (0.0423)	-0.0375 (0.0665)	-0.1308*** (0.0407)	-0.0205 (0.0631)
Children aged under 6	-0.0343** (0.0150)	-0.0371** (0.0178)	0.0153 (0.0386)	0.0212 (0.0464)	0.0194 (0.0352)	0.0499 (0.0481)
Children aged 14-20	-0.0329* (0.0189)	-0.0214 (0.0233)	-0.0248 (0.0391)	-0.0323 (0.0527)	-0.0309 (0.0400)	-0.0021 (0.0478)
Adults aged 21-54	0.0570*** (0.0143)	0.0385** (0.0178)	0.0556** (0.0279)	0.1448*** (0.0439)	0.1012*** (0.0280)	0.0610 (0.0413)
R^2	0.10	0.10	0.20	0.28	0.21	0.32

Notes: The dependent variable is the share of total consumption of adult goods in total household expenditures. Additional controls not displayed included are the full set of dummies for head ethnicity, parents primary education, female headship, urban, net receivers, parents age and age square, 2-parents family, regions, and date of the interview. Columns (2)–(4) split the sample by the sibship composition and Columns (5)–(6) by the indicator for child-related transfers. Standard errors in parenthesis are corrected for clustering, sampling weights and stratification. Level of significance denoted * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Author's calculations using Côte d'Ivoire Household Living Standard Survey (2015).

General Conclusion

Development economics offers a broad area for research. In this thesis, I have attempted to examine issues that have strong resonance within economics. This dissertation contains three essays in the fields of household and family economics in Sub-Saharan Africa. The first two essays focus exclusively on the issue of redistributive pressure, specifically its correlates, measurement, and how it affects household behavior. The final essay addresses the issue of foster children's welfare within their host households. These essays aim to improve the knowledge of both researchers and development practitioners on the impacts of strong and prevalent informal institutions on households' behavior. Thus, this dissertation broader contributes to the understanding of the economic development process of the concerned region. I will now summarize the chapters' main findings, highlight gaps and avenues for future research.

In the first chapter, I first examined the issue of redistributive pressure by reviewing and reconciling the social science literature on forced solidarity to provide a depth understanding of the topic while filling some gaps in the economic literature. Then, after proposing a definition and distinguishing the key concepts related to this issue, I have introduced new measurements that aim to ease the assessment of its effects.

In the second chapter, I attempted to assess the *social tax* induced by redistributive pressure and empirically examined its microeconomic correlates using data from Côte d'Ivoire. To this end, I have adopted a mixed-methods approach, combining data from a comprehensive national survey, the Household Living Standard Survey (HLSS), and observations from a qualitative survey conducted in the country. The results of this essay indicate that agents who experience explicit redistributive pressure are one-sided givers, which corroborates the theoretical approach proposed in Chapter 1. These agents, who are thus under pressure to share their income with the less successful members of

the community-based network, have on average significant tax rates: 10 and 17 percent of household expenditures and income, respectively. Furthermore, the econometric approach highlights that the microeconomic correlates of being under pressure to share are related to socio-demographic characteristics such as religious beliefs, age, income, and mobile phone-owning in rural areas. In addition, education, occupational status, and marital status are the main predictors in urban areas.

The first part of this essay pointed out the strengths and weaknesses of existing studies on redistributive pressure. I believe that the new insights provided by these two essays contribute to the development of the related literature. Moreover, in its recent report on analyzing the issues shaping Africa's economic future, the World Bank's Africa region office emphasizes redistributive pressure as a significant issue hindering its growth and development (Calderon, Kambou, Korman, Kubota, & Canales, 2019, p. 121). However, empirical evidence on the positive effects of redistributive pressure is scarce—except for one paper on education. In addition, anecdotes during my fieldwork suggest that pressure to share can also motivate earning more income. This is indeed an avenue of research that I intend to pursue in the coming time. Thus, from my viewpoint, this would shift the burden of proof between incentive and disincentive effects.

In the third chapter, I investigate intrahousehold inequality among children of school-age. Taking advantage of the detailed representative HLSS survey from Côte d'Ivoire, I was able to identify foster-in households and empirically test the null of equality in consumption between foster and biological children within the same age interval. I found that fostering arrangements present mixed outcomes for foster children. On the one hand, child fostering remains a social institution that provides a good response to various idiosyncratic shocks for fostering-out parents and guarantees equality of treatment in terms of resources between school-age foster and biological children in the household because the results indicate an absence of inequality among school-age children aged ten and under. On the other hand, I found little evidence of discrimination against foster boys aged 11-14 that contrast the first argument. These results show that this solidarity mechanism remains very complex and leaves an avenue for further research on child welfare highlighted in the conclusion of that chapter.

Last but not least, this thesis opens two major avenues that I plan to pursue. On the one

hand, by bringing these two aspects of solidarity together, a question naturally emerges: What is the link between redistributive pressure and child fostering? Indeed, the latter is not always done voluntarily. Thus, I suspect that both substitution and income effects between these two aspects. Suppose that discrimination occurs in foster households that have to deal with redistributive pressure. The latter may devote fewer resources to foster children in order to offset such transfers. By contrast, some households may decide to foster a child rather than financially supporting relatives who cannot bear their children's costs. In addition, the household will count on the economies of scale that it achieves within the dwelling, such as food or housing expenditure, to take care of the foster child. Thus, foster children will have the direct effect of reducing the transfer costs for the host household. This will act as an income effect. Even in this case, the child-raising cost remains. The household will have to incur everyday child costs, such as education, clothing, leisure, and health. Moreover, foster children are not supposed to be economically active or working-age, making them dependent on the household. Therefore, disentangling these effects to assess the more dominant may provides a deep understanding and appropriate response to address social welfare concerns. Finally, it is well known that relevant data are prerequisites for evaluating economic and social policy decisions, both for analysts and practitioners. Thus, household surveys such as the Living Standard Measurement Survey (LSMS) need to be updated to incorporate topics that affect people's daily lives, including those addressed in this thesis.

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