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Gender Equality and Women's Empowerment to Enhance
Children's Food Security
Views from Ethiopia

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Summary

Abstract

Gender refers to the socially constructed roles, behaviours, activities and attributes a specific society considers appropriate for men and women. It represents a pervasive determinant of livelihood activities and plays a key role in determining a person's quality of life and well-being. In Ethiopia, as in most parts of the world and especially in developing countries, women are systematically less well-nourished than men, more exposed to physical and psychological violence and less healthy; moreover, they are less likely than men to be literate and to have a professional or technical education. The occurrence of unequal sharing of burden for domestic works and childcare, which are mostly under women's responsibilities, affect their access to paid jobs as well as contribute to determining their poverty of time. Overall, Ethiopian women are vital for what concerns household food security: they are in charge of providing edible food and preparing meals for the whole family on a daily basis.

Notwithstanding the women's crucial role, the multi-dimensional gender gap indicators for Ethiopia still show one of the highest levels of unequal status in the Sub-Saharan African countries. Despite remarkable progress has been made regarding some dimensions, women and girls in Ethiopia are strongly disadvantaged compared to men in several areas, including literacy, health as well as basic human rights.

The purpose of the study is to investigate the effects of gender inequality in education, health and employment opportunities as well as that of women's empowerment on children's food security, using the Capability Approach as theoretical framework.
A wide strand of literature has already pointed out that women play a crucial role for the expansion of their own capabilities and also that of their children. Furthermore, growing attention to the achievement of gender equality is paid by international bodies and scholars in order to reach sustainable development.

The hypothesis is that the narrower the multi-dimensional gender inequality is, the more women will be empowered and will participate in the decision-making process, improving the health and nutritional conditions of their children.

To assess the existence and the magnitude of these relations, we use data provided by the Demographic and Health Survey (DHS). Food security is measured by anthropometric indicators, which encompass information on nutritional achievements, providing a more complete picture of child health and dietary status.

We use two models, one based on individual characteristics and the other one based on the intra-household differences between the mother and the father of the child.

Intra-household gender inequality is accounted for educational achievements and working conditions; in addition, variables addressing women's empowerment and their decision-making power within the household have also been taken into consideration, such as the perception of domestic violence.

Other control variables are included in order to take into account socio-economic factors, such as wealth and place of residence.

The main findings show that to improve children's food security, it would be crucial to enhance women's empowerment in multiple dimensions, which has a significant impact. The analysis of intra-household gender equality suggests mixed results, equality in education is desirable, while the effect of working condition might need further investigation.

For further research and investigation, data collected to capture the intra-household differences would be useful.

Introduction

The issue of women's empowerment and gender equality is at the top of policies agenda across the world (Bayeh, 2016), in fact 191 countries have signed an international commitment to promote gender equality and empower women multi-dimensionally.

Food insecurity is also a pressing problem globally; according to figures presented by the SOFI report, more than 820 thousand people in the world suffer from undernourishment. Precisely, East Africa recorded a prevalence of undernourishment equal to 30.8% (FAO, IFAD, UNICEF, WFP and WHO, 2019A).

The present research aims at linking the multi-dimensional intra-household gender inequalities with the children's state of food security. More specifically, we are interested in understanding whether the position of power of women within their households play a crucial role enhancing the food security of their child.

A wide strand of literature has extensively clarified the paramount role of mother as a primary caregiver for her children, however, not much has been said about the role played by the intra-household power dynamics and the established social norms. There are in fact not many empirical studies that seek to understand whether pursuing the goal of intra-household gender equality might have an impact on children's food security. Moreover, there has not been enough reflection on the fact that the primary role of the caregiver corresponds to a social attribution that society has conferred on women.

The present study focuses on intra-household gender dynamics in developing countries[1], where males on average are better positioned than women in education, health, and economic opportunities. Especially in these countries[2], gender represents a marker of social and economic stratification, and consequently, of exclusion[3] (Jayachandran, 2014; UNDP, 2013).

Furthermore, this work proposes also an empirical analysis focused on Ethiopia, as this country represents a perfect case study for the purpose of this research. It is, in fact, a country

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[1] Although family dynamics could represent the first basis for the foundations of the political participation of a woman in her community and in her country, it was decided not to consider the dimension of political participation in this study, as it is more relevant to a social analysis and less relevant to the understanding of the intra-household dynamics of power.

[2] Jayachandran in her important work "The roots of gender inequality in Developing Countries" pointed out that gender-based inequalities tend to be more evident in low-income countries than in higher-income countries. From the author's point of view, however, it is important to specify that the fact they are less large in higher income countries does not necessarily imply they are still less present.

[3] The relevance of gender gap could be calculated in a monetary way, accounting for poor national development performance, especially in Sub-Saharan Africa where UNDP estimates a gap cost of 95 billion US dollar per year. (M. Blackden, 2006; UNDP, 2016).

historically permeated by gender roles and social norms which might affect women's empowerment and gender equality. Furthermore, Ethiopia suffers endemically from food insecurity. Government however has recently been committed in order to implement policies aimed at achieving multi-dimensional gender equality as well as has approved several programmes in order to improve country's food security.

This work is divided into 6 chapters; the first chapter aims at explaining the theoretical framework, the lens that we will wear in order to analyse and assess gender inequalities and food security, which constitute the main pillars of the present work. The Capability Approach, which is the normative framework used, was applied in the field of economics by Amartya Sen during the 70s, and it allows us to consider gender equality and women's empowerment as a process of expansion of capabilities (Agarwal, Humphries, & Robeyns, 2005). It is a people centred-approach and it attributes importance to what people have reason to value: "committed to cross-cultural norms of justice, equality, and rights, and at the same time sensitive to local particularity and to the many ways in which circumstances shape not only options but also beliefs and preferences" (Nussbaum M. C., Women and Human Development. The Capabilities Approach., 2001, p. 7). We consider the Capability Approach particularly suitable to study gender issues. Feminist literature has in fact furtherly developed some of the topics propose by Sen, such as the concepts of agency and empowerment which are central in achieving gender equality.

The second chapter is focused on the concepts of women's empowerment and the multi-dimensional aspects of gender inequalities in developing countries. We propose an analysis of the multiple dimensions in which gender inequalities may occur, education, health and economic opportunities. The objective of this chapter is to provide the framework to evaluate the women's position within the society considering all the aspects that affect their standard of living.

The third chapter is focused on food security; it provides an historical overview of the concept in order to guide the reader towards a complete understanding of food security as it is intended today. In addition, we underline the importance of considering the intra-household food security, in order to strengthen the individualistic dimension of the concept. We reject the unitary family model, which assumes that the resources are equally distributed among the household's members. Rather, the bargaining model has pinpointed the existence of the heterogeneity in preferences among the members.

The chapter will also focus on the measurability of food security, which is one of the characteristics that has contributed to make it a diffuse and widespread concept.

There exist several methods to measure food security; for the purpose of this research, the anthropometric indicators are those we considered the most appropriate, so we will deeply dwell on these. Anthropometric indicators are the results of the combination of objective physical measures and provide a complete picture of the health and nutrition condition of the individual.

Once we have defined the pillars of this study, women's empowerment, gender inequalities and food security, we proceed to apply them to the Ethiopian case. The fourth chapter provides the methodological framework we use to respond to our research question. We will account for the transmission channels that drive the intra-household gender equality in multiple dimensions to the improvement of child's food security. We will try to build a solid framework that help in explaining why we expect that pursuing intra-household gender equality might improve food security condition of the child. This chapter is preliminary to the empirical study proposed in chapter 6 and it aims at highlighting the link between intra-household gender inequalities and child's food security.

The analysis of the Ethiopian context will be presented in chapter 5. The gender equality and women's empowerment condition will be outlined in order to provides the key concepts for understanding the social norms and gender roles ruling the Ethiopian society. This chapter intends to provide the Ethiopian institutional context in order to better understand the empirical analysis, which is presented in chapter 6.

We provide several regression models to study the linkage between intra-household gender inequalities and women's empowerment to child's food security.

At first, we estimate the effects of individual variables, the impacts of education of mother and father considered separately as well as their working condition. Additionally, variables which assess the women's empowerment are considered. The second model instead replaces, where possible, the individual variables with relational variables, i.e. aimed at capturing the extent of differences in some characteristics between men and women. This econometric model investigates whether and how intra-household differences affect children's food security.

The hypothesis underlying this research is that a better position of the woman within the household expands her bargaining power and her empowerment, with positive effects on the food security of her children. In addition, the research also intended to emphasise the role of social norms in defining gender roles.

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Gender Equality and Women's Empowerment through the lens of Capability Approach

1.1 Introduction

The aim of the present chapter is to provide an overview of the Capability Approach as it will be the theoretical framework we will use to analyse and assess the concepts of women's empowerment and gender equality.

The CA was firstly applied to economics by Amartya Sen at the very beginning of 80s. Sen has had the merit of developing an innovative and revolutionary theoretical framework for studying economics, a framework that consider the individual's values in collective decision-making. Sen has laid the foundation and has provided the reference points for further development of the CA. However, over the time, the theoretical outline has improved and enriched thanks to the contribution of several scholars and to the debate that has generated.

This section, therefore, deals with some specific features of the CA, namely its declination and adaptability to the study of gender equality and women's empowerment. Thus, at first, we discuss the main features of the CA, as thought by Amartya Sen, adding when necessary, the contributions of other authors.

Henceforth, the chapter aims at highlighting the key points and the theoretical pillars on which the present research is based on.

1.2 Capability Approach as a theoretical framework for studying gender

Capability Approach is a theoretical and normative framework developed within the economic field by Amartya Sen at the beginning of the 80s (Sen A. , 1999). The notion of "basic capabilities" came precisely to overcome the utilitarian idea of equality, based on the

maximization of the utility sum function, which could reasonably work only in the case of perfect equality of the individual's marginal utility. Nevertheless, the recognition of human being's variety shows the limits of the utilitarian theory and gives space to the development of the CA, a people-centred approach which is attentive to evaluate individuals' well-being in terms of what people are able to do and to be in order to live a valuable life, according to a personal perspective (Nussbaum M. C., 2001; Sen A. , 2008; Sen A. , 1979). The core concepts of CA are the *functionings* and the *capabilities*; the former refer to the realm of beings and doings that each individual has reason to value; while the capabilities are the set of *functions* that one can achieve or have access to (Sen A. , 1992b).

The use of *functionings* and capabilities as instruments to evaluate human well-being provides space for a universal normative approach that is still sensitive to pluralism and cultural differences (Nussbaum M. C., 2001), in addition in Sen's works the attention to gender inequalities is pervasive (Sen A. , 1999; Sen A. , 2001; Sen A. , 1992a; Sen A. , Gender and Cooperative Conflicts, 1987). Hence the CA has all the features, or to use the words of Martha Nussbaum, has "a superior potential for developing a theory of gender-justice" (Nussbaum M. C., 2003, p. 34; Nussbaum M. C., 2001). The CA in fact refers to individuals, hence not to the household as the unit of analysis and does not make distinctions between the public and private spheres. These features favour the evaluation of the state of the gender-justice within the family, allowing an intra-household perspective and investigation. Furthermore, the CA considers the social and the environmental conversion factors as determinants of individual's capabilities, thus CA allows to account also for social norms and discriminatory factors. These advantages make CA particularly appealing for the development of feminist perspective research (Robeyns, 2003; Nussbaum M. C., 2003).

Despite the clear adaptability of CA to investigate gender inequalities; Sen in his works has never explicitly combined the CA on gender issues, preferring rather to maintain the approach as a comparative tool to assess individuals' well-being.

Nussbaum's works aims at closing the theoretical gap, developing a direct link between the CA and the assessment of women's empowerment.

1.3 The role of Agency

Agency represents a crucial notion in assessing and understanding the power dynamics affecting women within the household.

The concept of agency was introduced by Sen within the framework of CA. Initially it was elaborated only with a descriptive or explanatory nature: agency is the "human motivation as often going beyond self-interest". Afterwards, Sen developed furtherly the concept by conferring it a normative account, which is of interest for this work as we will take into consideration within this paragraph (Crocker & Robeyns, 2009)

Agency was introduced by Sen as the individual power to act in order to bring changes, achievements, in this framework, can be evaluated in terms of individual's values and goals. Sen pointed out, in drawing the concept, the significant differentiation between agency and well-being: agency in fact does not necessarily increase one's well-being.

An illuminating, and appropriate example of this differentiation is made by Van Stavaren and Odebode (2007). An improvement of women's position within the household does not necessarily reflect and improvement in women's well-being, especially when we refer to patriarchal society.

The main point of differentiation lies in the fact that all the *functionings* that a person has reason to value are aimed at achieving individual well-being. Rather, agency has more to do with the achievements that people *happen* to value. Agency highlights what a person effectively does or what can do to realize the goals he/she wants to achieve.

In this regard, Drydyk (2013) emphasized a possible weakness of the concept of agency, precisely with regard to the purposes that one wants to achieve, agency seems to be subjected to adaptive preferences. The vivid example provided by Drydyk contributes to make clear the idea: "if grinding poverty causes people to give up on their hopes and aspirations, they have as a result fewer unachieved goals. Has their agency thereby expanded?" (2008, p. 2).

What highlighted by Drydyk contributes to underline that sometimes may happen that the individual could not exercise agency, due to lack of awareness or due to other deprivations which can be physical or material.

The existence of these possibilities contributes to shed light on another crucial aspect of agency, while remarking again the border between agency and well-being. Do, in fact, the individuals act solely and exclusively to increase their own well-being? The lack of agency is an irreversible situation?

The answer is no: it is, in fact, not certain whether the individual's achievements are related to the individual's well-beings, *strictu sensu*. People not only act in order to increase their own well-being, therefore it comes the agency's normative aspect.

The conceptualization of agency is related with the personal dimension, as it is defined as the "person's ability to pursue and realize goals that he or she values or has reason to value" (Alkire, 2005) in order to shape and determine his or her own life. Although it represents a first and fundamental step, the expansion of capabilities does not only happen by the individual exercise of agency, collective action in fact also plays a crucial role. Through the joint exercise of agency, communities can choose, expand and trade off capabilities and functionings.

On this specification, Sen draws a further distinction between the possible achievements that can be realised through the exercise of agency: the "realized agency achievement", which refers to a simpler idea of agency and the "instrumental agency success" which outlines a more participatory concept of agency. Thus, the concept of agency reveals two fundamental faces: the individual and the collective aspects, which lead a broader effect of the exercise of agency.

The individual exercise of agency allows the person to control, lead and drive the changes, and the agency could pass also through active participation in collective action. The collective exercise of agency, therefore the action of a community of people, permits in turns to empower also other's life. This represents a crucial point: the individual exercise of agency opens the space to the collective dimensions. In fact, the exercise of agency in order to achieve individual objectives, potentially contributes also to reach other people's goals. Therefore, the institutions also play a crucial role addressing public policies, they can ensure the expansion of various people's capabilities, including those who are deprived from the possibility of exercise agency.

The agency's collective dimension is particularly important regarding the gender's perspective. The power of established social norms could act as a constraint to exercise of agency. However, agency is a process and can be triggered also by collective action, henceforth initial lack of individual agency can be filled by other's exercise of agency.

The further elaboration of agency by the feminist economists lies especially on the normative dimension of agency. Starting from the fundamental contribution of Sen, agency has been then enriched with what Kabeer has called the "sense of agency". That is a cognitive dimension that includes "self-worth and social identity, their [women's] capacity to exercise strategic control over their own lives and to renegotiate their relationships with others, and their ability to participate on more equal terms with men in reshaping the societies in which they live, in ways that contribute to a more democratic distribution of power and possibilities" (Gammage, Kabeer , & Rodgers, 2015, p. 4). Furthermore, Argawal (1997) contributes by emphasizing the

role played by external factors in the bargaining power process within the household, pointing out the importance of women's participation in collective groups.

The feminist literature has then effectively broadened the concept of agency, incorporating into the individual sphere of action also the social norms and the gender roles.

Women's actions constitute one of the pillars for social change, however external institutions and communities which have to be ready to listen and understand are equally necessary.

The relationship and dialogue between external and internal spheres become crucial: the asymmetric institutions represent an obstacle to the women's empowerment, and can also distort what is generated by eventual symmetric institutions (Gammage, Kabeer , & Rodgers, 2015; Van Stavaren & Odebode, 2007).

To conclude, the intra-household power dynamics cannot be analysed and understood, unless social gender dynamics of power are considered in close relation.

1.4 Women's Empowerment as a crucial aspect to promote and achieve Gender Equality

The exercise of agency leads to the enhancement of empowerment, in turn women's empowerment represents a direct channel to achieve gender equality. Women's empowerment and gender equality come often together; these two concepts have an intrinsic role as they are valued as an end in themselves, in addition to the instrumental role as they are a mean to achieve other ends.

Kabeer (2005) defines power as the ability to make choices, hence empowerment is the process that lead to acquisition of these ability. In her work, Kabeer also clarifies how the *transformative* form of agency[4] can immediately address inequalities as well as it can be used to initiate a long-term process to change the structure of the society. Thereby, this form of agency plays a role in undermine the reproduction of inequalities, hence it helps in achieving gender equality.

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[4] Kabeer (2005) distinguishes among different forms of agency: the "effectiveness" of agency and the "transformative" form of agency. The first one is related to the great efficiency of women to satisfy their given roles and responsibilities, while the second one regards women's ability to act on the restrictive aspects of these roles and responsibilities, in order to question them. The relation between agency and empowerment implies in addition to the active exercise of choice also the capacity to challenge power relations.

Empowerment counts several definitions, Ibrahim and Alkire (2007) provide a list of 32 which are currently in use. Looking at the scheme proposed by the two scholars, it clearly emerges that empowerment consists of two dimensions: the individual one in addition to the social/institutional aspect. These dimensions are complementary, in fact the institutional structure constitutes a necessary component to allow the possibility to people to exert agency. Furthermore, institutional factors can act also as a constraint: social norms may hide the existence of unbalanced dynamics of power or undermine strong social rules can imply heavy personal and social costs.

In addition to the institutional factors, acts the individual aspect of agency, which refers to the capacity to behave in order to achieve the goals that one has reason to value, is a constitutive part of the process of empowerment (Ibrahim & Alkire, 2007; Kabeer N. , 2005).

The present study is focused on the process of empowerment of women; hence it is appropriate underlines the empowerment as the process triggered by the individual exercise of agency.

Empowerment is the process that leads the individual to gain full control over his/her own life. The process involves control over life's choices as well as raise awareness of rights, in addition to the control over resources.

Recently, the empowerment of women has been given attention by international agencies, governmental bodies and academics as it is strategic to achieve gender equality as it helps in recognising and demolishing the existing social structures weighted in men's favour (UNFPA, 2005). Women's empowerment is a multi-dimensional concept, to be realized, in fact, it has to regard several aspects of women's life. It does not exist a hierarchical evaluation of those aspects, education, health and economic empowerment are equally important, hence women have to empower themselves simultaneously in each of these dimensions. The realization of autonomy in all these dimensions constitutes an end in itself, thus emerges the intrinsic value of women's empowerment.

However, there is also an instrumental role of women's empowerment: the identification, at first, and the subsequent correction of the dynamics of unbalanced power, in addition to the acquisition of autonomy in the management of one's own life – both at intra-household and community's levels - are crucial to achieve multi-dimensional gender equality, which is in turn crucial for sustainable development.

The concept of women's empowerment has been developed by the feminist movement since the 1980s. Empowerment, in this strand of literature, regards the possibility of actively

changing power relations[5] and it concerns the ability to exercise choices (Kabeer N. , 1999; Cornwall & Rivas, 2005). This definition provides an intra-household perspective, the control and the power to manage relationships constitute a fundamental condition for the empowerment of women. The theoretical framework of CA provides useful insights to enrich as well as trigger the process of empowerment. Agency, in fact, stresses the importance of the *active role* of women, as pointed out by Cornwall and Rivas, "empowerment was not something that could be bestowed by others, but was about recognising inequalities in power, asserting the right to have rights and acting individually and in concert to bring about structural change in favour of greater equality" (2005, p. 9). Women thus are the main agents of changes and they are advocates and the protagonist to achieve gender equality. However, the pre-conditions that allows the exert of agency (and therefore the enhancement of empowerment) have an equally important role. Concrete social, institutional and material conditions have to be crucially considered when evaluate the individual agency, as these attributes can determine the differentiation between agency-rich from agency-poor women.

In the next chapter we pin down the multi-dimensional aspects that characterized gender equality and women's empowerment. We will focus on developing countries in order to consider both the individual exert of agency as well as the set of institution and social norms that may be a feature in that areas.

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[5] Empowerment is not an end point, neither it represents a strategy for women to cope with situations of disadvantage, injustice or oppression. Rather, it is the women's battlefield to actively conquer the space of exercise of individual and collective choices. On this point, it is worthy to also notice the contribution of Amartya Sen, who in "Development as Freedom" (1999, p. 189) has traced the important transition operated by the women's movements from the "welfarist" approach to the incorporation of agency. The distinction between the role of "agent" from that of "patient", in Sen's words (1999, p. 190), is crucial to understand the real potential and meaning of women's empowerment as the main channel to close gender gap.

2

Women's Empowerment and Gender Inequality in Developing Countries

2.1 Introduction

The concept of gender, launched at the beginning of 1970s, has been profoundly developed in the last decades. Several international policies have been implemented at global level in order to achieve gender equality. Despite these policies, Sub-Saharan African Countries are still performing poorly. Looking, in fact, at the Global Gender Gap Index, which is a multi-dimensional indicator of the status of women's inequality worldwide, the Sub-Saharan region have closed the gap between women and men by the 66% on average, recording a result that is still below the global average value. Furthermore, it is important to consider that Sub-Saharan African region is characterized by a high female's participation in labour force, which greatly contributes to lowering the gender gap percentage value.

These figures support the argument that social norms and institutions are key factors in the transformation of political international commitments into effectively achieving gender equality. Henceforth, in order to understand the dynamics that drive the existence of gender inequality, it appears crucial the consideration of social norms and gender roles that are deeply entrenched within the society.

This first chapter therefore aims at providing an overview of the key concepts useful to study the phenomenon of gender inequalities in developing countries. A specific focus will be dedicated to the dynamics that weaken the role of women at community level and as a consequence also at intra-household level. The lens through which we study the gender gap is that of Capability Approach, as we are interested in the way in which gender inequalities could affect the expansion of capabilities for women and women's empowerment.

This chapter assesses three dimensions of gender inequality: education, health and economic empowerment, focusing especially on the inequalities of opportunities.

With regard to the first dimension mentioned, the quality of education will be also considered, as it is crucial to effectively overcome gender roles. Teachers who are assertive towards the patriarchal ideology may confirm gender roles even at school. The health dimension is mainly focused on the reproductive aspects and the possibilities for women to take decisions over the body. The chapter aims at assessing also the influence traditional institutions and social norms exercise, hindering women's agency. Finally, the aspect of economic empowerment is explored clarifying that the gendered division of labour is one of the main drivers leading to unequal employment opportunities.

The objective of this chapter, therefore, is to highlight the ways through which gender inequalities are manifested in developing countries and more importantly, the social mechanisms that strengthens and consolidates impairments between women and men.

2.2 What does "gender" mean? Some preliminary concepts

The investigation of the multiple dimensions of intra-household gender inequality requires firstly some clarification on the many facets concerning being a woman in developing countries, which, in turn, needs the consideration of the institutional specificity of each society.

The living condition of women, in fact, is determined simultaneously by institutional factors, such as family, politics, religion, which are directly linked with the existing dynamics of power. For example, the levels of prestige women can potentially achieve as well as the possibility of having control over the resources depend from the cultural beliefs and traditional norms already ruling the society.

Therefore, to assess the women's position within a specific society, it is necessary to take into account all the different levels of women's life; i.e. the evaluation of the individual dimension has necessarily to be accompanied by the consideration of the institutional dimension, which is in turn shaped by social norms and traditional customs (Kinnear, 2011).

A preliminary clarification of some concepts, a toolkit such as sex and gender roles, social stratification and patriarchy, will help in clarifying causes and effects of the manifold dimensions of the gender inequality.

The first and most important distinction is that between gender and sex. Oakley in her seminal study "Gender, Sex and Society" (1985) was among the first scholars to emphasize the difference between the two. The sex sphere relates to the biological and physiological differences existing between men and women, which mostly regards the reproductive aspects

of life. On the contrary, gender role is something determined by the social and cultural context that woman lives. Gender is a fluid concept, a process continuously changing, shaped and transformed by historical courses. Gender role reflects the "construction of masculine and feminine roles, behaviours, attributes, ideologies" which can vary in time and space (Imam , 1997, p. 2). One of the aspects of the society in which gender roles are best reflected is the division of labour. Each society is organized based on the division of labour, which is determined by gender roles; in turn the division of labour acts also as a reinforcement of the established gender norms (Seguino, 2013). Sen on this point highlights that the gender-based division of labour represents the most consistent part of the general social arrangements, continuously shaping the society, and as a consequence, continuously shaping the intra-household power dynamics (1987). He emphasized the constant exchange between the social arrangements and the intra-household relations, in particular he states that "specific patterns of sexual divisions (and female specialization in particular economic activities) even outside the household can be seen as being partly reflective of the traditional within-household divisions related to established arrangements, which differentially bias the cultivation of skill and tend to sustain asymmetry of opportunities offered for acquiring 'untraditional' skills. In understanding the inferior economic position of women inside and outside the household in most societies, the hold of these social arrangements has to be clearly identified and analysed" (Sen, 1987, p. 14).

Therefore, understanding gender roles constitutes the preliminary as well as necessary step in order to investigate the women's position within the household and the multi-dimensional intra-household gender gap.

Along with gender roles, social stratification too is a reflection of the hierarchical order among the individuals within a constituted society. Social stratification is primarily based on economic and power-related factors: each society tends to confirm and corroborate the existing social stratification, which contributes in confirming the diverse amount of power, privilege and wealth among individuals (Chodak, 1973; Seguino, 2013). Furthermore, Kinner pointed out that gender "defines the position of a person within the stratification system; men are granted higher social status than women in most of societies simply because they are men" (2011, p. 4), henceforth, the social stratification actively contributes to building up and maintaining the established gender norms.

Finally, the concept of patriarchy represents a specific type of social construction, which is quite common in developing countries and determines the role of women within the society. Patriarchy counts many definitions, varying according to the theoretical lens through which it is

observed (for further details see Walby, 1990). In a wide sense it could be defined as a system of social relations that take concrete forms in both public and family life, shaping and orienting the existing structures of power in every sphere of the society (Walby, 1990; Kinnear, 2011). Patriarchal ideology is a product of the society, it is a complex social structure placing men in a dominant position with respect to women, which emerges in every aspect of the society.

Women, especially in developing countries, have to bargain with specific gender norms that hinder the achievement of gender equality. The fact that social norms are pervasive should not be confused with an implicit women's acceptance (Gammage, Kabeer , & Rodgers, 2015). Rather it should provide some hints about how much the gender norms are embedded in the society, how much the patriarchy could permeate the common sense and shaping the women's "unconscious aspects of their gendered subjectivity" (Kandiyoti, 1988, p. 285).

The chapter is organized as follows: next section intends to deal precisely with the definition and the analysis of the multi-dimensional gender gap in developing countries, which is thought as "unequal power relations that emphasise men's and women's roles, and assert men's dominance over women" (Vyas & Jansen, 2018, p. 2). Particularly, an attempt will be made to shed lights on specific aspects and elements which trigger the creation of specific dynamics of power within the household.

2.3 Gender Inequality in Developing Countries

As extensively explored in the previous section, gender refers to the roles and attributes that a society give to women and also to men, shaping people's behaviours and determining livelihood and well-being (UNDP, 2016; Chambers & Conway, 1991).

Data and figures proposed by the Global Gender Gap Report (World Economic Forum, 2018) show that women globally suffer from a systematic inferior position than men, experiencing greater inequalities at every stage of their life cycle: they are more likely to face disparities in health access and education, more likely to experience restriction in personal autonomy and to have less employment opportunities than men. Furthermore, women are often excluded from effective participation in the political dimension.

However, women in developing countries, which are the primary addressees of this work, seem to suffer from more acute and extended form of inequalities. Women are less well-nourished than men, and their access to labour market, for example, could be hindered by the

husband's or family members' decision or more in general by the existing social norms which discourage women participation. Furthermore, the pronounced gendered division of labour, which emerges through the asymmetric sharing of burden between wife and husband, of the domestic works and childcare, could affects women's access to paid jobs as well as women's leisure time (Nussbaum M. C., 2001; Sen A. , 2001; Jayachandran, 2014).

The pervasiveness of the gender roles in the society, in addition to the systematic differences between women and men are manifested in inequalities based on gender. Women can experience several inequalities in multiple dimensions, which can occur both at community as well as at intra-household levels.

Country level data allows to easily grasp the differences between women and men worldwide. However, as mentioned above, inequalities based on gender can emerge also at intra-household level, hence it is restrictive to account for inequalities only at aggregate level. It is worthy, then, to analyse the concept also at intra-household level, which imply the consideration of the women's position within the household.

Gender inequality, considered multi-dimensionally, drives the intra-household dynamics of power between the partners. Therefore, understanding the decision-making process as well as its determinants and the effects that it procures at household level allows to address policies in order to drive social and cultural changes. As it is a multi-dimensional concept, gender inequality could manifest itself simultaneously in a variety of aspects of women's life: changing the balance of power in one dimension can affect other dimensions of life as well as the presence of inequalities in one sphere may get reproduced also in other aspects. Therefore, the necessity to analyse the dynamics of power with an integrated approach, which is that provided by the CA. The normative framework of CA and the lens of human development allow to consider gender-based inequalities as inequality of capabilities, thus, by definition they could regard potentially every aspects of life (Sen, 2001). On the idea of inequality of capabilities, estimations provided by UNDP (2016) indicate that women, on average, reached only the 87%, with respect to men, of the HDI outcome[6], showing an extended deprivation of capabilities.

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[6] The human development outcomes refer to the results of the Human Development Index (HDI), which is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. These three dimensions respectively are measured by life expectancy at birth; expected years of schooling for children (school entry age) and means years of schooling for adults (25 years old and older); estimated income earned. To measure the gap between men and women, UNDP calculates the ratio between the HDI value for female/ HDI value for male (UNDP, 2016, p. 27)

The next paragraphs are intended to analyse the gender inequalities multi-dimensionally through the lens of CA. The intrinsic role of inequalities in education, health and economic empowerment will be discussed. The instrumental role to achieve gender equality in other dimensions.

As already underlined, these dimensions are strictly interlinked and they act at the same level, henceforth it is not possible to establish a hierarchy among them; neither it is possible to identify a unique driving force that univocally determines how and in which direction the improvements in one dimension affect others.

2.3.1 Gender Inequality in Education

Education is a key factor for sustainable economic growth and human development. The capability of being educated is an end in itself and represents a crucial achievement for the enhancement of personal empowerment as well as it is important in order to expand individual freedoms (Unterhalter, 2003). The partial or total absence of the opportunity to access and effectively attend school may result in a personal weakening or delay in reaching individual empowerment, also causing several future deprivations. Education is a cornerstone for human development; however, a wide strand of literature has focused on the importance of education for women, both from an intrinsic as well as from an instrumental point of view (Klasen, 2002). Education is the most important mean to achieve women's empowerment, it may affect women's living standard and it may increase intra-household's bargaining power and individual agency (Sen A. , 1999). Despite all this, women suffer from systematic inequality in accessing and completing education: women are more likely to not access to school than men (Evans, Akmal , & Jakiela, 2019). Recently international organizations and governments, having recognized the pivotal role of education have implemented public policies aimed at promoting education for women and reducing the inequalities between women and men. Thanks to several programmes implemented worldwide women's education has considerably increased, however the gender gap in education persists in many countries both in term of enrolment and attainment (Filmer, 2000). According to the study of Evans, Akmal and Jakiela, who analyse the trend of educational gender gap in 126 country from 1960 to 2010, South Asia and Sub-Saharan Africa[7]

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[7] The Global Gender Gap report estimates gender gap in education by measuring the difference in school attainment between boys and girls based on national data. Figures disaggregated by regions shows that the educational gap for Sub-Saharan African countries is 0.872 (where 1 represents gender equality) and for South Asia is 0.943. These regions still have the widest gender gap in education when compared to the rest of the world.

regions have worsened their performance by widening the gap between men and women. These two regions also count the smallest gains in women's education.

One of the possible reasons that may explain the persistence of gender gap in education can be find in the intra-household allocation of resources. Empirical studies have shown in fact that household spend less money for girls' education than for boys, consequently this may hinder the narrowing of the gender gap in education (Shonchoy & Rabbani, 2015). The different allocation of resources may directly respond to social norms and gender roles that exist within the society. Social norms have an effect also on school's drop-out: girls in fact are more likely to leave the school when they reach adulthood, regardless of completion of their studies.

The lack of expansion of the capability of being educated for women negatively affects women's personal empowerment, however, the effect also extends to society due to the important instrumental role that education plays for human development.

For example, the lack of education may have consequences on women's future opportunities to obtain a valuable job; which is, in turn, an important mean to expand other capabilities as well as an instrument to enhance women's bargaining power within the household. On the contrary, education for women contributes to raising awareness over their own body and their marital preferences (Kim, 2016), enabling them to take control over their reproductive behaviour[8], lowering the fertility rate, which is a relevant key to trigger both human and economic development processes.

In addition, the women's capability of being educated appears of paramount importance for the enlargement of her child's capabilities. A mother's education improves several child's outcomes: they are in fact more likely to be well-nourished, more likely to be in good health and to participate in school activities (Burchi & De Muro, 2007; Sen A. , 1999; Behrman & Wolfe, 1987; Boyle et al., 2006; Browne & Barrett, 1991). The positive impact of a mother's education seems to be greater for daughters than for sons: female children are more stimulated by an educated mother, having, in fact, a daily basis example of empowerment within the household contributing to raising awareness and questioning the established gender norms.

Henceforth, being educated for a woman proves a foundational capability, opening the way to improve women's well-being as well as that of future generations (Terzi, 2007).

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[8] In order to better see how education drives empowerment, note that in developing countries educated women are most likely to use modern birth control methods and contraceptives, than those non-educated.

There are several channels through which a mother's education affects child's health and nutrition. Firstly, basic skills on numeracy and literacy provide useful tools to catch, process and elaborate information, generally disseminated by media or by government pamphlets/brochures. The acquisition of health and nutritional knowledge in school could be useful for women for future diagnosing and treatment of a child's health problems. Education contributes in raising awareness of medical practices leading to questioning the traditional healers and their way of dealing with illness and disease. Furthermore, educated women are more likely to get a paid job, which may imply an improvement of intra-household bargaining power. Women's control over resources, in fact, contributes to the improvement of a child's outcomes, since women are more likely to invest resources on childcare than males (Thomas, Strauss, & Henriques, 1991; Glewwe P. , 1999; Sen A. , 1999; World Bank, 2001).

Having emphasized the importance of the capability of being educated for women, one more aspect is worthy to be considered, especially for the purpose of the present study: the quality of education. On this issue, Unterhalter (2003) pointed out that Sen seems to have "undertheorized" (2003, p. 7) education within the framework of CA. Surely, Sen discussed the key role of education in enlarging people's capabilities, however he seemed to not consider the multiple setting in which schooling takes place. Sen actually did not explore how school attainment could be transformed in "the capability of being educated", while the fact that the conversion is not an automatic mechanism has to be taken into account. The quality of education therefore seems to assume a relevant position in the debate, especially relatively to women's empowerment and acquisition of awareness regarding the social and gender norms: Unterhalter (2003) then highlights the substantial difference between attending school and being educated. Education, in his opinion, is surely a valuable achievement for people, however the institutions as well as favourable (to women) social and cultural norms are pivotal to realize the transformation from "just" schooling into effective, durable and valuable education, which serves to enable women to expand their capabilities.

Henceforth, the contents of education as well as the way in which these contents are delivered to students become crucial: quality education could imply an effective structural change of the society, raising awareness and giving the tools to challenge established norms. On the contrary, non-quality education may mirror and legitimate social inequalities and re-affirm gender stereotyping. The concepts thought in class as well as the teacher attitudes may results in a reinforcement of messages about the inferior position of women within the society,

moreover they could contribute in creating and disseminating among women an attitude of low self-esteem and poor aspirations (Vaughan, 2007; Kabeer N. , 2005).

Good quality education has an intrinsic value for life as it establishes the base to achieve and develop personal empowerment; simultaneously it has also an instrumental value because it triggers the expansion of other fundamental capabilities and functions, such as being in good health, being well-nourished, actively participating in social and political sphere and in labour market. Henceforth, quality of education as well as equality in education opportunities between girls and boys, matter (Walker M. , 2007).

On this last point, empirical evidence has shown that women, especially in developing countries, suffer from unequal access to education, even if several policies have been implemented in order to reduce the gap. Undoubtedly international attention has served to ensure better access to girls to school. However, as Lynch and Baker (2005) have pointed out, equalizing access and participation to school between women and men, could be certainly considered as a key equality objective; however an integrated approach is needed to reasonably close the gap. They have defined it as the "equality of conditions" (Lynch & Baker, 2005, p. 1) which concerns the idea of equalizing the real options one has in life involving the equal enabling and empowerment of individuals. When the equality of conditions is achieved, then women's education leads to the expansion of capabilities.

To conclude, the women's capabilities of being educated constitutes a key driver for the expansion of her personal as well as her children's capabilities. Quality of education should be highly taken into consideration as it may effectively lead to a social change and to challenging the gender-biased social norms.

2.3.2 Gender Inequality in Health

Recently, women's health has gained attention from the gender and women's study literature. Health risks are present at every stage of the woman's life cycle: Sen defined these inequalities as a matter of life and death, literally. He coined the expression "missing women"[9]

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[9] The concept of "missing women" refers specifically to the suspected low birth ratio of women to men. Sen noted that in some parts of developing world, especially in Asia and North Africa, the number of women at birth seems to be unnaturally low compared to that of men, as a consequence of discriminatory treatments in access to health and nutrition. Missing women could be the result of two different processes which occur at different times in the lives of girls: on the one hand, the phenomenon of sex-selective abortion or infanticides discriminates women at the birth time-being, and on the other hand during childhood females could be systematically less cared for than males, leading them to early child mortality. It should be noticed that Sub-Saharan Africa seems to be not affected by this phenomenon, Sen hypothesizes that the high participation of women in labour force in Sub-Saharan

(Sen A. , 2001, p. 446) to effectively explain the suspect excess of female mortality rate at birth, which occurred especially in some parts of the world, such as India, China and North Africa; interestingly women in Sub-Saharan African region seems to be less affected from this biased mortality rate (Sen A. , 2003; World Bank, 2019). Sen estimated the number of missing women in the world to be around 100 million, the figure has also been confirmed by a further study conducted by Klasen (1994).

Most recent estimates do not suggest a substantial change in the absolute figure the number of missing women remains in fact substantially stable. However, while the female disadvantage in mortality rate has been dramatically reduced, that in natality has increased due to selective abortion against female (Sen A. , 2003).

Investigating the "missing women" phenomenon, Sen emphasized the differences of natality and mortality rates between women and men. However, the scientific production around the health dimension has mostly focused on the reproductive sphere and more recently, on mental health issues, which have a pervasive effect on women's well-being. In all these cases, women's health results highly affected by social norms, traditional beliefs and gender roles. Marital institutions, for example, such as early marriage, abduction and polygamy may endanger women's health, both mentally and physically. The practice of polygamy, a marital institution quite diffused in Sub-Saran African countries, endangers women's health by hitting several aspects. Women involved in a polygamous marriage are more likely to give birth to undesired children, because of the latent competition with other women; are more likely to be infected by sexually transmitted disease, due to promiscuous intercourses (Bove & Valeggia, 2009; Bowan, 2013), and are more likely to be threatened by mental health disorders, as polygamy could induce stress and depression (Jankowiak, Sudakov , & Wilreker, 2005).

Mental health diseases seem to be a threaten for those women affected by social marginalization and poor living conditions. They in fact seem more prone to emotional disorders while having less access to treatment (Seedat et al., 2009; WHO, 2019; Doyal, 2001; Kisekka, 1990). Furthermore, the imperative to adhere strictly to social norms as well as the lack of choice on reproductive behaviour and fertility preferences may compromise women's mental health (Ampofo et al, 2004; Rao Gupta, Grown , & Kes, 2005). Surely reproductive health cannot be

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countries plays a key role for their survival, suggesting therefore, in author's opinion that women's survival rate depends on a recognition of "usefulness" coming from the society itself, a fact which however is not exactly comforting (Anderson & Ray, Missing Women: age and disease, 2010; Klasen & Wink, Missing Women: A Review of the Debates and an Analysis of Recent Trends, 2003).

seen in terms of distance between woman and man, i.e inequality, as it depends on sex attributes; however, it has a pivotal role in defining the women's position within the household. Reproduction choices represent a battleground to establish the intra-household power dynamics (Braam & Hessini, 2004; Ampofo et al, 2004)**,** as quite often they reflect the male dominance and the central notion of masculinity within the household (Ampofo et al, 2004). The structure of power within the society and within the household contributes to define the degree of the decision-making power of women over their own body, in some countries thematic such as contraception, abortion and more in general women's sexuality are strictly bounded by male dominance (Ampofo et al, 2004).

The effect of harmful social norms could be worsened by geographical constraints: lack of availability of adequate health services, absence of organized referral system and skilled nurses, combined with the capillary presence of traditional healers and diffuse mistrust of caregivers hampered the women's access to health facilities (Bhasker Rao, 2000; Namasivayam et al., 2012). Hence, the absence of proper medical and sanitation care, especially during the pregnancy time, may lead to serious health complication for the mother and for the infant as well.

Domestic violence is also one of the possible expressions of gender-inequalities in the health dimension and may be the result of prevalent gendered social norms and diffused customary norms. It is defined as "any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or private life" (UN General Assembly, 1993).

Domestic violence is highly associated with lack of decision, making power on reproductive behaviour, mental health disorders as well as physical impairs (Uthman , Lawoko, & Moradi, 2009; Campbell, 2002).

Interestingly, women all over the world benefit from a higher life expectancy: a newborn girl on average may expect to live longer than a male peer. The reasons beyond this phenomenon are not entirely clear: biological traits as well as behavioural and environmental factors contribute to increase women's life expectancy (Ortiz-Ospina & Beltekian, 2018). However, as pointed out by Austad, even if women have higher life expectancy, they generally suffer more from a higher rate of physical illness than men (Austad, 2006).

To conclude, women, compared to men, are more likely to suffer from physical impairment and from mental health disorders, due partially to biological traits (i.e. reproductive

sphere which extensively affects women's life). However, inequalities in the health dimension emerges also and especially as the perpetration of the subordinate role of woman at intra-household and household level. Traditional oppressive marital institutions and domestic violence hinder the possibility for women to improve their bargaining power, while posing an actual threat to their health.

The unbalanced structures of power may be one of the main driver in preventing the expansion of women's capability of being in good health.

2.3.3 Gender Inequality in Economic and Employment Opportunities

Gender-based inequalities in access and participation to labour market, career opportunities and income earned are very common and diffused worldwide (World Economic Forum, 2018). Modes and intensities through which these inequalities emerge vary based on region and level of development.

The CA could serve as a normative framework to investigate the gender inequalities of opportunities in economic dimension.

In developing countries especially, the opportunity for women to actively participate in the labour market has relevant implication for the expansion of their capabilities, for the enhancement of their empowerment as well as it covers a pivotal role enabling women in exercise agency; hence, the possibility to get a valuable job can help women in balancing the unequal power dynamics within the household.

The first channel passes through income[10]: working women have their own source of income, which constitutes one of the primary means to enhance their empowerment. Income, and more in general, the control over resources, increases the women's bargaining power at intra-household level (Anderson & Eswaran, 2009; Majlesi, 2016; Morrison, Raju, & Sinha, 2007). As a consequence, women with more bargaining power also have more decision-making power in allocation of the resources, which generally results in an improvement of children's outcomes. Women, in fact, are more likely to allocate resources in order to improve children's healthcare, education and nutrition; expanding then their own capabilities and well-being (Morrison, Raju, & Sinha, 2007; Thomas, Strauss, & Henriques, 1991).

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[10] The need to focus attention on human development in terms of freedom and not simply as an increase in personal income is one of the main points elaborated by Amartya Sen in "Development as Freedom": in order to expand the individual capabilities, income is considered a *mean* that has to be converted into an *end* or into freedom to achieve an *end* (Sen A. , 1999).

However, participation in labour market is more than just income; employment opportunities in fact contribute to improving professional skills as well as helping people achieve personal empowerment. Gender-based inequalities in economic dimension are defined by Sen as a "major source of unfreedom" (Sen A. , 1999, p. 3). He emphasized the importance of the work dimension for women within the framework of CA stating that "working outside the house and earning an independent income tends to have a clear impact on enhancing the social standing of a woman in the household and the society. Her contribution to the prosperity of the family is then more visible, and she also has more voice, because of being less dependent on others" (Sen A. , 1999, p. 191-192). The aspects of external visibility and community's perception of women's work assume a crucial role: in developing countries women usually take exclusively the burden of the household's activities, which include household chores, food preparation, children and elderly care. The heavy workload constituted the sphere of the non-paid work, which could affect women's quality of life. Women have to balance their time, necessarily they need to conceal the time for working outside of the household, in favour of the time needed to take care of the household. Generally, no leisure time is left.

The amount of domestic burden could hinder women's participation in the labour market, weakening their bargaining power (Ferrant, Pesando, & Nowacka, 2014). Blackden and Wodon in "Gender, Time Use, and Poverty in Sub-Saharan Africa" (2006) have clearly raised the problem of the excessive amount of work that women have to bear, highlighting the difficulties in accomplishing the time-managing task to fulfil effectively both labour market-oriented and domestic-oriented activities. Women cover simultaneously multiple roles in a context of inelasticity of the division of labour: the domestic work is unavoidably and exclusively women's responsibility. Then the engagement in paid jobs competes with the primarily caregiver role society attributes to women, implying difficult decisions over the allocation of scarce time. Trade-offs in time allocation, and sometimes harsh choices, are at the core of the inter-relationship between the "visible" market and "invisible" household economies, given the simultaneous competing claims on women's—but not men's—labour time" (Blackden & Wodon, 2006, p. 3). Blackden and Wodon called the phenomenon "poverty of time", referring to the women's scarcity of time and their poor decision over time allocation, due to their overburden of workloads. The poverty of time faced by women is mainly caused by the gendered division of labour and it is reinforced by social norms and gender roles. This generates the detriment of the expansion of basic capabilities.

Traditional poverty measures do not consider the dimension of time availability; indeed, it is generally assumed that families have no constraints on the availability of time, only few studies consider it as a limited resource. Furthermore, the consideration of the household as the unit of analysis regarding time deprivation turns out to be even more incorrect, the intra-household division of domestic labour and paid-work is in fact unequal among members of the same household (Zacharias, 2011). In addition, the empirical study conducted by Antonopoulos and Memis (2010) shown that in developing countries, non-subsitutable amount of unpaid work could be binding as paid work time in determining wealth. Hence, time poverty may have a role in hindering the process of women's empowerment.

Furthermore, the women's participation in labour force is strictly limited to specific sectors: female workforce is frequently employed in agricultural sector and in the informal sectors. Sub-Saharan rural areas are experiencing the "feminization of agriculture" (Lastarria-Cornhiel, 2006), an expression that aims at describing the increase in women's participation, both in absolute term than relatively to men, in agricultural activities. The feminization of agriculture, however, is not helping the institutions in overcoming the resource constraints that often limit women's empowerment, such as lack of land ownership and titles, scarce opportunities to access to credit and to join collective facilities[11].

Women, in fact, do not have secure access to land, productive resources and financial services. Nonetheless, achieving equal opportunities in access and control over resources and services is critical to achieve gender equality and women's empowerment. Legal and social barriers in access to productive resources prevent women to growing enterprises, improving productivity as well as entering contracts. Women are not fully legally entitled to own land and to inherit it, this precludes them also from using properties as a collateral for access to loans and credits. In addition, access to financial services, such as credit, savings and insurance is hampered by legal and social constraints. Hence the dismantling of such barriers seems crucial

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[11] Land access and the exercise of rights are critical to enhance women empowerment. There are tangible evidences showing that females face an unequal position in acquiring titles on land, with consequences on their livelihood. Tenure is affected by different sets of rules, sometimes in contradiction each other. In Sub-Saharan Africa laws and traditions are the most applied forms, often both disadvantageous for women. Land ownership is vital to secure the livelihood conditions of women, since in many cases it constitutes one of the main sources of food. Furthermore, women are usually curtailed access to inputs such as credit, necessary to carrying out the productive activities. Generally speaking an adequate provisions for women to hold land rights independently of their husbands or male relatives is needed, but it results particularly important for the female head of the household, who are generally victims of greater deprivation in terms of livelihood (Namubiru-Mwaura, 2014; Daley & Englert, 2009; Mutangadura, 2004; FAO, 1999).

to foster women's empowerment and favour the expansion of capabilities (Inter-Agency Task Force on Rural Women , 2012; United Nations, 2009).

Women face significant constraints also in accessing to formal sector, women's workforce in fact dominates the informal economy[12] (Chant & Pedwell, 2008), resulting in a further undermining of their empowerment (Meagher, 2011). The informal sector is focused mostly on low-skill and low-income activities; which imply limited career progress and professional growth. Also the income perspectives are poor and women result systematically less paid than men (International Labour Organization, 2018; Dieterich, Huang , & Thomas, 2016; Boserup, 1986; Chant & Pedwell, 2008). Social expectations, such as reproductive behaviour and marital institutions, play a key role in preventing women from entering and also maintaining a job in the formal sector[13] (Dieterich, Huang , & Thomas, 2016).

In conclusion, women's economic empowerment intended as active and free participation in labour market, access to natural resources and to formal credit is a crucial point for enlarging women's capabilities as well as the capabilities of their children[14] (Waterhouse, Hill , & Hind, 2017).

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[12] Informal sector comprehends subsistence farmers, seasonal workers, domestic workers and industrial outworkers. In Sub-Saharan Africa 89% of women are employed in informal sector; the percentage become 74% if excluding agricultural related work. Work in informal sector often means for women remaining outside of the social protection net and labour laws and guarantees, working for less wages and in unsafe conditions (UN Women , 2016).

[13] Dieterich, Huang and Thomas found that marriage significantly widens the gender gap at higher education levels: although secondary education significantly increase the likelihood for women to be employed in the formal sector, "the return of female secondary education in the labour market is cancelled out by the negative impact from marriage", meaning that women's job and career opportunities are considerably threatened by the burden of house responsibilities not equally distributed (Dieterich, Huang , & Thomas, 2016, p. 10).

[14] Female farmers are more likely to limit their labour time in farm activities due to heavy commitment in household activities, and at the same time the responsibilities for children and chores made it difficult for female heads of the household to opt for some regular off-farm activities in order to increase family-earnings. These difficulties could then fall on the members of the family itself, reducing their capabilities: sometimes girls are forced to drop out from school in order to help their mother in finalizing all the mandatory activities-showing a high opportunity cost for family to send girls to school. Furthermore, the workload could affects the future well-being of children, limiting their likelihood to be taken to health posts for vaccinations, or that sick children will access health care in a timely manner (Blackden & Wodon, 2006).

2.4 Concluding Remark

In this Chapter, we have reviewed the multiple aspects of gender inequalities in developing countries, focusing on three dimensions: i. education; ii. health and iii. economic empowerment. The opportunity to consider these dimensions is confirmed by the necessity to make the concept of gender inequality "operational", following, thus, the line traced by the indicators used at international level, such as the Gender Inequality Index and the Global Gender Gap Index. Measuring gender inequality is not an easy task: each dimension influences and is influenced by the others. Systemising the analysis by considering each dimension separately make it easier to capture the measure of inequalities, however interactions among dimensions are not being considered.

In this chapter, we tried to highlight the role of social norms and institutional factors in reinforcing gender differences.

Furthermore, in order to narrow the field of interest to the intra-household dimension, we decided not to consider the aspect related to political empowerment, as it is not directly linked with intra-household power dynamics.

The Chapter draws a complete picture of the manifestation of the multi-dimensional inequality of opportunities that women in developing countries have to deal with. This overview is preparatory to analyse the Ethiopian case study, as it provides a framework through which we can effectively identify the inequalities that matter specifically for Ethiopian society, as well as it offers a perspective of analysis.

3

Food Security: concepts and measurements

3.1 Introduction

The objective of the present chapter is to provide a comprehensive framework in order to investigate and discuss the concept of food security.

Food security is a dynamic concept, launched around the 1950s, to deliver quick and effective responses to global food crisis. Since then, it has considerably evolved over time, responding to the numerous points raised by academic and international communities.

The first paragraph provides a historical overview of the idea of food security, aiming at explaining the path through which academy and international community come to the modern formulation and aiming at clarifying the content of the four pillars on which the concept is based.

Relatively to food security, the household unitary model has been questioned in order to give space to the bargaining model: family members do not necessarily have the same preferences, and therefore do not share the same utility function. Hence, access to food and resources is absolutely a subject of negotiation within the household, therefore the importance of disengaging from the idea of the family as a unitary model.

The second paragraph is intended to provide a general outline of the possible way of measuring food security, focusing then on anthropometric measures. The anthropometric indicators are, in fact, those chosen to assess the condition of food security for children under five years old in the empirical chapter (chapter III), hence, they deserve special attention.

3.2 Food Security: the change of perspective over time

"Food Security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life[15]" (World Food Summit, 1996).

The above-mentioned high standard is recognised as the most comprehensive definition of food security, encompassing the four dimensions that compose it: availability, access, utilization and stability.

The long path that led to this definition has its roots in the Universal Declaration of Human Right in 1948 (United Nations, 1948) which recognised the right to food as essential to achieve an adequate standard of living; then the 1973 oil crisis, causing a sharp rise in food prices, contributed to expanding and refining the debate, which is currently still open.

Maxwell conceptualized and synthesized the history of food security in "three important and overlapping paradigm shifts": i) from the global and national aggregate food supply to the possibility for household and individual to access food; ii) from a food first perspective to livelihood; and iii) from objective indicators to subjective perception[16] (1996, p. 156).

During the 1970s the focus was mostly on national and international aggregate supply side, and the availability was the only aspect considered: the main challenge was being able to provide an adequate amount of food, at global level, so that any fluctuations in production and prices could be properly coped with (UN, 1975). Thereafter, due to the food supply difficulties (1972-1974) as a result of the oil shock, a most complete definition of food security has risen: the focus of the debate narrows to the individual[17] dimension, and the household became the unit of analysis.

Amartya Sen, introducing the concept of *entitlements*[18], namely the "people's ability to command over food through legal means available in the society" (1981, p. 433), contributes

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[15] The original definition from the World Food Summit in 1996 was "Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". The definition is therefore refined with the introduction of the social access as well "food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 2002) . As a result of the seminal contribution of Amartya Sen, great emphasis is ensured to food consumption even for most vulnerable people considering the dimension of social access (Clay, 2002).

[16] The transition from objective measures to subjective perception of food security will not be discussed here, for further details cf. Maxwell (1996, p. 158-160).

[17] The individual dimension, as implying the concept of intra-household food security, will be widely discussed further in section 2.2.1.

[18] Amartya Sen proposes to overcome food security as just "food availability": up to that moment in fact, long-run theory paid great attention to the availability of food: population should have been grown faster than the food supply would have done, leading to a "catastrophic" food shortage. The food availability decline, as explanation

largely to widening the notion of food security, emphasizing the role of the access to food, rather than the production and availability of resources. In order to support his idea, Sen examined the nature of the Bengal (1943), Ethiopian (1973) and Bangladesh (1974) famines through the lens of entitlements framework and demonstrated that the so-called "entitlement failure", and not the food unavailability, is the determining factor of famines[19]. Rightly pointed out by Osmani (1993), Sen criticized the Food Decline Availability (FAD) approach, and not the FAD hypothesis. Sen, in his seminal work on poverty and famines (1981a) pointed out that it is not possible to explain the causes of starvation by *just* looking at the aggregate supply side. The same famine occurs and could be endorsed and overcome by the population in several ways, depending on social stratification, community groups and geographical area; it could be reductive to consider such an articulated phenomenon, which involves each strata of the society differently as explained by the *aggregate* food supply. However, the decline in food availability could be of course one of the causes which contribute to starvation and famines – as could happen that famines occur without any significant decline in food availability per head (Sen A. , 1981)- but it would be over simplistic to consider it as the only cause as well as consider the tie between hunger and FAD in a unique and unavoidable way.

As a result, the first shift helps developing the "access" dimension, which is meaningful at household and individual level as it expresses the dynamics that leads the family to be food secure.

The second change of the paradigm, according to the classification proposed by Maxwell, is from a "food first perspective to a livelihood perspective" (1996, p. 157): the

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of famine and more in general of food insecurity, could work for Amartya Sen only in the case of subsistence economy, so when the households depend exclusively on its own production. In an exchange economy instead, the term of exchange, precisely, plays a key role: in fact, entitlements, commodities over which one can exercise ownership or command, are related to one's endowments constitute the ability to change a unit of one commodity into a certain amount of another commodity. Labour, commodities prices, assets become crucial to achieve food security (Sen A. , Ingredients of famine analysis: availability and entitlements, 1981).

[19] Maxwell, while recognizing how fundamental the entitlement approach was in order to deepen the notion of food security, remarks that the dimension of "access to food" was already present in the nutritional planning. So, the major contribution given by Sen, was mainly related with the creation of a comprehensive framework to analyse famines and hunger. In addition, Maxwell (1992) identifies several points, of the entitlements approach that has been extended and deepen in subsequent analysis. The limitations (Devereux, Sen's Entitlement Approach: critiques and counter- critiques, 2001) in the original analysis are briefly listed below (numbering and order elaborated by the author): i) the entitlements framework omits all non-legal transfers of resources; ii) it forgets to consider the non-market rights and commitments of the households within the community which they belong to; iii) the unit of analysis is the household, which implies the assumption of equal allocation of food and resource within it; iv) still the role of health is not adequately addressed, just the starvation-driven mortality is considered; v) food preferences and habitual consumption where not appropriately considered, particularly with regard to the starvation by choice, so when entitlements are adequate but there is still a loss in food security; vi) the entitlements framework has not the temporal dimension, as a consequence the analysis cannot account for the change in vulnerability occurred by the entitlements failure, neither the household resilience to food insecurity.

observation of African famines during the second half of the 1980s stimulates reflections on how the time variable affects food security. What emerges is the importance of time preferences: people not only pursue the short-term nutritional intake, but through coping and adaptive strategies try to achieve also the long-term stability. It is frequent in fact, that rural people, while facing famines and starvation, may decide to consume less food in the present time, in order to ensure their family does not get hungrier in the near future. They can put in place some prudent attitudes such as storing seeds or decide to not sell livestock, remaining hungry in the present time. Considering the time as a variable, and thus taking into account the inter-temporal choices of the household, can contribute largely to expanding the concept of food security as not just a matter of current food availability, but as a concept that embeds the sustainability of the livelihoods. Chamber and Conway (1991), pioneers of the Sustainable Livelihoods framework, defined it as an integrated concept which combines capabilities, equity and sustainability: "capabilities are both an end and a means of livelihood: livelihood provides support for the enhancement and exercise of capabilities (an end); and capabilities (a means) enable a livelihood to be gained. Equity is both an end and a means: any minimum definition of equity must include adequate and decent livelihoods for all - (an end); and equity in assets and access are preconditions (means) for gaining adequate and decent livelihoods. Sustainability, too, is both end and a means: sustainable stewardship of resources is a value (or end) in itself; and it provides conditions (a means) for livelihoods to be sustained for future generations" (Chambers & Conway, 1991, p. 5). Furthermore, Maxwell and Smith (1992) affirmed that livelihoods could be defined sustainable if they persist over time despite external shocks and long-term adverse trends, implying that sustainable livelihood are a necessary condition for food security.

What we can conclude from this historical excursus of the concept of food security is that the household's food insecurity condition can be determined by a number of risk factors, the nature of which could depend by the channels or "the source of entitlements", to use the Maxwell's definition (Maxwell & Frankenberger, 1992, p. 14), which each family uses to access to food. Thus, time also matters, as the way each household copes with changes in access and availability determines their resilience to shock: the more households can recover quickly from a shock, the more resilient[20] they are. The household's adaptive capacity to

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[20]The concept of resilience has become a key point for designing of policy interventions. FAO defined resilience as "the ability to prevent disasters and crises as well as to anticipate, absorb, accommodate or recover from them in a timely, efficient and sustainable manner. This includes protecting, restoring and improving livelihoods systems in the face of threats that impact agriculture, nutrition, food security and food safety" (FAO, s.d.). Strengthening

prevent and absorb shocks in a timely and effective way has implication for its future food security condition. Hereby, a household has to defend the *status quo* consisting in "all behaviours which seek to maintain current consumption and current economic and social norms" (Maxwell & Frankenberger, 1992, p. 37) while it has to preserve their ability to recover rapidly when the crisis comes to an end.

The flourishing debate on the concept of food security has therefore led to the most comprehensive definition mentioned at the beginning of the paragraph, which reinforces the multidimensional nature of food security. Following a brief description of each of the four dimensions declined at national and household levels,

Availability – in aggregate terms it refers to the supply side of food (of appropriate quality) and it includes the amount of a country's food production, the level of stock and the net trade (including food aid). While, looking at household level, it refers to the total available quantity acquired as food purchases and/or self-production if applicable;

Access – it concerns the economical, physical and social access of individuals to proper resources in order to enjoy a healthy and balanced diet. The respect of food tastes and cultural preferences are well highlighted, as well as the need to be well nourished in order to conduct a healthy and active life;

Utilization – it focuses on different people's dietary needs, the nutritional contribution of food (considering also the way of cooking it in order to deliver their full nutritional value), the use of clean water and the environmental sanitation as well as food storage condition. This dimension brings the health care aspect to the forefront of the discussion: empirical evidence shows how the lack of micro-nutrients intake, in the long-run, has an adverse impact on people's health conditions and cognitive development (Viteri & Gonzalez, 2002; Glewwe & King, 2001), as they constitute "the essential building blocks of healthy brains, bones and bodies" (UNICEF, s.d.). Furthermore, "the provision of non-food inputs such as health care, basic education, clean drinking water, or sanitary facilities" (Sen & Dreze, Hunger and Public Action, 1989, p. 44) is essential to guarantee the nutritional achievements, strongly inter-linked with food security[21],

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the capacity of people to react to disaster or unforeseeable events is a key point to reinforce food security, with particular regard to stability dimension.

[21] Food security and nutrition are strongly inter-linked: the former is a prerequisite for nutrition, but it is not a sufficient condition to guarantee the adequate nutritional achievements, as the most recent definition of food security encompasses not only the quantity, but the quality of food in terms of diversification and micronutrient intake such as iron, vitamins and zinc. The bridge between food security and nutrition is channelled by health

by the absorption and transformation of calorie intake into nutrients (Beaudry, 1996; Ghattas, 2014).

Stability – it refers to the temporal dynamics of food insecurity: to be food secure, households must have the durable access and availability to adequate, nutritious and quality food. Stability implies that household are not at risk of losing its entitlements as a consequence of sudden shocks or because of cyclical events. World Bank (1986) introduced the distinction between chronic and transitory food security. The former, a predictable phenomenon, is associated with problems on a continuing basis due to the lack of resources, poverty and low income; while the latter is related to periods of intensified pressure caused by external and sudden shocks such as natural disasters, economic collapse or conflict (FAO, 2006; Clay, 2002).

The four pillars of food security are highly interdependent and hierarchically interlinked: availability is a necessary, but not sufficient, condition to ensure the access dimension. The latter is in turn a necessary, also not sufficient condition to achieve appropriate nutritional outcomes; while utilization is sufficient to guarantee the nutritional achievements but cannot exists regardless of availability and access. Finally, stability is positioned transversally to the other three dimensions: it emphasises the sustainability and durability of all of them (Barrett, 2010).

Food security is a multi-dimensional concept which considers both the current nutritional status and the vulnerability to the natural disaster and external shocks. It is a fruit of a long and articulate debate, which embraces different dimensions and relates multiple levels. In the ideal assessment of individual (or household) food security it is necessary to consider all the dimensions above mentioned. The absence of any of the components could results in food insecurity.

3.2.1 Intra-Household Food Security

The use of the household as a unit of analysis for what concerns food security and the allocation of resources implies some assumptions on household structure and members' preferences.

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condition: albeit the adequate calorie intake is achieved, it does not turn automatically into good nutritional outcomes, but a good health condition is the prerequisite to be well-nourished.

Thus, a circle is triggered as at the same time, an adequate nutritional intake is necessary in order to not compromise a good health condition (Ghattas, 2014).

The neoclassical model assumes that all members of the household jointly maximize their collective welfare function, presupposing that the household could be treated as an individual. Resources are pooled together and the reallocation of them is equal among all the members, implying also that income under control of different members has the same impact on specific outcomes, such as children and women's health and household food security (Maxwell & Frankenberger, 1992; Thomas, 1990).

Nonetheless, the results emerged from intra-household research strand, conducted from the 1970s to mid-1980s, show something different: there exists heterogeneity in preferences and there are differences in the allocations of resources among members, especially in nutrition and food consumption. Thomas (1990) for example, empirically revealed that unearned income in the hand of the mother has a bigger impact on child's health and household nutritional intake[22] than the same amount in the hand of father, moreover, the same ideas have been theoretically framed by other scholars (Sen A. , 1992a; Doss, 2013).

The collective models[23] while focusing on the individuality of each household member, help to highlight the role of bargaining power of individuals within the household, as a key determinant for the allocation of resources (Alderman, Chiappori, Haddad, Hoddinott, & Kanbur, 1995; Quisumbing & Maluccio, 1999).

The intra-household allocation of resources is strongly gender-driven: based on the pattern of gender division of labour and on the considerations on paid and non-paid work, also Sen pointed out (1987) the importance of bargaining power and women's empowerment[24] theorizing the cooperative-conflict. According to Sen, household members face simultaneously two problems: on one hand members co-operate, contributing to build the total availabilities, and on the other hand they are in conflict when dividing the total availabilities among all the household members, keeping in mind the different preferences. Exactly the simultaneity of these sentiments generates the cooperative conflict.

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[22] Note, however that when Thomas restricts the sample to those couples where both members are engaged in labour force there is no evidence to reject the hypothesis to treating the family as a single unit of analysis, suggesting that household composition and labour supply choice have to be taken simultaneously into account (Haddad, Hoddinott, & Alderman, Intra-Household Resource Allocation in Developing Countries, 1997)

[23] Collective models stray on the assumptions made by the unitary model allowing for different preferences within the household, assuming that allocations are Pareto optimal or Pareto efficient and nothing is assumed *a priori* about the decision-making process. If one wants to take into consideration the variable on decision making, then two subclasses of the collective models have been developed: the cooperative model which relies on the decision of individuals to remain single or to form group/household; while the non-cooperative model assumes that the individual cannot conclude and finalize agreements (for more details on collective models cfr. (Alderman, Chiappori, Haddad, Hoddinott, & Kanbur, 1995; Quisumbing & Maluccio, 1999).

[24] More details on the effects that bargaining power and women empowerment have on household outcomes have been already discussed in Chapter I and will be furtherly declined on the Ethiopian case study in Chapter IV.

The recognition that household's allocative rules may not act protecting always the most vulnerable within the household is crucial to not underestimate disparities, as well as addressing policy interventions. (Rogers, 1990; Haddad, Hoddinott, & Alderman, 1997).

Once we have defined food security, outlining its key aspects and the evolution of the concept over time, as well as drawing the distinction between household and intra-household food security, the following section is dedicated to the measurement.

3.3 Measuring food security

"Food security is an essential, universal dimension of household and personal well-being" (Bickel, Nord, Price, Hamilton, & Cook, 2000, p. 7) thus, the assessment of the state of food security at individual, household and community level results crucial in order to address policymakers and evaluate the effectiveness of intervention. As food security is a multidimensional concept, the full nuances it can assume cannot be easily captured by a single indicator; on the contrary, it depends on a variety of specific conditions, experiences and pattern behaviour. Moreover, as seen in the previous section, there is not a single and univocal definition that fully incorporates the concept of food security, therefore it seems complex to identify an indicator that synthetizes every aspects of food security while specifying also the magnitude of insecurity: according to Hoddinott (1999) there are approximately 200 definition and 450 indicators. So, one of the first problems in assessing food security is the choice of the most appropriate indicator.

Pérez-Escamilla and Segall-Correa (2008) grouped five methods commonly used to measure food security as an outcome[25] (or better, food insecurity as they provide information on whether an individual is to be considered at risk): i. the FAO methods which estimate calories per capita at country level, based mostly on the dimension of availability; ii. the individual's

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[25] Maxwell and Frankenberger (1992) distinguished food security indicators into two groups: the process indicators and the outcome indicators. The former is in turn divided into indicators that reflect food supply and those reflect food access; while those of the second type trace the pattern of consumption.

Meteorological data, information on natural resources, data on agricultural production constitutes some examples of process indicators, they well return the idea of the process that makes food available (or unavailable) at a broader level than that of the household and individual dimension; but are not sufficient to characterize the individual's food security outcome (Hoddinott, 1999), as there is little correlation between area-level food production and household food security (IFAD, 1997).

The present study focused the attention on individual's and household's food security, so we considered only the outcome indicators; for further details on process indicators cf. Maxwell & Frankenberger, 1992 p. 73-134.

dietary intake, which directly measures the food consumption on the base of the re-call capacity (or recording of food) of each individual; iii. Household income and expenditure surveys, which through the analysis of expenditure for food estimate the amount of calories consumed on average by each household member; iv. anthropometry, as the measure of body proportion, which assesses both food security and health status; and finally, v. the food insecurity experience-based measurement scale assesses food security directly from the voices of the affected people, as it is a measure based on people's experiences and perceptions.

It should be noted that there is no hierarchy among these measures, as they measure food security on the basis of completely different data and information. It is better to consider these measures as complementary to each other: hypothetically, if we had them all at our disposal, it would increase our ability to understand the phenomenon, as each measure take into account different shade of food security (Hoddinott, 1999; Perez-Escamilla & Segall-Correa, 2008).

The choice of the indicator relies on the research question: in this study we intend to measure food security as the capability of being well-nourished, so anthropometric measures seem to be the more appropriate outcome indicator for the study's purpose. Anthropometric measures are in fact informative about the past and present individual's nutritional status: they provide information on the absorption of macro and micronutrient intake, they capture the individual's health condition as the capacity of absorbing and transforming calories intake in "active life", they can be used to derive information on obesity and overweight[26], a crucial added value in a time of nutritional transition (Harttgen, Klasen, & Vollmer, 2013).

Therefore, the following section aims at deepening anthropometric measures as an expression of food security.

3.3.1 Anthropometric measures to assess the capability of being well nourished

The anthropometric measures concern some morphological traits of human-being that could be externally measured; for what concerns socio-economic studies, the most widely used are height and weight. A wide literature sustains anthropometry as a useful method to assess nutritional status and food security condition of people (Svedberg, 2000, p. 153-154; Maxwell & Frankenberger, 1992, p. 98-99): it is a practical, easy and universally applicable technique to

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[26] De Haen, Klasen and Qaim (2011) pointed out on the possible failure of the weight-for-age indicator to correctly measure the individual's nutritional status in time of the so-called nutritional transition: worldwide there is a shift towards food with high content of starch, fat and sugar. As a result, people can gain weight more easily, and thus may decrease the prevalence of underweight, but this does not reflect an improvement in real nutritional status and health.

investigate child's development and adult's longitudinal changes during their own life, it is inexpensive and not intrusively collected (World Bank; Gibson R. S., 2005; World Health Organization, 1995; Gorstein & Akre, 1988).

In order to make the body measurements meaningful and readable it is necessary to combine them in indices[27], considering also age and sex. The anthropometric indices[28] are essential to the interpretation of the physical components measured: raw data on people's height and weight, in fact, could not be very informative on their own, while their combination and standardization is. Indices in fact allow the comparison between people (or groups) and a reference population[29].

The different values assumed by each index are subject to a specific interpretation, as explained below.

Weight-for-height

It is a particularly suitable indicator to describe the individual current nutritional status and health condition.

A low weight for height, namely wasting, identifies a deficit in tissue and/or fat mass if compared with the one expected from a child with the same height or weight. It could be interpreted as a recent and severe loss of weight or a failure in gaining it, which can be often associated with acute starvation and/or severe disease, however, it could be also the result of a chronic unfavourable condition. Wasting could occur for different reasons: the family food supply could be reduced or variation in disease prevalence happened; generally wasting arises very rapidly, and under specific conditions one could recover from it rapidly as well. The risk of being wasting is greater between the first and the second years of age, when diarrhoeal diseases are more frequent, and tend to decrease later.

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[27] There is an important conceptual difference between index and indicator: the former is a combination of different measurements, while the latter refers to the use of indices to measure an outcome or a phenomenon. For what concerns the anthropometric measures, we can say that they are indices, often interpreted as individual indicators of the nutritional status (World Health Organization , 1986; World Bank).

[28] The most widely used indicators in socio-economic field are weight for height, weight for age and height for age. Those commonly provide information on nutritional status and health condition for children under five years of age; while the body mass index (BMI) is an indicator more suitable for the evaluation of adults' outcomes. Furthermore, anthropometric measurements of children under five are considered to be better predictors of well-being conditions rather than those of adults. Measuring adults instead could be useful to understand the determinants of children food security (Alderman , 2000). Based on this, the present study focuses attention on children indicators.

[29] An in-depth analysis on the reference and standard charts as well as the transition from the previous method to the new current reference chart is proposed in section 2.3.4.

On the contrary, high weight for height could be interpreted as overweight, as there exists a relation between the high value of this index and obesity, measured by adiposity. Even though it is important to underline that it is not fully correct to label one person as "obese" only on the base of the high value of weight for height, because this increasing may also occur if the lean mass rises, on a population wide basis there is evidence that the majority of persons with high weight for height result obese.

The use of weight-for-height is particularly favourable in countries where age is not accurate known, such as the case for Sub-Saharan African countries, which have great sensitivity to a person's change in weight over time.

Height-for-age[30]

Height-for-age measures the cumulative linear growth and reflects a long-term condition of food shortages, recurring or chronic illness and poverty.

Low height-for-age, namely stunting, reflects a failure in achieving growth as its potential as a result of non-optimal and continuous nutritional and health conditions. Stunting is linked with poor socio-economic conditions that increase the risk of facing adverse health conditions, such as repeated infections as well as inadequate nutritional intake and feeding practices.

The prevalence of stunting increases over the time, commonly not appearing in children below the third month of age, and it becomes more frequent among children from two to three years of age, then shows a tendency to level off.

Weight-for-age

The weight for age measures the individual's body mass relative to the age. A low value for weight-for-age reflects underweight. As weight is influenced both by height and thinness, underweight presents a mixed nature, which contributes to making the interpretation complex. As a result, it could be considered a composite indicator of weight-for-height and height-for-age accounting both for wasting and stunting but does not provide a distinction between the two.

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[30] Anthropometric measures are highly appropriate for an operational approach, so it is important to distinguish between terms length and stature: the former refers to the measurement taken in recumbent position, recommended for children below the 2 years of age (or under 85 cm); the latter refers to standing height measurement.

It presents the advantage of requiring only one physical measurement, but it needs accurate information about the age; as a consequence, when age is not precise this indicator may cause systematic bias (Gorstein et al., 1994).

Body Mass Index (BMI)

The BMI is the ratio between the weight in kilos and the square of height in meters, and it provides information both on overweight and thinness.

It is an indicator mostly used for adults in developing countries to identify chronic energy deficiencies and obesity, to mention the two extremes, having the great advantage that it is independent from age.

BMI is highly related with fat mass and therefore it is considered a good indicator for body energies stored by the body as fats (World Health Organization , 1986; World Health Organization, 1995; World Bank; Gorstein et al., 1994; Alderman , Anthropometry, 2000).

3.3.2 Scale of Choice

There are three different systems to compare uniformly and objectively each of the above-mentioned different indicators collected from individuals to the reference population: Z-scores (or standard deviation score), percentiles and percent of median.

Z-score or Standard Deviation Score – measures the dispersion of data around the average mean and it can be calculated as the difference between the value observed and the median value of the reference population divided by the standard deviation for the reference population.

$$ZScore = \frac{(\text{value observed}) - (median\ reference\ value)}{(standard\ deviation\ of\ reference\ population)} \qquad (2.1)$$

The individual measurements can be transformed in Z-scores using as baseline the growth reference chart developed by the United States National Centre for Health Statistics,

constructed on data collected in United States and subsequently recommended for international use by WHO.

The Z-score expresses the anthropometric value observed as the number of standard deviation of a person is away from the mean value of the reference population normally distributed, identifying also the direction of the deviation, i.e. below or above the mean reference.

Figure 2.1: Z-Score and the cumulative distribution
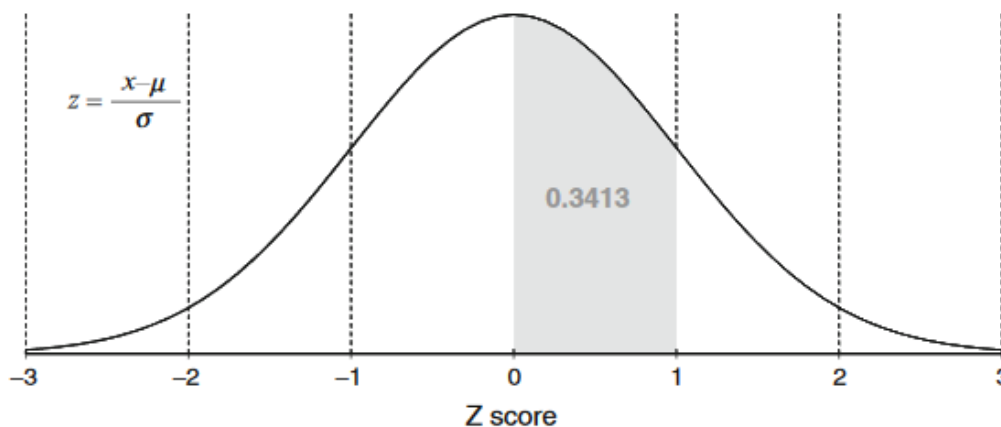
In a normal distribution the Z-Score=0 divides the area in two identical parts, corresponding to the mean and the median of the distribution. As the figure clearly shows the Z-Score = +1 represents the point at which 84% of the population falls (i.e. 50% till the 0 + 34%), so one can conclude that 84% of the population measured lower than Z-score = 1.

Source: Wang et. Al. 2006.

Its use presents several advantages: i. as it is a standardized quantity, it is comparable across ages, sex and groups, as well as it makes different indicators comparable to each other; ii. it is linear and could be analysed as a continuous variable; iii. provides information also on the range of malnutrition (mild, moderate and severe) and allows to quantify the extreme growth status located at the tails of the distribution; iv. It does not depend on sex and age, so it allows to evaluate growth status by combining those variables also; and lastly V. groups of Z-Scores can be summarized by descriptive statistics such as mean and standard deviation, providing information on the whole population (Wang & Chen, 2012; World Health Organization, 1997).

Percentile – is a positioning measurement as it identifies the ranking position of an individual in a given reference distribution; it expresses what percentage of the population the individuals equals or exceeds.

It is frequently used in clinical setting as its interpretation is unambiguous and provides information on the expected prevalence, however percentile has some limitations, as the same interval in percentile corresponds to different changes in absolute values in weight or height, depending on which part of the distribution we are looking at. High variation in absolute values is expected at the extremes of the distribution, so percentile are not very useful in addressing the individual's change over time, neither in making comparisons with different anthropometric measures[31].

Under a normal distribution, each percentile corresponds to fixed value of Z-Score, so the two can be easily converted to each other, even if the commonly used cut-off points are not exactly comparable: for example to Z-score equal to – 2 corresponds the 2.3th percentile; as well as to a more intuitive measure expressed in percentiles such as the 95th corresponds a less intuitive +1.64 Z-Score (Wang & Chen, 2012; World Health Organization, 1997).

Percent of median – it is the ratio, expressed as a percentage, between the observed value and the median value of the reference population.

$$\text{Percent of median} = \frac{(observed\ value)}{(median\ value\ of\ the\ reference\ population)} * 100 \qquad (2.2)$$

This method does not present strong adherence with the reference population, as it considers only the median value of the reference and not its distribution around the median value; as a consequence, the interpretation of a fixed percent of median value varies across age and height groups. On the other hand, it could be useful in case the distribution around the median is unknown or the reference population has not been normalized (Gorstein et al., 1994; World Health Organization, 1997).

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[31] Due to these limitations, Z-Score is the preferred and most usable way, in quantitative studies, to compare the individual's (or group's) anthropometric measurements to a reference population (Wang & Chen, 2012).

3.3.3 Cut-off points for the interpretation of anthropometric measures

Cut-off points are essential to effectively express the child's growth status and estimate the extent (or the prevalence) of malnutrition. The commonly reported cut-off point is <-2 and >+2 Z-scores of the WHO Child Growth Standard average: "the rational for this is the statistical definition of the central 95% of a distribution as the "normal" range" (World Health Organization, 1997, p. 50).

The cut-off point ideally traces the line that divides people who are in danger from those who instead experience a healthier condition[32], therefore, a person showing a Z-Score below or equal to the threshold value (Z-Score < -2) is classified as low weight-for-age, low height-for-age and low weight-for-height implying an evaluation of moderate malnutrition, while a Z-score < -3 define severe malnutrition. A positive score + 2 above the standard deviation instead identifies high weight-for-height figuring out overweight[33].

Those points are calculated as the result of a review of anthropometric individuals' characteristics which presents clinically moderate or severe malnutrition and/or subsequently die. Nonetheless, the use of universal cut-off points presents some limitations, as they are not necessarily reflecting the optimal condition to predict functional outcomes, and could be misinterpreted as not all the children below the cut-off point are as a consequence malnourished and vice versa; furthermore, there is a tendency to associate a label to some indices' specific values such as "moderate" or "severe" (cf. note 30), however the real function of cut-off points is to identify those who are *more likely* to be undernourished. In addition, it is crucial to stress the point that the linkage between body composition's indices and health risks is more likely to vary, of course with gender and ages, but also with environmental conditions.

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[32] The anthropometric could be used as a screening test to assess population condition. Sensitivity and specificity should be taken into consideration to make those measures effective. The proportion of people identified as at risk, using the cut-off value, stands for a measure of the sensitivity of the test it-self. Sensitivity could be improved changing the cut-off point and so increase the proportion of people that should be considered at risk. On the other side, a good screening test is also one who accurately measures the specificity of the test, so those who are not considered at risk. Sensitivity and specificity are inversely related: increasing one would result in the decreasing of the other.

[33] For the sake of clarity, below a summary table with cut-off points:

Classification	Z-Score value
Overweight	Z-Score => +2
Mild	-2 < Z-Score <=-1
Moderate	-3 < Z-score <= -2
Severe	Z-Score <= -3

Source: Author's elaboration from WHO 1997.

The use of anthropometric measures recently has also been employed for the design, implementation and the evaluation of public policies aimed at reducing the prevalence of malnutrition and targeting beneficiaries of policy interventions. For this purpose, it is crucial that one is well equipped when identifying the target population and the beneficiaries of intervention. Hence, considering the limits of cut- off values, "trigger-levels" have been implemented in order to provide guideline to establish levels of importance in public health, helping in customizing policy's criteria, depending on specific population needs and different environmental conditions (Gibson R. S., 2005; World Health Organization, 1997; World Health Organization, 1995; Gorstein et al., 1994).

3.3.4 The International reference population: from reference chart to growth standard

Reference/standard charts are essential in order to assess nutritional and health condition of individuals and population/groups. They represent a fundamental tool providing countable measures to assess whether a child is growing at his/her potential, assuming also a key-role in evaluating public policies; for these reasons they deserve, and have had, great attention, having been perfected over time.

Here follows the history and the reasons that lead to the transition from a reference to a standard growth chart.

The first reference chart (commonly being referred as WHO/NCHS) was developed jointly by the NCHS and the Centre for Disease Control and Prevention (CDC): the former, on 1977, provides analysis of data collected in United States during the 1960s and 1970s, while the latter on 1978 delivered the normalized version of curves, which subsequently were strongly recommended by WHO, to be used as the reference curves for international nutritional assessment.

The international use of this chart has raised a sensitive issue; as Wang points out (2006, p. 176) a conceptual distinction between "reference" and "standard" seems to be necessary, since in most of the cases they are wrongly considered as interchangeable concepts. "Reference" concerns a useful tool to analyse data, it provides a baseline, a benchmark, and to make comparisons. Yet, deviations from the mean value do not necessarily evidence a non-normal growth. On the contrary "standard" implies the idea of a target to be achieved, involving a value judgement. As underlined by the WHO Expert Committee, it is not possible to prevent the

incorrect use of the reference chart, which is very often understood as a standard, hence the importance of choosing a reference chart that resembles as much as possible a true standard.

In light of this difference, the first chart provided by NCHS shows limitation: it has limited geographical coverage as it is based on data coming from the United States only (partially surveyed); it does not reflect a healthy sample as the distribution of the weight is positively skewed to the right with a high prevalence of overweight, and data are taken from different surveys affecting the homogeneity of the final dataset.

In order to overcome these weaknesses, already on 1995 the WHO Expert Committee stressed the importance of developing new charts with a novel approach: a standard rather than a reference. They should be elaborated with criteria thought to increase the representativeness for countries and drawing up a healthier reference population; the guidelines suggested to include samples of at least 200 people in each age and sex group and to make sampling procedures well-defined, well documented and reproducible.

As a result of this agenda, on 2006 the WHO launched the new Child Growth Standard based on data from the WHO Multicentre Growth Reference Study (1997-2003) collected in six countries (Brazil, Ghana, India, Norway, Oman and United States) following highly standardised procedures. The population surveyed is healthy as the children selected were closely monitored to ensure they had optimal nutrition and health condition, moreover their mothers are engaged in healthy practises namely non-smoking and breastfeeding. Furthermore, breastfeeding is established as the biological norm and as a consequence the breastfed infants represent the standard for growth and development, while previously the reference was represented by those fed by baby formula milk. Finally, the new standard addresses all the life cycle as it relate to pregnant and breastfeeding women, adolescents and elderly people, in addition to children and infants already previously considered (Kuczmarski, Ogden, & Guo, 2002; Wang et al., 2006; London School of Hygiene and Tropical Medicine, 2009; De Onis, 2011).

3.4 Concluding remarks

In this chapter we have explored the concept of food security, framing it within an historical perspective, in order to understand the process and deepen the reasons that have led the academic and international communities to the current and most used definition. Food security has an operational nature, it is a flexible concept and it is quite ductile for policy usage.

In the most recent and used definition, food security is based on four fundamental pillars: availability, access, utilization and stability. In order to define an individual "food secure" all the four pillars must co-exist; the lack of one of these pillars endangers the personal's food security.

In this regard, we therefore emphasized that food security is clearly an individual achievement. Thus, the necessity to make a distinction between household food security and intra-household food security. The former implies the acceptance of the household as a unitary model: all the member of the household, though, share the same preferences, maximizing the same utility function and receiving an equal amount of resources. We reject this model, preferring then the bargaining family model: preferences vary from one member to another and within the family there exist a bargaining of the resources. The concept of cooperative conflict, theorized by Sen, provides a clear idea of negotiation within the household: negotiation of the resource allocation. Wife and husband cooperate in order to build up a decent amount of food resources, but simultaneously they are in conflict to negotiate the allocation of the same resources.

Thus, accepting the bargaining model and considering the cooperative conflict within the household, also food security becomes the reflection of gender roles, social norms and the gendered division of labour.

Henceforth, having clarified that food security is an individual achievement, an adaptable and highly operational concept, we dealt with the measurement issue.

As food security counts hundreds of definitions, there are as many ways to measure it: it is possible to rely on objective measures, such as anthropometric indicators, or completely subjective measures that highlight the perception of the individual on her own condition of food security. Each measure emphasizes and returns a specific aspect of food security; each one has advantages and disadvantages and the choice is strictly depending on what we are trying to assess and explore.

The present research aims at assessing food security objectively: thus, we focus on anthropometric indicators which combine individual anthropometric recording providing then a complete figure of the nutritional status and health condition.

The chapter, therefore, provides all the tools needed to investigate the food security: a complete review of the literature, considering also the most operational aspects of the concept, i.e. the different ways of measurements.

In the next chapter, we investigate the position of women within the household and the state of intra-household food security in Ethiopia, applying the concepts widely discussed in chapters I and II.

4

From intra-household gender equalities to better child's food security.

A framework proposal

4.1 Introduction

In previous chapters we have analysed gender inequalities in the dimensions of education, health and access to economic and labour market opportunities. International organisations and governments have devoted much effort in order to achieve gender equality worldwide. The implementation of diffused public policies has brought the need to produce aggregate data so that the effectiveness of the policies implemented can be assessed. This allows the stakeholders to keep the phenomenon monitored, which is surely crucial.

Despite this all, little attention has been given to the effects of gender inequalities within the household. An interesting strand of literature has criticized the neoclassical model of household economics, highlighting rather the heterogeneity of preferences within the household as well as the differences in resource allocation among members of the same family. However, only few empirical studies have estimated the effects of intra-family gender inequality, i.e. between wife and husband, on children's outcomes. This study tries to contribute to the provision of insights on this topic.

Firstly, we propose a logical framework aiming at highlighting the transmission channel through which equality between spouses contributes to improve child's food security.

4.2 From Intra-Household Gender Gap to Children's Food Security: The Transmission channels

Having defined the research objective, i.e. understanding whether the intra-household power dynamics affect children's food security, and the Capability Approach and its many facets as the theoretical framework, we proceed in outlining the transmission channels from multi-dimensional intra-household gender gap to children's food security. Therefore, this section aims at clarifying through which paths a better woman's intra-household position should improve children's food security.

The table below helps also in motivating the research hypothesis: women with a better intra-household position gain the tools to improve children's food security.

Table 4.1: The transmission channels from Intra-Household Gender Gap to Children's Food
Security
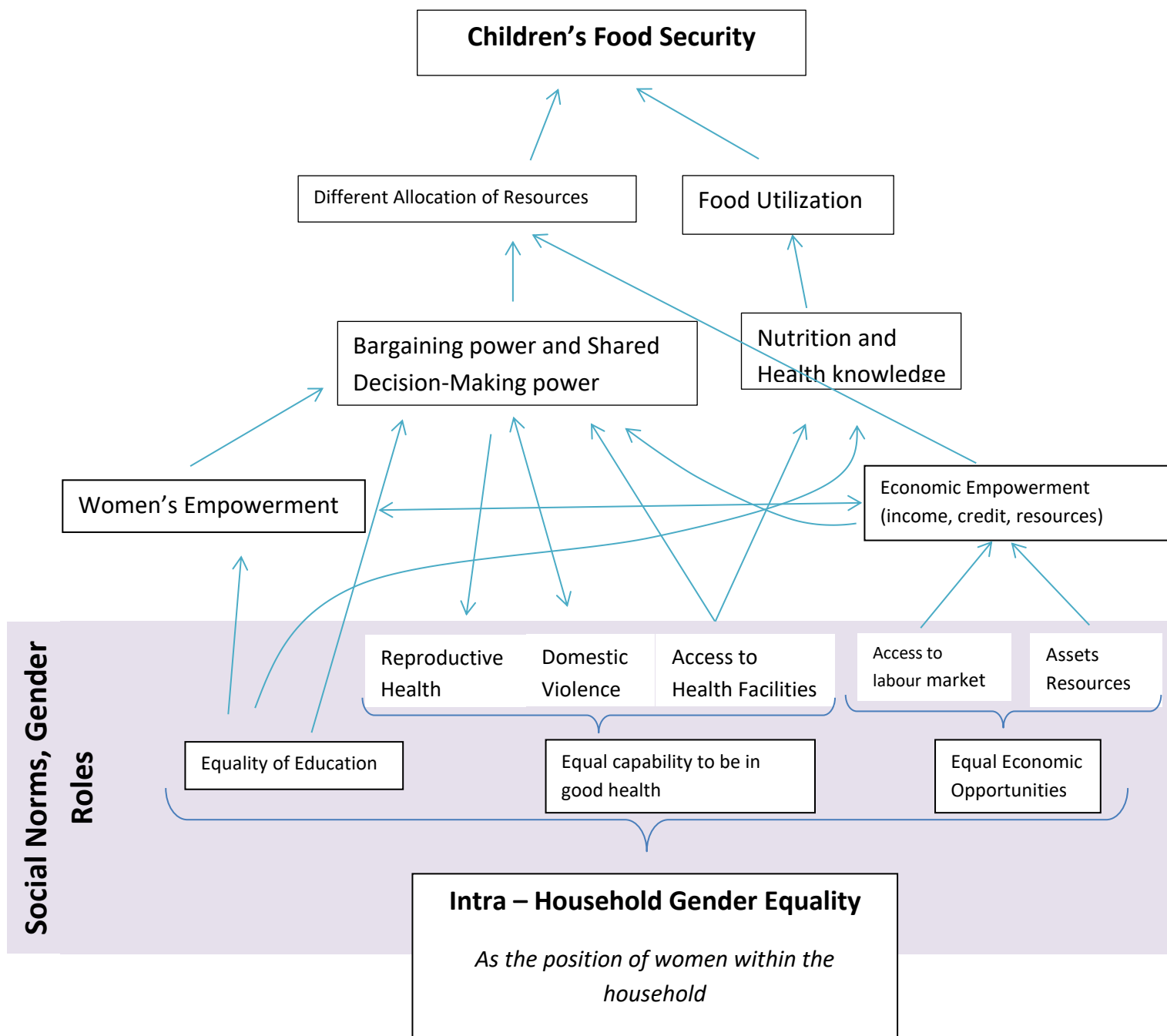
The assessment of the intra-household women position requires a simultaneous focus on the three dimensions useful to synthetize the full spectrum of life: education, health, economic and employment opportunities. The simultaneous acquisition of power for women in the three dimension is crucial to improve children's outcome. These dimensions are extremely interconnected, and it is not unusual that some improvement in one dimension drive

improvements in all the others. Some studies, for examples, have showed that education for women is a key driver for better health outcomes (LeVine, LeVine, & Schnell, 2001; Population Reference Bureau, 2011), as well as simultaneously, women with more education are more likely to gain a better employment position (Yousefy & Baratali, 2011). Additionally, women with a greater power over health dimension, such as reproductive or marital choices, are more likely to extend their own education. Although in this case even the reverse causality may occur, as women with more education tend to marry and give birth later than the less educated ones (Birchall, 2018). These examples are useful to illustrate that each dimension contributes to reinforcing the empowerment in all the others.

Education represents the key instrument to enhance women's empowerment, which is in turn a driver to increase intra-household bargaining and decision-making power. Blunch and Das (2007) suggest that the educational equality between wife and husband captures the norms within the marriage. They expected that women which are equal or better educated than their husband increase the value of equality in their marriage. In turn, more equality within marriage might lead to equal participation in decision-making process and more bargaining power for women than those households with spouses with education inequality. Along with the equality in marriage, however, the authors explicit also the importance of the aggregate levels of education between spouses. This is a crucial point also for the present analysis: the case in which wife and husband have both no education expresses a situation of equality. However, this might not lead to equality in marriage, neither increase women's empowerment.

Thus, equality in education between wife and husband could lead to equality in marriage and shared decision making processes, further it could increase women's empowerment and bargaining power (however those cases in which both partners have no education are not considered as such). In turn, shared decision-making power, enhanced bargaining power and improved women's empowerment are expected to enhance child's food security.

Gender equality in health condition according to WHO means that women and men have the same opportunities to expand their capability of being healthy. However, different biological traits do not allow to consider health condition of men and women in terms of difference, *strictu sensu*. Women in fact deal with the reproductive aspect and maternal healthcare, which requires access to specific health facilities at specific time. Reproduction involves the entire life cycle of the woman and touches both the physical and mental health

spheres. Access to adequate health facilities is indispensable for women during any stage of life: it is essential during pregnancy and childbirth as well as it plays key role also to properly inform women about fertility preferences. Women with poor reproductive health and women that experience maternal depression are more likely to negatively affect children's food security (Hassan, 2016). Furthermore, women with poor decision making over fertility preferences and motherhood are more likely to be food insecure (Prakash et al., 2011), in turn this might be a transmission channel for child's food insecurity as well.

Empirical evidence from Sub-Saharan African countries have shown that autonomy in decision making processes increase the use of maternal health facilities (Stephenson , Bescieri, Clements, & Hennink, 2006; Fotso, Ezeh , & Essendi, 2009; Woldemicael & Tenkorang, 2010; Beegle, Frankenberg, & Thomas, 2001). Furthermore, other empirical studies suggest that decision over access to health care facilities might be affected by husband (Kifle et alt., 2018), thus decision making power (or the lack of) plays a crucial role for women's health status.

In addition, domestic violence, which affect both physical and mental health condition, also might be one of the causes of the detriment of bargaining power and autonomy of women (Eswaran & Malhotra, 2011).

Shared decision making and women's bargaining power within the household seems to be crucial to ensure women a decent access to health care, especially with regard to the reproductive aspect in all its facets (Novignon , Djossou , & Enemark , 2019), hence the direction is twofold.

The women's economic conditions, enhanced by access to resources, to credit and financial services and to decent work (which in turn is also bettered by education), contribute to expand women's bargaining power within the household (Osmani L. N., 2007). Bargaining power acquired through the economic dimension improve child's food security directly through the channel of allocation of resources within the household. A large strand of literature in fact have shown that women's control over resources affect child's food security. The proportion of income controlled by women has a positive and significant effect on child's food security and more in general on child's outcomes (Kennedy & Peters, 1992; Quisumbing et al., 1996; Haddad, Peña, Nishida, Quisumbing, & Slack, 1996).

Additionally, the children's food security is directly enhanced through the channel of food utilization, which in turns has been improved directly by education as well as by the access to health services and facilities (i.e. importance of breastfeeding, information provided by professional nurses, prenatal and postnatal care).

The scheme shows the connections from intra-household gender equality, intended as the women position within the household, and children's food security. However, the transmission channels do not act perfectly predictably. In fact, the existence of conversion factors could actually hinder the expansion of capabilities, in this case, referred specifically to the capability of children to be well-nourished.

The conversion factors are personal, environmental and social factors[34] which can interfere with the expansion of capabilities (Sen A. , 1999; Robeyns, 2005). Therefore, in regard to the present research, the social norms and gender roles, which constitutes the *social conversion factors[35]* according to Robeyns (2005, p. 99) could affect the capacity of women to move from the management of intra-household power dynamics to the expansion of child's capabilities. Hence, the promotion of social arrangements plays a crucial role in the achievement of the valued choices (Frediani & Hansen, 2015).

Since Ethiopia is a patriarchal society with gendered institutions, we highlight here the specific role of the social conversion factors which, in the author's opinion, constitute the main obstacle transforming women's resources into specific functions. To understand the blocking role of the social factors, we use the concept of doing gender firstly theorized by West and Zimmerman (1987, p. 126). The idea of "doing gender" refers to the daily reaffirmation of the roles of masculinity and femininity; a way for "legitimating one of the fundamental divisions of the society". The concept of doing gender helps in explaining the entrenched reasons why women, even those that successfully deviate from the established gender roles (i.e. dual earner scheme versus breadwinner model), are then able to accept the abusive behaviour of men. At the same time, doing gender also explains why men compensate the loss of their masculinity, exercising power in other aspects of life. Doing gender henceforth implies the neutralization of the individual bargaining power acquired by women; it corresponds to an asymmetric re-balance

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[34] The achievement of certain beings and doings (functions) to which each individual attribute a proper value is influenced by three groups of conversion factors: i. personal; ii. social and iii. environmental. The individual conversion factors attain to the personal characteristics of the individual, such as sex, age or physical traits. The social conversion factors are related to the social norms and customaries each specific society adopts. Finally, the environmental conversion factors regard all climate or geographical location (Robeyns, 2005).

[35] Emphasis by the author.

of the power relationships. The internalization of asymmetric norms and beliefs means that, quite often, women are not even able to imagine the possibility of acting or choosing differently, following another scheme than that of acted by "doing gender" (Mabsout & Van Staveren, 2010; Kabeer N. , 1999), impeding thus the role of the agency.

5

The state of gender inequalities in Ethiopia

5.1 Introduction

The present chapter aims at providing a clear picture of the condition of women and the state of food security in Ethiopia. These issues will be addressed by applying the concepts and the tools extensively explored in Chapter I and II.

In order to deepen the investigation on women's position in Ethiopia, it is considered appropriate to approach and provide figures and country-level data for each single dimension, education, health and economic opportunities.

Ethiopia has been experiencing since a decade a double-digit annual economic growth, however looking at demographic and socio-economic statistics provides a useful distributive perspective of this impressive economic growth.

Mortality rate and fertility rate have declined sharply in recent years[36], however, despite these achievements that have actually driven the country to perform even better than the average

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[36] The following figures are intended to show the trends over years of the under-five mortality rate and fertility rate for Ethiopia. The graphs show the actual fall of the two indicators both for Ethiopia and for Sub-Saharan African Countries used as a group for comparison. Ethiopia in both cases has performed better than the average of the region.

Figure 5.1: Mortality Rate for children under five (per 1,000 births)
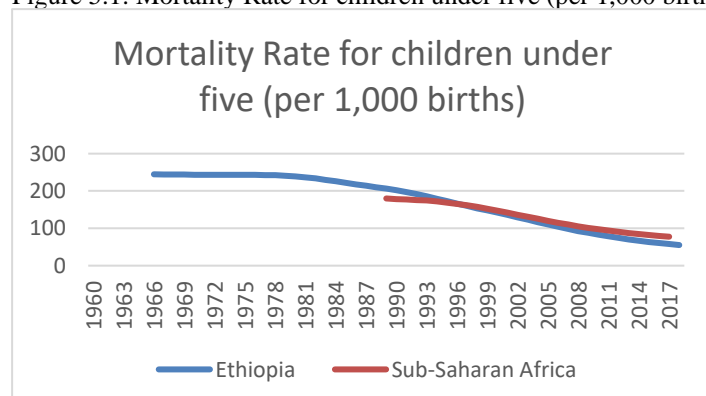
Source: Author's Elaboration of data available at World Bank, 2019

of the Sub-Saharan region, mortality rate is still representing a public health problem and women are on average still recording a high fertility rate (Woldeamanuel, 2019). Furthermore, a press released by the World Bank stated that the benefits of the economic growth seem to be skewed in favour of the upper stratum of the society, while the poorest segment (the lowest 10% of the distribution) did not experience any improvement in the standard of living, especially in terms of nutrition and food consumption (World Bank , 2019).

It is interesting to note that all these indicators, aimed at providing a general overlook of the whole country, are strictly linked with the women's condition.

Women play a crucial role in fighting children's mortality, and for obvious reasons fertility rate is directly linked with (and also determines) women's condition.

Therefore, the position of women contributes to determining the human and economic development of the country.

In this Chapter, we try to assess and understand the women's position in Ethiopia. Sections 5.2 and 5.3 provides an overview on the gender gap and women's condition in Ethiopia, paying attention to the institutional factors and social structure of the country.

Section 5.5 offers an in - depth analysis of the women's position in Ethiopia, through the dimensions explored in Chapter I.

Finally, section 5.7 focuses on the analysis of the intra-household dynamics in food allocation.

Figure 5.2: Fertility Rate, Total (birth per woman)
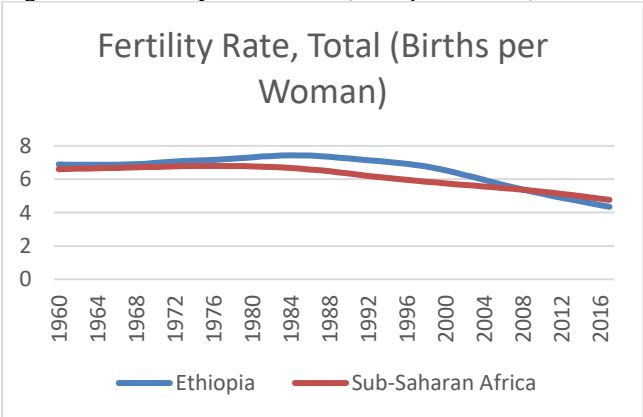
Source: Author's Elaboration of data available at World Bank, 2019

These figures are intended to show the trend of Ethiopia compared with the group of Sub- Saharan African countries.

5.2 Ethiopian Gender Gap and Women's Empowerment at a glance

Since 2007 Ethiopia has experienced a sustained and rapid economic growth, becoming one of the highest performing economies in Sub-Saharan Africa. Nonetheless, it remains one of the least developed countries in the world.

Figuring out Ethiopia from a human development perspective, gives the chance to trace the actual progresses growth has contributed to make in the country; these advancements however seem to proceed at a very slow pace.

According to the Human Development Indicator[37] (HDI) for example, Ethiopia, on 2018, ranked only 173 out of 189 countries, with a current estimated value of 0.463 point (UNDP, 2019). Between 2000 and 2017 the Ethiopian HDI increased from an absolute value of 0.283 to 0.463, recording an improvement over 63%. Each dimension of the indicator has actually enhanced over time[38], and yet despite this fact, Ethiopia is still performing poorly, even when compared with similar countries.

The table below shows the Ethiopian HDI's trend, from 2000 to 2017, compared with that of other countries, grouped by similar characteristics and/or general level of development.

Despite a steady growth over the years[39], Ethiopia is still far from reaching the level of the other groups (United Nations Development Programme, 2018). Ethiopia, basically, has performed similarly to all the other countries, simply by following the footsteps of the region.

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[37] The Human Development Indicator (HDI), launched by the economist Mahbub-ul-Haqin 1990, helps in shifting the focus of development from the national Gross Domestic Product towards a people-centred perspective. The index summarises three basic and key dimensions of human development: a long and healthy life, access to knowledge and decent standard of living. Thus, given the objective of this study, the use of this indicator for framing Ethiopia seems particularly suitable.

[38] It is useful to analyse the trend of each single HDI's component for Ethiopia: data are available from 1990 to 2017 for all components, except for "mean year of schooling" for which the series starts from 2000. It follows a schematic summary of the change for each element: i. Life expectancy at birth: 38.64%; ii. Expected years of schooling: 174.19%; iii. Mean years of schooling: 80% and iv. Gross National Income (at PPP$ 2011): 165.3%. Every component presents a pattern of growth, but the change in HDI is driven mainly from GDP growth and from the increase of expected years of schooling (United Nation Development Programme, 2018)

[39] Ethiopia shows the same trend of all the groups of Countries but presents then lower levels.

Figure 5.3: Trends for Ethiopian Human Development Indicators compared with relevant categories

Ethiopia HDI's trend compared with relevant categories   1990-2017

Legend: Ethiopia — Low HDI — Developing Countries — Sub-Saharan Africa
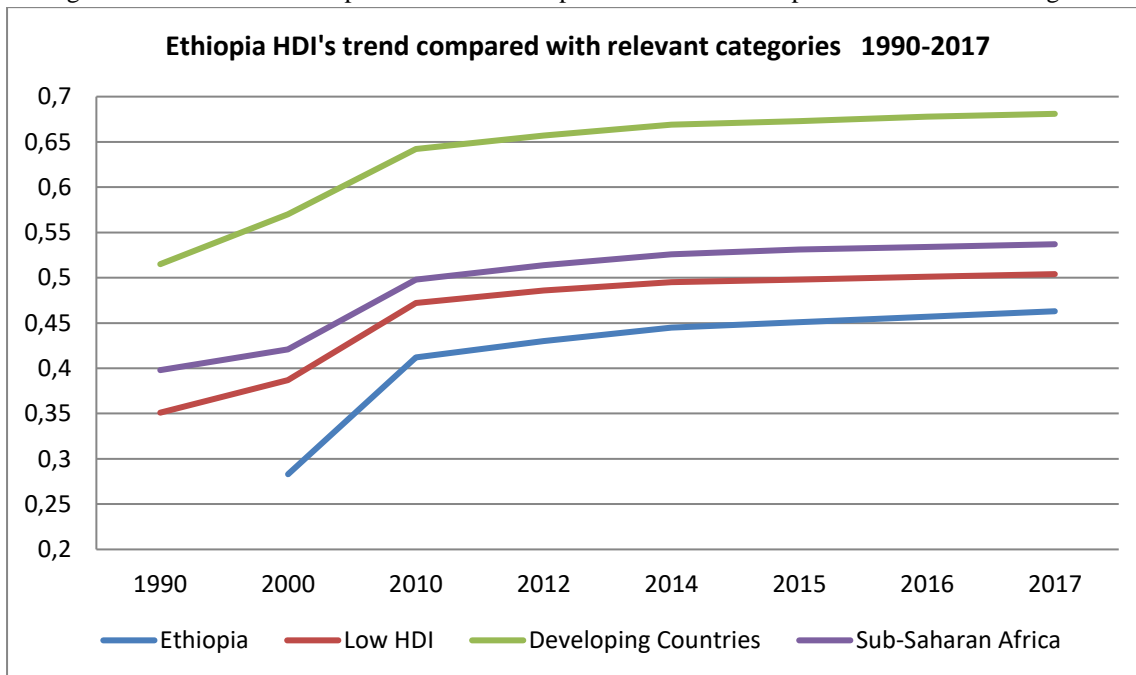
Source: United Nations Development Programme, 2018

This data, therefore, shows that a sustained economic growth does not automatically translate into an improvement of people's well-being. Surely, it helps triggering general positive effects, improving the general economic position of the country, globally, however it does not entail an immediate reduction of inequalities.

One more useful indicator to understand the condition of people's well-being is the Multidimensional Poverty Index (MPI), which identifies multiple deprivation on health, education and standard of living dimensions. Ethiopia has an incidence of 83% of people in multi-dimensional poverty condition and has an intensity of deprivation[40] equal to the 58,5%, of which the 61,8% is in severe multi-dimensional deprivation (UNDP, 2018). Therefore, a large proportion of the population is living in a condition of multi-dimensional deprivation.

Focusing on the major topic of the present research, however, Ethiopia performs poorly also in term of gender equality and women's empowerment. The figures provided by the Global Gender Gap Index illustrates that Ethiopia is among the lowest countries in the world. According to the latest World Economic Forum's report, on average[41] Ethiopia have closed 65% of the gap,

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[40] The incidence corresponds to the proportion of people who are considered poor according to the MPI, those who experience deprivations in at least one third of the weighted sub-indicators, while the intensity refers to the weighted average number of total deprivations the individual experience at the same time (UNDP, 2019).

[41] World Economic Forum proposed a synthetic indicator to measure the extent and the magnitude of multi-dimensional gender gap for each country. It examined the gap between men and women across four categories: economic participation and opportunities, education, health and survival and political empowerment. In turn, each

ranking 117 out of 149 countries. Other estimations proposed by UNDP, such as the percentage of child marriage (40%), the expected years of schooling (lower for female than their male peers) and the adolescent child-birth rate (7%) contribute to picturing the women living condition in Ethiopia. Women on average do not seem to have many possibilities to enhance their empowerment and exercise their agency.

In fact, this data helps in clarifying the reasons of the policy orientations by international organizations and academia towards Ethiopia on gender and women's empowerment (World Bank, 2016). Consistently in line with recommendations, Ethiopia has established a long-term commitment with several international bodies. The government has recently, in fact, signed and ratified some important international conventions such as the "Convention on the Political Rights of Women" and the "Convention on Elimination of All Forms of Discrimination against Women" in order to guarantee a legal framework to achieve gender equality (UN WOMEN, 2014; UNDP, 2017).

In addition to adhering to international standards and improving domestic legislation[42], thus improving the legal framework of reference, huge public investments have been made in health and education sectors, which are crucial sectors to fight gender inequality. While these investments have undoubtedly helped alleviate poverty, they have not been instrumental in dramatically reducing the gender gap at country level.

Data and figures proposed in this paragraph aimed at providing a general picture on the condition of women in Ethiopia; while in the following sections we narrowed the focus on the single dimensions we considered also in chapter I.

Hence, in the following sections the dimensions of education, health, economic participation and employment opportunity will be discussed through the existing empirical literature. The contributions of researchers and scholars from Ethiopia, and more in general from Sub-Saharan Africa, will be preferred when possible. A preliminary description of the role of women in Ethiopia will follow, aiming at providing some references to furtherly explore the women's position of power within the household, while keeping into account the institutional framework and social norms.

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category is the combination of several variables. The final indicator ranges between 0 and 1 and shows how much each country, has closed, on weighted average, the gap between men and women (World Economic Forum, 2018).

[42] For further details on Ethiopian domestic legislative changes as well as the compliance and transposes of international conventions, see section 3.3.

5.3 Bargaining the power also outside of the domestic walls: the role of institutions and social norms

Women play a critical role in Ethiopia as they are actively engaged in all the segments that constitutes society; as a result, they are effectively key promoters of their household's well-being and key-actors, as well, for the development of the country as a whole.

Despite their strong involvement in the society, the role of Ethiopian women still struggles to emerge. The reasons are manifold, and the patriarchal structure of the society represents one of the main drivers (Moreda, 2017). Worthy to highlight, as Ternsjo points out, that in context with highly gendered institution such as Ethiopia, the internalisation - by women themselves - of the discriminatory gender norms has not to be undermined. The structure of constraints could be so deeply entrenched in the mentality of women itself that it could be difficult to overcome it (Ternsjö, 2018). Thus, the institutions, social norms and cultural beliefs matter. Gender role is in fact a product of a wide structural system; it is determined simultaneously by the legal, political and economic spheres (Vyas & Jansen, 2018).

From an institutional point of view, hence considering the legal aspect, the Federal Democratic Republic of Ethiopia has always been committed to achieve gender parity.

The Ethiopian Constitution at Article 25 titled "The Right of Equality" states the equality of individuals without distinctions of sex, even emphasizing the affirmative action from the law to protect people from discrimination (Constitute Project, 2018). In addition, the Government have pursued, both internationally and domestically, several measures in order to reach equality while promoting women's empowerment. Internationally, Ethiopia joined important regulations such as the "Universal Declaration of Human Rights", the "Convention on the elimination of all forms of discrimination against women" and the "Declaration on the elimination of violence against women", aimed at ensuring basic human rights to women (Fite, 2014).

From a domestic point of view, Ethiopia has consolidated its international commitments establishing the National Policy on Women in 1993 aimed at promoting the women's empowerment also within the governmental institutions. Recently, the country's efforts are aimed at fostering the women's condition, through the implementation of policies to secure women's land ownership title, such as the "Joint Land Certification Program[43] as well as the

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[43] The joint possession of land ensures women's property rights that would not otherwise be granted to them, thus generating a form of protection, as well as ensuring greater control over resources, in a formal way. The author, with this example intended to highlight that the process of tenure security of women's rights on land could trigger

revision of the discriminatory legal provisions in the "Family Law and Penal Code" (Melesse , Dabissa , & Bulte , 2018; UN WOMEN, 2014).

However, despite the government's efforts, the process for reaching gender equality is still far to be completed. The "patriarchal nature of Ethiopian society" (Fite, 2014, p. 56) might represent a reason for the slowdown in the achievement of gender equality. The patriarchal ideology in fact, through cultural beliefs and traditional practices, tends to normalize the established gender norms and the gender-based inequalities (Kedir & Admasachew, 2010). Customary and traditional norms constitute major drivers towards the normalization of gender gap, meant as systematic inferior position of women respect that of men, considering multiple aspects of life. On this topic, Mabsout and Van Staveren (Mabsout & Van Staveren, 2010)have brilliantly showed that Ethiopian gendered institutions actually hampered the individual and household bargaining power. The paradoxical effect highlighted by the two scholars evidenced that greater control over the resources does not always translate into more bargaining powers for women, rather it could also be lowered by it.

Furthermore, from an economic point of view, the role of women in Ethiopia at institutional level continues to be underestimated. Women, in fact, experience significant barriers in entering the workforce: half of them results unemployed, while the other half is engaged in seasonal and occasional employment (Ayferam, 2015). It is important to specify that the term "unemployment" does not describe the exact living condition of women. It is more a reflection of the division of labour and cultural beliefs of the country; women in Ethiopia in fact are in charge of an extremely high amount of duties. They bear entirely the burden of domestic works, child rearing and elderly care, furthermore they account for 80% of the agricultural productivity at country level, without receiving any payment nor social benefits. Hence, this is not a condition of unemployment, rather a condition of invisibility. Women experience less access in formal credit and natural resources.

The normalization, through the maintenance of established gender norms, of women's inferiority position within communities implies that women themselves are not perceiving their deprivation of capabilities.

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a larger pathway of empowerment. The possession of the title in fact allows women to participate more actively in the decision-making process of the community, as well as of that of the household.

For further information on the history of the policies implemented in Ethiopia to reduce gender gap cf. UN WOMEN at http://www.un.org/womenwatch/daw/country/national/ethiopia.htm and "The Preliminary Gender Profile of Ethiopia" by UN WOMEN, 2014.

Ethiopia represents a perfect example of the differences occurring at institutional level between the formal/objective channel and the informal/subjective channel for the achievement of gender equality. From a formal point of view, Ethiopia is a sensitive and responsive country in terms of gender equality, however, the established power dynamics between women and men hardly disappear. Social norms and customary are difficult to eradicate: they are not directly linked, changing the objective dimension in fact, and do not directly imply the immediate transformation of the other.

The next sections aim at understanding the position of women in Ethiopia, considering individually the relevant dimensions.

5.4 Gender differences in School Participation in Ethiopia

School participation in Ethiopia is strongly gender-biased; the figure below illustrates the school enrolment's trend by gender from 1971 to 2004. The graph shows the persistence of the gender gap over the years in school enrolment, considered both in terms of net and gross[44] rate.

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[44] Gross enrolment includes students of all ages, even those whose age exceeds the official age groups (repeaters, late enrolment); net enrolments includes only children of the official school age, as defined by the national education system.
Since the net enrolment rate excludes overage and underage students, it captures education system's coverage and internal efficiency more accurately than gross enrolment ratio. However, it is useful to see differences between the gross enrolment ratio and the net enrolment rate for capturing the incidence of overage and underage enrolments. (World Bank, 2018)

Figure 5.4: Trends for school enrolment in Ethiopia, from 1971 to 2014

School Enrolment in Ethiopia Gross and Net (%)

Legend: Total — Female — Male — Total (Net) — Female (Net) — Male (Net)
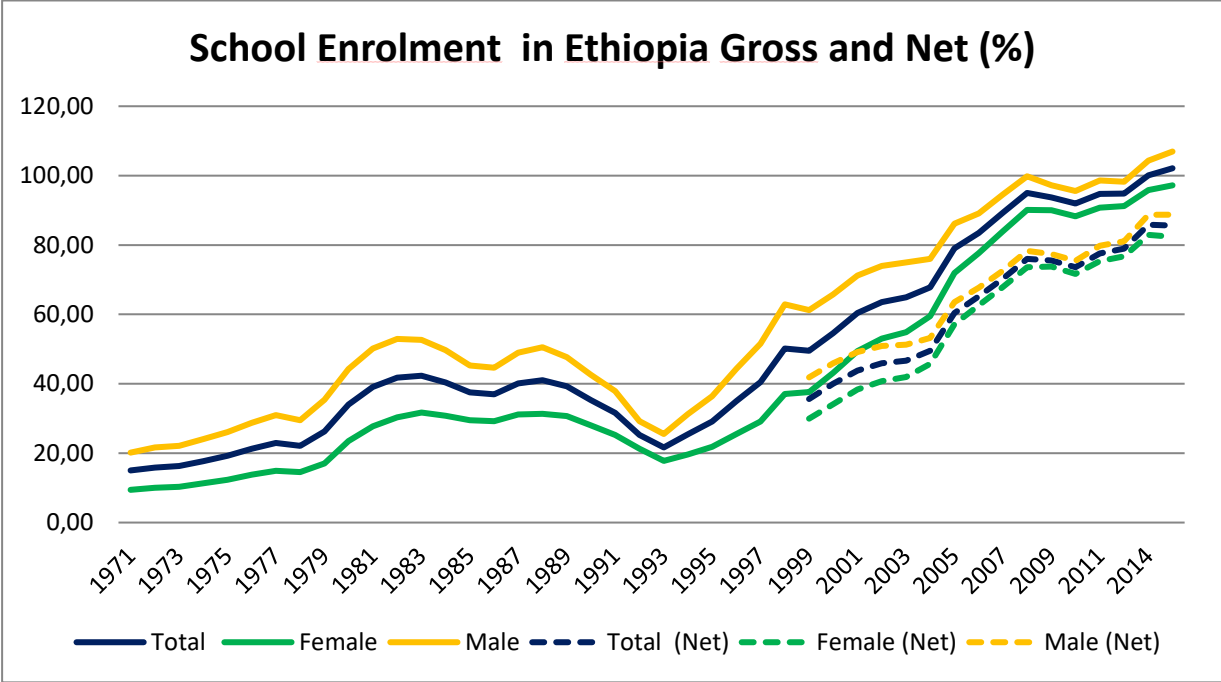
Although the gap has narrowed, especially in the last decade, the gender-driven inequalities in school enrolment have always been present. Since 1971, boys are more likely to be enrolled in school than females[45].

It is, then, interesting to investigate the several drivers that lead to inequality. They could relate to different triggering factors: for example, the socio-economic condition of the household, geographical aspects and notably the social norms and cultural beliefs play a crucial role hindering the female participation to school, especially in rural areas.

Firstly, we focus our attention on social norms and gender roles in determining the female school participation as well as the incidence of female's school drop-out.

Households and communities, especially in rural place of residence, attribute different values to male and female education. The primary role ascribed to woman is that of caregiver; being a wife and a mother constitutes the women's first duties. Henceforth, the opportunity-cost to educate women is perceived as too high from the communities, and education can even be seen as harmful by the society as it may result on a key-instrument for empowerment.

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[45] It is here important to emphasize that the school enrolment does not provide any information about the school achievements, neither on the quality of education.

In Ethiopia, as in many Sub-Saharan African countries, the opportunity cost for female is higher than that of their male peers (Woldehanna, Jones , & Tefera, 2005; Abraha et al., 1991). This aspect serves to highlight the linkage between economic aspects and the social norms: generally speaking, children who live in poor household are more likely to be excluded from school attainment, and among them, females are those encountering more barriers. Gender role attributed to young females harms their position: the care of the household represents the domain of females, henceforth education constitutes a non-necessary investment, both in term of money and time, plus the female's future economic and employment opportunities seems not to be a relevant variable in the decision.

Parental characteristics assumes a fundamental role to determine the future of daughters, in fact more literate parents are more likely to enrol female child at school (Chimombo, 2005).

Economic factors play a key role in determining the educational gender gap; these aspects are very often linked to social norms and diffused behaviour and practices. Household's economic status and its wealth condition are decisive in establishing whether a child can attain school, as both opportunity cost and direct cost has to be taken into account.

School enrolment entails direct costs, such as school fees, textbooks and clothing such as uniforms. Not all the families could cover easily the direct costs of school enrolment. This can lead to school exclusion, regardless of gender. However, the survey conducted by Colclough et al. (2000) shows that gender-based differences could emerge also when addressing the poverty condition of the family. Based on data collected in two regions of Ethiopia, some pupils undertook paid job in order to self-finance their school enrolment. The proportion of boys involved in paid jobs is higher than that of girls. Therefore, even if the direct cost is exactly the same for boys and girls, "boys were more able to attend school because, to some extent, they could support themselves" (Colclough , Rose , & Tembon, 2000, p. 16). This occurs not because girls are less prone to undertake paid works, but because they are mostly involved in housework and farm related jobs, which are not adequately economically quantified, resulting in a disadvantage for girls who are perceived as less supportive for their family[46].

Households also have to consider the opportunity cost[47] of sending their children to school, operating a "trade-off between household consumption now and children's expected

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[46] The fact that girls are involved in domestic work, which is not adequately recognised as "productive", is an example of how the economic factor, i.e. the poverty of the family, is then intertwined with the traditional and cultural values of the society. The social idea that women can be employed only in domestic work, for which education is not a requirement, becomes a real disadvantage for women.

[47] The opportunity cost refers to the cash earnings or other contributions a household sacrifices in order to obtain something higher in its preference rankings (Chimombo, 2005).

future income" (Chimombo, 2005, p. 131). Lloyd and Blanc in their work present an effective summary of what economic constraints mean, highlighting both the direct and the more hidden opportunity cost: "even when schools are accessible and affordable, families have to see a net advantage to themselves and to their children from forgoing children's full-time participation in domestic and economic activities, and they must possess the means to finance their children's education" (Lloyd & Blanc, 1996, p. 267).

In addition to the pure cost issue, the cultural background also constitutes a constraint for girl's education. Traditional norms as well as customaries often discourage the female education, especially in rural areas. Women are considered weak and vulnerable to possible physical and sexual violence while going to school, thus when they reach puberty they are more likely to be forced from parents to leave school early. Obviously, the distance from house to school represents a crucial determinant for school dismissal: the further the school is from the household's place of residence, the more the probability for girls to be secluded from classes (Woldehanna, Mekonnen, & Jones, 2008; Colclough , Rose , & Tembon, 2000). This attitude responds directly to the inadequacy of the family members of managing the sense of shame felt in front of the community, rather than moved, instead, by a sense of protection towards the daughter. The communities in fact stigmatized women (and their family members) who are victim of violence; this is well outlined by one of the statement included in a qualitative study proposed by Waldehanna, Jones and Tafera in which "one parent from Lalibela[48] described the danger not from the point of view of her child's potential suffering, but rather in terms of community shame and blame" (Woldehanna, Jones , & Tefera, 2005, p. 30). The oppression exerted by the communities actually orients the families' attitude and decision over their daughters: especially in rural areas, in fact, households prefer that females are involved in early marriage, in order to avoid taking some risks, such as unwanted pregnancies, affecting their school attainment (Colclough , Rose , & Tembon, 2000).

On this topic, the following figure shows the primary completion rate[49] by gender, aiming at illustrating the actual differences between boys and girls in accomplishing at least the primary school grade.

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[48] Lalibela is a town in Amhara region, North Ethiopia.

[49] Primary completion rate is the number of new entrants (enrolments minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. Data limitations preclude adjusting for students who drop out during the final year of primary education, henceforth the figure do not capture all the girls that drop-out from primary school in the last year (World Bank, 2019).

Figure 5.5 – Primary completion rate by gender

Primary Completion Rate by Gender

Legend:
- Primary completion rate, female (% of relevant age group)
- Primary completion rate, male (% of relevant age group)
- Primary completion rate, total (% of relevant age group)
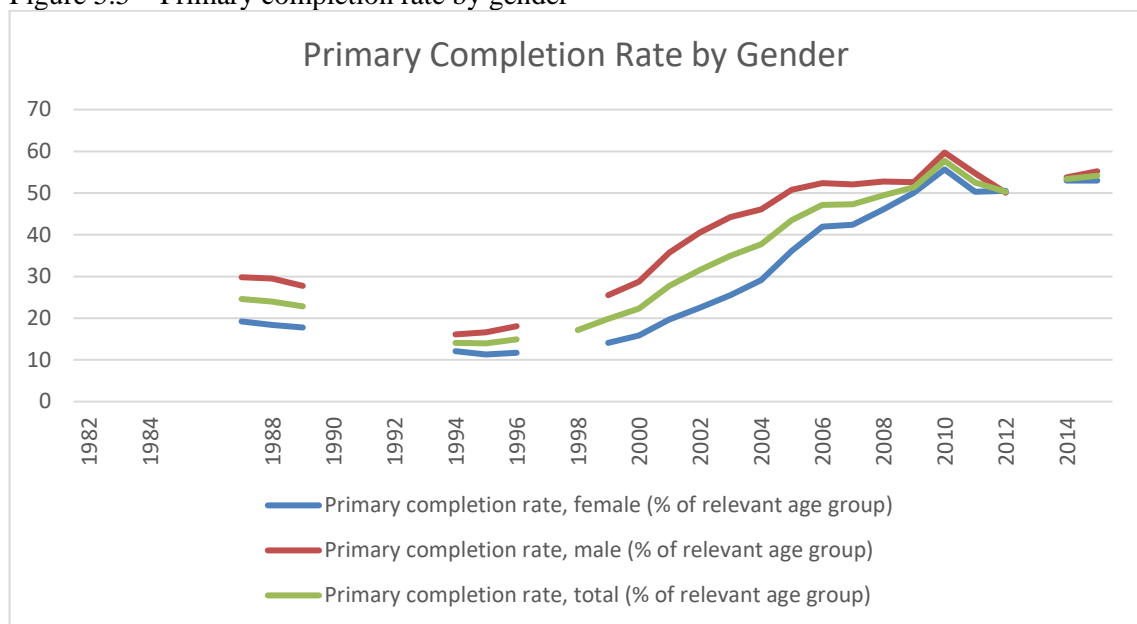
Source: World Bank Open Data, 2019.

Although the gap is progressively closing, girls face more difficulties in completing the primary school due to the traditional and cultural beliefs and social norms diffused within the communities.

Moreover, as explored in Chapter I, the quality of education, intended in terms of contents and attitudes of instructors/teachers, may also be shaped by social norms and gender roles. In developing countries, it is not unusual for the teacher's attitude to contribute to perpetrating some gender-biased practices. According to the result presented by Colclough, Rose, & Tembon (2000), Ethiopia confirms this trend: the teacher's perception, of both sexes, of their student is punctually distorted by the sex of the students. Females are considered less intelligent, less active, less participative and less interested than their male classmates. Moreover, teachers confirm the general perception of the female given by the society: school is more important and useful for the life of a man, than that of a women (Colclough , Rose , & Tembon, 2000). Actually, the added value of women's education is widely demonstrated (Bayeh, 2016; Rose & Tembon, 1999).

In conclusion, in Ethiopia there exist several drivers, highly interrelated, which impede the access to education for girls and lead to the deprivation of the capabilities of being educated. This deprivation represents one of the main obstacles to the enhancement of women's empowerment.

5.5 Gender Differences in Health Condition

According to the WHO (2010), women in Ethiopia suffer from a generalized poor health condition. Low socio-economic status and disempowerment of women in Ethiopia is highly associated with poor health outcomes (Lailulo, Susuman, & Blignaut, 2015),

The health dimension comprehends a wide spectrum of aspects: it varies from the life expectancy to reproductive sphere, affecting at a different grade the woman's empowerment.

In Ethiopia there exists a pattern of gender-based inequalities in health dimension: the morbidity rate, for example, is 76% for women against 23% for men (World Health Organization, 2010).

However, in this section, we focus on those aspects of health which most affects the empowerment of women and has more influence over their decision-making power at intra-household level.

5.5.1 Reproductive health and autonomy in access to health services

Reproductive health contributes largely to the women's well-being. As extensively seen in Chapter I, decision over the body entails several implications on women's empowerment; nonetheless it also has an impact on their physical condition.

Firstly, we assess the women's attitude as well as opportunities for access to health facilities during the different phase of pregnancy. The objective is to capture the relation between empowerment and health outcomes.

Data from DHS 2016 shows that on average only 62% of women aged 15-49, who gave birth in the 5 years before the survey, received at least one antenatal care from a skilled provider. Anyway, splitting the data in urban and rural areas, the likelihood for women to receive any antenatal care changes significantly, moving from 90% of urban resident to 58% for the rural one[50]. Despite the efforts of the government to expand strategies to increase service utilization and improve maternal and child care (Yebyo, Alemayehu, & Kahsay, 2015), 73% of women decide to give birth at home rather than in health facilities[51], recording however a slight decrease

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[50] Addis Ababa has the highest (97%) coverage for antenatal care services, while Somali the lowest (44%).
[51] Frequent antenatal care visits, the help of trained personnel during labour and delivery as well as the frequent post-natal cares helps to reduce maternal mortality and morbidity and contributes to improving child's health. Ethiopia, being one of the countries with the highest level of maternal mortality and morbidity, has put in place several strategies to improve the use of maternal health services. For example, family planning, antenatal-care visits, facility delivery and post-natal care visits are provided for free, overcoming then the wealth problem.

since 2011 Ethiopian DHS registered 90% of home births (Central Statistical Agency and ICF, 2016).

Several studies attempt to discover the main causes of these tendencies: empirical studies conducted in different regions and *woredas* come to the same results and conclusions.

Most women interviewed do not consider a priority to give birth in a health facility, rather, women in most cases preferred delivery at home assisted by traditional birth attendants[52], adhering to traditional and social norms. Respect for customs and traditional beliefs plays a major role in avoiding the diffusion of giving birth in hospitals (Shiferaw et al[53]., 2013; Roro et al[54]., 2014; Mekonnen & Mekonnen[55], 2003).

The preference about giving birth at home, rather than in hospitals or health facilities is highly correlated with the grade of autonomy women can exercise, both at household and community levels. According to Tiruneh et al. (2017) the women's authonomy "enables the woman to overcome external barriers and access resources or change traditional ideologies" (Tiruneh, Chuang , & Chuang, 2017, p. 2). Therefore, the preferences of women could be interpreted, through this definition, simply as affirmative behaviours to external inputs and as a passive replication of common attitude. The importance of authonomy in decision making is crucial for women's timely seeking care, given that in many Sub-Saharan African countries it is not acceptable that a woman leaves her house to seek healthcare; as well as for what concerns the control over their bodies, i.e. family planning, voluntary pregnancy interruption and act to protect theirselves form HIV[56] (Adjiwanou & LeGrand, 2014; Girum et al., 2018). The lack of

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Despite the efforts of the government in order to create awareness, the participation of women in health facility programmes is still low (Fekadu, Getahun, & Kidanie, 2018).

[52] The role of traditional birth attendants results crucial in the study proposed by Shiferaw et al. (2013), as they are trusted source of service providers. The final decision on whether it is better to give birth in an appropriate health structure is in fact taken by the traditional birth attendant. If she believes that the labour is normal, thus the birth can be handled at home, the family will stay at home, not otherwise.

[53] This study was conducted in Southern Nations People and Nationalities region, in the Kembata-Tembaro zone which is mostly rural. Furthermore, the *wereda* host a free health facility, hence finance and distance here play lesser roles. The mixed method approach combines qualitative interviews with quantitative data. The complete analysis shows that women with a secondary education are more likely to prefer health facilities than giving birth at home, as well as the wealthier households do. In addition to traditional beliefs, the poor and inadequate services offered by health structures also plays a key role in discourage women access.

[54] Roro et al. (2014) also conduct their study in Southern Nations People and Nationalities region, but in a different *woreda*, Butajira. The results were similar to that presented by Shiferaw et al. (Why do women prefer home births in Ethiopia?, 2013).

[55] This study also particularly highlighted the central role of education: more educated women are more prone to undergo to antenatal examinations; thus, improving women education is as an effective investment for a mother's future well-being, also in regard to this dimension.

[56] Girum et al. (2018) with their work, shed light on the phenomenon of "feminization" which characterized the diffusion of HIV in Sub-Saharan countries. They focus their attention on Ethiopia and found that HIV is 1.62 times more prevalent among adult women than men (Girum et al., 2018, p. 6-7). Gender discrimination and inequalities have fuelled the diffusion of HIV among women, the causes have been brilliantly pointed out by the authors:

autonomy for women may result in the perpetration of the vicious circle that leads them to accept and share behaviors that are harmful to their health.

Several studies have pointed out that also the marital status affect women's participation to health programmes: surprisingly married women are more likely to attend visits, than the unmarried ones (Mekonnen & Mekonnen, 2003).

This figure could be interpreted through the lens of the women's autonomy concept: if the community, in fact, considers regrettable for a woman to go alone to attend medical examinations, as a consequence the unmarried women, and additionally pregnant outside of the marital institution, are even more likely to exclude themselves from seeking cares.

Furthermore, the decision over the fertility preferences constitutes another major point of the autonomy of women in the reproductive sphere. According to DHS data 75% of the children born in the 5 years preceeding the interview were wanted at the time of coception, the 17% were mistemed and 8% were unwanted. In addition, women are more likely than men to limit childbearing (Central Statistical Agency and ICF, 2016). However, an empirical study conducted in Southern Ethiopia found that the use of contraception to avoid pregnancies is more diffused in urban than in rural areas. Interestingly, in rural areas the decision over contraceptive use is almost made by men. On the contrary, in urban setting, women, pushed by a more equitable gender attitude, are more autonomous on decision over contraceptive use (Bogale , Wondafrash, Tilahun, & Girma , 2011). Henceforth, the traditional norms and the cultural beliefs hinder the women's autonomy on fertility decisions.

As a result, traditional norms and gender roles strongly drive the access to health facilities. The weak power position of women within household and societies prevents them from expanding the capability of being in good health.

"unequal power relations, sexual coercion and violence are a widespread phenomenon faced by women of all age groups that have an array of negative effects on female sexual, physical and mental health which predispose to HIV infection" (p. 2). Women suffer also from a disproportionate access to health care, which increase their mortality due to infections. Despite the strategies implemented by the Government, HIV is still considered a problem all over Ethiopia, but data shows again the gender discrimination in the incidence of the morbidity as well as the access in health care access. Moreover, DHS report showing data on women's awareness and information on HIV transmission and prevention, shows that only 20% of women (against the 38% of men) have comprehensive knowledge on this topic.

5.5.2 Female Genital Mutilation[57]

Female genital mutilation (FGM) is a phenomenon strongly rooted and prelevant in many African societies. It is a procedure involving cutting or altering female's genitalia for nontherapeutic reasons, but usually as a part of the rite of passage from childhood into womanhood. This ritual also includes a period of isolation, in which also the young girls is forced into some education about wife's rights and obligations (Banks , et al., 2006).

According to the WHO (2018) the practice could lead to serious health and psychological consequences; nonetheless it is still widely used.

One of the reasons attributed to the perpetration of this practice lies in the family's willingness to adhere to religious and traditional rules; however in Ethiopia a large majority of the population are convinced that mutilation is not required by religion: respectively 72% and 77% of women and men (Central Statistical Agency & ICF, 2016).

However, FGM serves primarily as a social stratification mechanism: women who are circumcised gain a higher social status than those who are not (Odukogbe , Afolabi , Bello , & Adeyanju , 2017).

There are also economic reasons supporting FGM practices; females circumcised could in fact benefit from better marriage prospects; moreover, the mutilation could constitute a prerequisite for future inheritance. This is especially the case for Ethiopia; a qualitative study conducted in Eastern Ethiopia highlights the willingness to satisfy men's preferences and expectations (Missailidis & Gebre-Medhin, 2000). Men, in fact, declare to prefer marrying women who have been subjected to FGM because they are supposed to be "not sexually overactive and unfaithful" (Missailidis & Gebre-Medhin, 2000, p. 137); women consistently state that the FGM could cease faster in case men openly declare to prefer marrying a non-genital mutilated woman. Data collected by the DHS however shows an inconsistency on this specific issue: 79% of women and 87% of men believe that the FGM should be ended, thus it is not easy to pinpoint the exact orientation of the population on this sensitive topic.

This qualitative study reveals the magnitude through which the strong patriarchal ideology oppresses women.

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[57] Female genital mutilation is not used in the econometric models presented in Chapter 6 as data are not available in DHS. However, we considered necessary and fundamental to address in this Chapter this important issue that affects physical and mental health of women in Ethiopia.

Although Ethiopian governments have taken strategic and programmatic measures[58] to eradicate genital mutilation, the practice is still a widespread phenomenon, performed mostly from traditional healers, which are women (Yirga , Kassa, Gebremichael, & Aro, 2012; Central Statistical Agency & ICF, 2016). More than half of the women aged between 15 and 19 years old have experienced genital mutilation, with negative reproductive health outcomes (World Health Organization, 2010), while 65% of women aged 15-49 are circumcised (Central Statistical Agency & ICF, 2016). Despite this alarming scenario, data released by the Ethiopian Central Statistical Agency and ICF (2016) shows an optimistic trend regarding the diffusion of the practice: in 2000, 89% of women had undergone genital mutilation, while in 2005 the share fell below 74%. Furthermore, an additional drop of 24% occurred between 2005 and 2016, a decrease from which especially young girls have benefited. In order to readthe figure correctly, it is important to take into account that in 2005 Ethiopia had internally legislated the criminalization of FGM, thus making it an illegal practice (Central Statistical Agency & ICF, 2016), and has further strengthened its commitment in 2017 by banning the medicalization of FGM in both public and private health facilities (World Health Organization, 2017). Hence, the decrease of the phenomenon could in part be the result of under-reporting from people, in order to avoid legal consequences.

FGM in Ethiopia is mostly performed during childhood; the majority of women (49%) interviewd by the CSA have reported to have undergone the practice at the age of 5. Then, young girls obviously are not active part of the decision making progress and are compleately unaware of what they're going through (Central Statistical Agency & ICF, 2016). The fully respect of the customary norms, the fear of isolation from the belonging community representing the main mechanism that supports and maintains the FGM (Missailidis & Gebre-Medhin, 2000; Yirga , Kassa, Gebremichael, & Aro, 2012).

Significantly, FGM is an all-female issues: mothers bring their daughters to the traditional healers, who have to be women, to fulfill the customary practice. However, it is not a process clensed by men oppression: it is the result of the adherence to estabished gendered-biased social norms.

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[58] Ethiopia both nationally and internationally committed to the end of the female genital mutilation. In 2013 the government implemented the National Strategy and Action Plan on Harmful Traditional Practices against Women and Children. The strategy is based on three-pillars: prevention, provision, and protection aiming at raising awareness among communities, providing safe space for girls and ensuring quality education and health. The strategy strives to improve legal national framework for the protection of women and children. In addition, Ethiopia has criminalized the practice reforming the National Criminal Code in 2005.

To conclude, the adherence to established gendered social norms and the traditional concept of "successful womanhood"[59] (Vyas & Jansen, 2018) are the main drivers to the continuation of the FGM, which hinders the capacity of Ethiopian women to determine their own reproductive health and sexual behaviours.

5.5.3 Domestic Violence And Its Acceptance By Women

Domestic violence is considered a widespread and a "rampant" (Yigzaw, Berhane , & Deyessa, 2010) public health problem in Ethiopia. It may generate serious consequences on women's physical, mental, sexual, and reproductive health (Kassa & Abajobir, 2018).

According to data provided by the Central Statistical Agency (2016) 35% of the ever-married Ethiopian women reported to have experienced physical, emotional, or sexual violence from their husband or partner at some point in their life. In addition, the systematic review of ten different qualitative studies conducted in Ethiopia, proposed by Semahegn and Mengistie contributed to drawing the picture on the diffusion of domestic violence in Ethiopia: the prevalence of women who have experienced domestic violence, at least once in their lives, varies from 20 to 78%, differing from regions and woredas (Semahegn & Mengistie, 2015).

The normalisation and acceptance of domestic violence is the reflection of the wide expansion of gender-based social norms. Surprisingly, according to data showed by the DHS report, women in Ethiopia seem more likely to accept and justify domestic violence than men. 63% of women aged between 15 and 49 may justify the husband/partner beating up the wife in case she burns the food, or she refuses to have sex with him, or she neglects the children, goes out without telling him, or finally argues with him. Thus, the majority of women consider acceptable the violent attitude of a man in case one of these scenarios occurrs, while the acceptance rate significantly reduced if the same question and scenarios are presented to men. Only 28% of men in fact agreed in justifying the husband's violent attitude towards his wife (Central Statistical Agency & ICF, 2016).

The acceptance of IPV is strongly related to patriarchal ideology, as that "women often internalise the idea that a husband who physically punishes or verbally reprimands his wife has exercised a right that serves her interest. This 'disciplining' is seen as a legitimate reprisal for a wife's disobedience rather than as 'violence'" (Sardinha & Najera Catalan, 2018, p. 12; Burman , Smailes, & Chantler, 2004; Kedir & Admasachew, 2010). Confirming this, women who

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[59] The concept of successful womanhood traditionally lay in reproductive responsibilities such as bearing children and especially sons, as well as in maintaining family values and family harmony (Vyas & Jansen, 2018, p. 2)

participated in a qualitative study conducted in Northern Ethiopia affirm to perceive "spousal violence as the expression of male dominance" (Yigzaw, Berhane , & Deyessa, 2010, p. 41).

The sense of prevarication of the gender-biased social norms is also confirmed by the attitude of communities' elders who encourange women to stay in their marriage, even if abusive circumstances occurred, asserting thus the attitudes effectively obstacling the achievement of gender equality (Kelly & Radford, 1998).

The institutional factors play a crucial role in affecting and determining the construction of women's identities, thus in a patriarchal society it could be difficult to trace the boundaries between traditional behaviours (or *cultural reasons*, which is the most common way to excuse and overlook domestic violence (Burman , Smailes, & Chantler, 2004, p. 333)) and women's opportunities deprivation. The majority of women, in fact, are subjected to physical and/or emotional violence from their partner, however, only few of these recognize the violent attitude (Kedir & Admasachew, 2010), or at least are willing to officially denounce their partners (Yigzaw, Berhane , & Deyessa, 2010; Shanko et al., 2013, p. 21). The patriarchal ideology represses the critical sense and awareness of women and its pervasiveness and entrenchment render unwise for women to break social norms. As a consequence, women feel lack of trust in governmental institutions, including those responsible for providing medical care and help to women victims of violence (Kedir & Admasachew, 2010).

However, the lack of trust is not limited to the institutions: women may not be able to report IPV episodes to their own parents either; there is in fact, high possibilities that women do not find support even from their relatives. It is not uncommon in fact that women who are victims of sexual harassment or abduction are encouraged to marry the perpetrator of that violence. The fear to be ashamed from the community, in fact, leads the family to be compliant despite the violence suffered; henceforth, even the family is subjected to patriarchal ideology. Additionally, the sense of isolation and total submission to family and husband willingness hinder the expansion of woman's bargaining power also in the newly formed household.

In addition to the fundamental environmental factors explored, different studies have highlighted also some individual traits whichtend to favour the expansion and the acceptance of domestic violence. Some socio-demographic factors such as age, ethnicity, religion and wealth contribute to the occurrence of IPV (Abramsky et al., 2011; Semahegn & Mengistie, 2015; Semahegn, Belachew, & Abdulahi, 2013). However, education and the consequent expansion

of women's empowerment play a relevant role in mitigating the acceptance of domestic violence.

The complention of primary education, interestingly both for woman and man, is associated with a decrease in domestic violence, when compared with a situation in which neither of the partner have completed the level (Abramsky et al., 2011).

The girls' education, in turn, is affected by social norms: early marriage, for example, might be the cause of an early drop-out, wich leads to negative repercussion on the women's bargaining power[60] within the family, which in turn may contribute to increasing the likelihood of suffering from domestic violence (Semahegn & Mengistie, 2015). Only 24% of women married before the age of 15 have reported to have discussed with their husbands importan health issues, such as HIV/AIDS or the use of maternal/child's health services. 32% of women have been forced into their first sexual intercourse with husbands, while 7% still experience IPV from their husbands (Erulkar, 2013; Ellsberg et al., 2008).

The cause of domestic violence and overall the acceptance among women are multi-faceted. From one hand the patrairchal ideolody plays a major role shaping the attitude of both men and women. However, any deprivation hindering the expansion of women's empowerment, such as the deprivation of being educated, lowering the women's bargaining power at intra-hosehold level, can as a result promote the diffusion and acceptance of IPV.

5.6 Gender Differences in Economic empowerment and employment opportunities

Women's participation in Ethiopian labour market deals with the same barriers and obstacles we have extensively explored in Chapter I. Women face an overall limited access and are almost confined to the agricultural sector.

The figure below shows the trend of women's participation in labour market from 1990 to 2017, divided by sectors of employment.

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[60] A part of the literature on the bargaining power dynamics has focused on the crucial role the control over resources such as income and assets have in widening the women decision-making power within the household. Property rights on house and land should contribute to the enlargement of women's participation in decision-making process. Nonetheless, another strand of literature shows a paradoxical effect: women with more control over resources might challenge the established gender norms. Thus, questioning the concept of successful manhood, women could be more exposed to domestic violence (Vyas & Jansen, 2018).

Figure 5.6: Women participation in labour market divided by sector

Women participation in labour market, by sector (% of female employment)
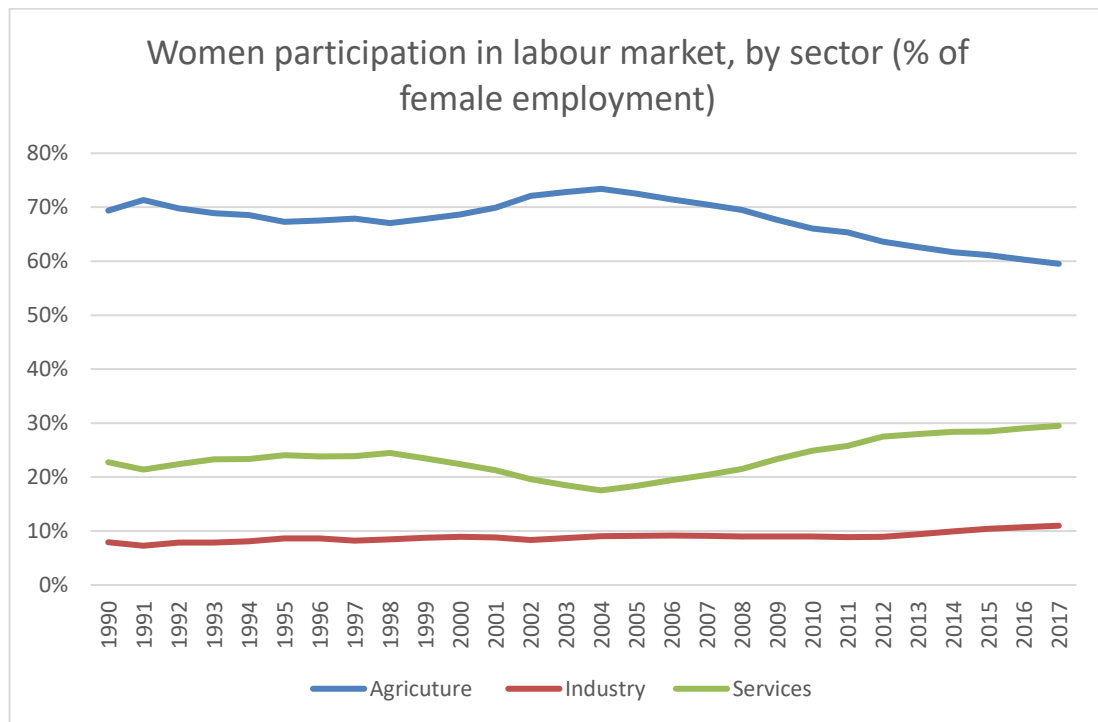
Women are more likely to be engaged in agricultural activities, while the formal sectors are almost dominated by men. The agricultural sector has recorded the highest share of employment for the whole period, ranging from 60 to 71% of women's participation share. It is only starting form 2011 that the share of women's employment in agriculture fell slightly downwards, while participation in services and industrial sectors has been always very marginal. However, in the last decade there has been a slight increase in the number of employees in both sectors, especially in the services' one.

Recent figures proposed by the World Bank (World Bank, 2019b) quantify the several constraints women have to face in Ethiopia in order to participate to the workforce. The reports conclude that 17% of women, on average, are less likely to participate in labour market than males[61].

The unmet potential of women in the workforce is strictly linked with the lack of opportunities in education and health access they have to deal with.

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[61] The report provides more accurate figures, taking also into account other variables such as education, age and sector of employment. For the purposes of this study, it is sufficient to provide the average figure, however for more details, see the World Bank's report "Ethiopia Gender Diagnostic Report: Priorities for Promoting Equity" (2019b).

Furthermore, the patriarchal definition of gender roles and social norms highly contributes in amplifying the limitation women have to face to access to labour market. The impairment in fact is also given by the strong gender-based discrimination in accessing resources such as land, agricultural inputs and formal credit. These limitations are clearly the results of institutional (informal institutions included, of course) intentions and willingness.

In addition, women have to overcome more barriers than men to entry in the entrepreneurial sector. In this case, it is interesting to point out that the marital status of women plays a crucial role in determining the likelihood of their engagement in business-type employment. Married women are more likely to be excluded from managerial positions, however, even in successful cases, a wage gap between men and women is likely to occur[62].

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[62] Macroeconomic and labour market dynamics could be very useful to better understand our topic. However, due to limitation in data and labour market statistics, it is not easy reconcile the macro-evidence with our topic. Indeed, we propose the time series from 1991 to 2020 for the employment rate, labour force participation and unemployment rate divided by gender. We use the estimation made by International Labour Organization (ILO) for labour force participation and unemployment rate, while employment rate estimation is furtherly elaborated by World Bank, population considered is the group 15+.

Figure 5.7: Time series of employment rate by gender

Source: World Bank (https://data.worldbank.org/)
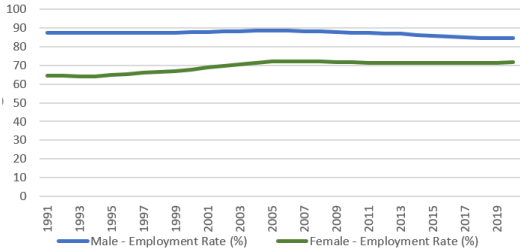
Figure 5.8: Time series of labor force participation by gender

Source: ILO (https://ilostat.ilo.org/data/)
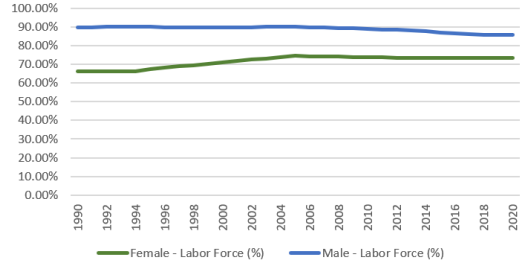
Figure 5.9: Time series of unemployment rate by gender

Source: ILO (https://ilostat.ilo.org/data/)

The indicators suggest high percentage of employment rate and labour force participation and low percentage of unemployment rate both for women and for men. However, looking at the data with gender lens, women are less employed than men, also labour force participation is lower for women rather than men and the unemployment rate is higher for women compared with men. These figures show that women are less engaged in labour market, although the share of women population involved in the labour market (namely, the women participation rate) is high. This good performance of the labour market could deceive, therefore it appears worthy to highlight that statistics may be affected by the way data is collected. ILO in fact in 2013 adopted a resolution

In addition to country-level institutional constraints, to participate to labour market women have to deal with intra-household power dynamics and time negotiation. Both the concepts are oriented by the gender roles, which in turn are driven, in this specific field, by the division of labour. Gender norms in Ethiopia attribute the domestic works exclusively to woman, including child-bearing, elderly care, food preparation as well as wood and water collection. As a consequence, women may not have enough time to devote to a job outside of the household, in case they want to. This figure may trigger further inequalities due to the difference in earnings, with consequences on the control over the resources.

In addition, husbands could use the "breadwinner"[63] argument to acquire power within the household, and potentially weaken the position of woman. However, having a personal income does not imply automatic control over resources; Yigzaw, Berhane and Deyessa (2010) have in fact pointed out that it is not unusual for men to take direct control over money, even if earned by her wife.

The man's abusive attitude regarding the control over resources may also affect the women's health dimension: women whose husbands decide alone about household issues are 2,3 times more likely to experience domestic violence than those who take decision jointly (Semahegn, Belachew, & Abdulahi, 2013, p. 5). In addition, Shanko et al. (2013) identified both the failure of completing their task and the case where they leave the house for work without the husband's permission as the two main causes for domestic violence in Ethiopia. This gives emphasis to the lack of autonomy in decision making as the catalysts of domestic violence.

(https://www.ilo.org/wcmsp5/groups/public/--dgreports/stat/documents/normativeinstrument/wcms_230304.pdf) in order to improve statistics related to labour market.

Activities that contribute to production, but are not done in exchange of remuneration like own-use production work, volunteer work and unpaid trainee work are included in the statistics presented above, hence those cases are included in the concept of employment. The resolution is aimed at enabling better statistical measurement of participation of all persons in all forms of work and in all sectors of the economy. However, the resolution is not yet applied, on 2018 a pilot has been done. The fact that all forms of work are considered in the indicator might affect the data, hence we prefer to put these figures in note in order to consider them carefully.

[63] The breadwinner family model was developed during the 19th and 20th centuries; it mainly reflects the idea of a traditional family in which marital roles where well defined. The breadwinner model relies, in fact primarily on the gendered division of labour within the household. In such paradigm, women were charged of family cares and housework, while men were seen precisely as breadwinners, that is, as those who working outside the household, earned what was necessity for the subsistence of the whole family (World Bank, 2006). The Ethiopian gender-based division of labour, closely fits the traditional male breadwinner/female carer model,

5.7 The Intra-Household State of Food Security in Ethiopia

Ethiopia has experienced several food shortages as well as excess mortality episodes since the early '50s[64]: recurrent famines and droughts occurred over the last 60 years, affecting the food production significantly with serious consequences on the state of food security in the country. Nowadays, food insecurity remains one of the main challenge for the country (FEWS NET, 2019).

Despite the fact that the aggregate supply side is certainly relevant to assess the country's state of food security, the study of entitlements results more informative for the understanding of intra-household food security. Food security, as argumented in chapter II, is not simply related just to the production of food and the availabilities of agricultural commodities; rather it is a more complex concept that concerns firstly the individual sphere, which is primarily realized throught the exercise of individual entitlements (Sen A. , 1981a).

Consistently, the use of the household as the unit of analysis to assess the state of food security results not sufficient, as in turn it implies a loss of information, taking the strong and not realistic assumption about the equality of nutrient allocation within the family. Therefore, the assessment of intra-household dynamics represents the most accurate way to investigate the real state of food security in Ethiopia, in this way the real inequalities is not understated (Haddad & Kanbur, 1990; Deaton, 1997).

A strand of empirical literature aimed at understanding to what extent the intra-household allocation of food differs on the base of demographic traits, such as age and gender, has recently developed, and nowadays it is finding application and interest also in regards to Ethiopian intra-household dynamics.

The varieties of approaches for the investigation on the intra-household food allocation, framed within several theoretical perspectives and different geographical angles, offer the possibilities to look at the phenomenon in a plurality of ways. Thus, the Ethiopian empirical literature review presented below shows mixed results.

An empirical study based on national data and conducted by Coates et al. (Coates, Rogers, Blau, Lauer, & Roba, 2012) found that on average, calories were equally distributed among family members, "where "equity" is defined as the consumption adequacy of one group

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[64] For the sake of the present study, we pinpoint famines and food insecurity condition in Ethiopia referring to the last 60 years, for which there are numerous and reliable historical sources. However, noteworthy Webb and Braun in their "Famine and Food Security in Ethiopia" (Webb & Braun, 1994) has managed to list episodes even back up to the 250 BC.

of household members relative to another" (Coates, et al., 2018, p. 83); while iron and animal source protein were inequally allocated, especially to the disadvantage of infants, children and youth[65].

A more recent study by Coates et al. (2018) intended to deepen the study of the intra-household inequality's patterns: based on data covering two Ethiopian regions, Oromya and SNNPRs – the study hypothesizes that the vulnerable categories (adult women and children) are those who experience the greatest nutritional deprivation and inequalities (Blaney , Beaudry , Latham, & Thibault , 2009). The results state that, although intra-household inequalities exist in rural areas for some nutrients, these inequalities are not affecting the groups generally considered most vulnerable. Therefore, there is no significant evidence to confirm the presence of "detrimental inequality", namely the case in which a household exhibits inequity toward the vulnerable group (Coates, et al., 2018, p. 85) in terms of calories and protein. Although, some degree of inequality is recorded between adult women and adult men for those "invisible" micro-nutrients, such as iron (Coates, et al., 2018, p. 91). The nutritional inequalities in Ethiopia therefore do not seem, on average, to further disadvantage vulnerable groups: the intra-household distribution of calories and protein seems, for the majority of the household interviewed, to advantage children over adults; however there is still a 36% of households in which children experienced detrimental inequities with respect to male adults, and nutrient inadequacy at the same time, but of those only a 5% recorded the presence of adult male being with adequate nutritional level. In addition, no significant differences between male and female childrens were found in food allocation; this is also confirmed by the 28 countries cross-sectional analysis conduct by Berti (2012).

Also Villa et. al (2011) confirm that the hypotesis of gender based discrimination on food allocation is not supported in their study on pastoralist communities in Southern Ethiopia, as male and female spouses consumed similar diets.

The abovementioned empirical evidence in Ethiopia, therefore, does not seem to support the thesis according to which vulnerable groups within the family are systemathically at risk of greater nutritional deprivation, although the study of Kimhi and Sosner (2000) has revealed a worse nutritional condition for pregnant and lactating women. Moreover, another study, aimed at assessing the nutritional differences between wife and husband in case of unexpected income

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[65] It should be noted, however, that the data analysed by Coates et al. (Coates, Rogers, Blau, Lauer, & Roba, 2012) highlights a general inadequacy in terms of calories for all groups in Ethiopia. The study points out that only a small proportion of the sample, between 8% and 20% achieves the caloric adequacy. The same general inadequacy is underlined also for the iron intake, of which all the groups result deprived.

shocks, showed that the load of adjustment is almost always on women, especially those living in the southern regions and in poorer households (Dercon & Krishnan, 2000).

In addition to the important assessment of nutritional inequalities within the household, a fundamental and different aspect related to the intra-household food security relies on the role of women and their decision making power in food allocation within the household.

The study carried out by Mekonnen and Gerber (2017) is aimed at analysing the possible existing correlations between the household food security and the aspirations of each of the spouses. Although it is not focused on intra-household food allocation, it finds interesting results regarding the decision-making dynamics within the household. Assuming that low aspirations reinforce external constraints, leading to material deprivation and lower individual's self-esteem, eroding the individual's pro-activity level, they find that the aspirations of the interviewed women are on average lower than those of their husbands, in all the dimensions accounted for. The failure of aspirations has an effect on the decision-making capacity of women, implying negative effects on the household food security.

Kimhi and Sosner (2000), investigating the dynamics of power within the Ethiopian household, had found that the economic position of women, and not that of men, affects positively the relative food security of their children. This finding contributes to proving that father and mother differ in their preferences, especially regarding the allocation of available food resources, with effects on the welfare of their children.

To conclude, the empirical evidence for Ethiopia does not seem to delineate a certain trend with regard to gender differences in food security at intra-household level, while the power dynamics within the household seems crucial to support the protective action of the mother towards children. The variety of results could depend on the different food security indicators chosen as well as the variables considered; also the geographical areas taken into account may generate variations in the results.

5.8 Concluding Remarks

In this Chapter we have addressed the women's position and the intra-household food allocation dynamics in Ethiopia. Regarding the assessment of women's position, we used a multi-dimensional approach, trying to understand the dynamics hindering the achievement of women's empowerment, which in turns constitutes one of the main instruments to close the existent gender differences.

Looking at the multiple aspects of gender inequalities in Ethiopia, the overall picture is not very comforting. Despite the fact that Ethiopian governments have implemented several policies aimed at achieving gender equality, the indicators providing an overview on the women's condition are still performing poor.

Ethiopia has several social norms, which have led to the construction of strict gender roles, which hamper the empowerment of women; it is important to take into account this aspect as it represents a main constraint to achieve gender equality.

Gender difference in school enrolment is decreasing; however, we have poor information about the quality of education, which represents the crucial point to break the influence of social norms. Similarly, looking at health dimension, specifically to the aspect of decision over the body, reproductive health and awareness over domestic violence, women in Ethiopia seems to be in a very weak position, mainly due to the deep-rooted social norms and traditional beliefs. Finally, also the dimension of economic opportunities brings out the weak position of women in society. Women, in fact, face obstacles in accessing to the labour market, for two main reasons, on one hand they experience the poverty of time, which is given by the inelasticity of the division of labour, which in turn is driven by the gender roles. On the other hand, gender roles contribute to limiting the access of women in labour market only at specific sectors, such as informal and/or agricultural sectors.

We furtherly investigate the intra-household food security condition in Ethiopia and the dynamics regulating the food allocation within the household. The review of existing literature shows that on average the vulnerable groups are not deprived or affected by unequal distribution, however estimations change based on the place of residence and also based on the methodology used.

This Chapter provides a preliminary analysis of the women's condition and intra-household food security in Ethiopia, henceforth it provides a complete background to carry out the econometric analysis proposed in the next Chapter.

6

Intra-Household Gender Equality and Women's Empowerment Affect Child's Food Security? Views from Ethiopia

6.1 Introduction

The purpose of the present empirical chapter is to investigate the relationship between intra-household gender gap and children's food security in Ethiopia.

The literature review on gender gap and women's empowerment, valid for developing countries generally and for Ethiopia particularly, illustrates how the role of women and their empowerment are crucial to ensure a full enlargement of capabilities, both for women themselves and for their children. The econometric models presented in this chapter, therefore, aim at verifying whether the existence of a multi-dimensional intra-household gender gap, assessed and measured as the position of women within the family, affects the food security of children.

Through the analysis of available data for Ethiopia, in fact, we have tried to investigate the effects on children's stunting of the social status of women within their families in the three areas of interests outlined in the previous sections: education, health condition, economic empowerment and employment opportunities.

Food security, the latent outcome of interest, is measured as the height-for-age anthropometric indicator for children under five years of age. The use of stunting as food security measure seems particularly appropriate since it helps capturing more information on the health condition and general well-being of children. As mentioned in the previous chapter, the assessment of children food security results particularly relevant also from a broader capabilities perspective: in the long run, better food security for children ensures that they are

more likely to expand their future capabilities; in addition, through an improvement of their health condition, food security contributes to reducing child and infant mortality, benefitting also the demographic transition of the entire country.

Based on the bargaining power and women's empowerment theories, the main hypothesis relies on the fact that the position of women within the household positively affects the food security of her children.

The econometric models presented in section 5.6 are intended to investigate the validity and applicability of this hypothesis to the Ethiopian case: that is, testing whether Ethiopian women's position within the household – that could be alternatively of oppression, of equality, or of power – has any effect on children's food security.

In section 5.1 the description of the dataset used, methodology and choice of variables are introduced. Section 5.6 presents the results and the main findings, and section 5.7 concludes the chapter discussing the policy implication of the results.

6.2 Methodology

6.2.1 The dataset

The data used in this analysis is provided by the Demographic and Health Survey (DHS) Programme. The DHS Programme collects, organizes and disseminates accurate nationally representative data, at individual and household level. Women and men aged 15-49 are eligible to take the individual questionnaire, which includes information on fertility, mortality, reproductive health, gender attitudes and behaviours, child health and nutrition, in addition to general household's information. The dataset is nationally representative[66] and contains information both for rural and urban households.

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[66] In order to be nationally representative, DHS designs the sample following a two – stage probability sample technique. To prevent sample bias, in fact, each individual of the target population should have the possibility to be picked for the interview. To do so, DHS elaborate the sampling frame, which is a complete list of all the enumeration areas or primary sampling units (PSUs) which cover the entire population. The PSUs contain information on the size of the population targeted, households or individuals. As a baseline DHS generally uses the most recent country's population census.
Then, DHS stratified the sampling frame diving it into subgroups that are the most homogenous possible under certain criteria (geographic region or rural/urban, for example).
Once the PSUs and the stratification process have been determined, DHS draws the sample using the two-stage procedure: firstly, only certain PSUs are selected following the probability proportional to size within each stratum, thus forming the survey clusters. Then, a complete list of households is fulfilled for each of the selected clusters. DHS generally select a fixed number of households in each cluster (from 25 to 30 households) by equal probability systematic sampling.
DHS seeks to provide representative data at national and sub-national levels. To achieve this objective, it is fundamental to apply the sample weights. Sample weights are crucial to avoid over-sampling and under-sampling bias, while ensuring even small regions have enough population to be representative.

For the purpose of the present research the dataset named "children_recode" has been used. The unit of analysis, that is the single record in the dataset, corresponds to each child under five of age (0-59 months) present in the household of the interviewed woman. Each row contains child's individual information, such as ready-to-use anthropometric indicators as well as data on child's health condition including that related with maternal health, pregnancy and postnatal care.

It is important to note the distinction between the unit observed – the child – and the respondent. The questionnaire, in fact, is submitted to the mother of the child, who answers questions about herself, her child as well as her husband. The final dataset provides mixed information: objective ones such as anthropometric indicators, which are taken *in loco* directly from the fieldworkers, and subjective information given by the mother.

To conclude, the final dataset has one record for each child between 0 and 59 months of age, for a total number of 8.977 observations.

Data has been organized and disseminated officially by the DHS team in the year 2016, however seems to be relevant to underline that this data was collected during the year 2008.

The data was analysed through the econometric software Stata 2015, and all the results presented in this chapter were estimated by including rigorously the sample weights, as suggested by DHS team.

Furthermore, due to the lack of information, it was not possible to insert a variable that take into account children belonging to the same family, therefore with the same mother.

It would have been interesting also to trace the polygamous families, and therefore make them recognizable, in order to consider the effects coming from belonging to an extended family.

Given the impossibility of considering this information, it was decided to consider as a unit of analysis the child under five years of age and repeat where the same information happens for the mother and the family.

6.3 The variables

Here follows an overview of all the set of variables considered for the empirical analysis. It is important to underline the different unit of analysis: the outcome variable, food security, is referred to children under five years of age. The regressors, instead, meant to outline the multi-dimensional intra-household gender equality and empowerment, as well as individual

characteristics are intended for individuals. Then some other variable, such as socio-economic ones as place of residence and wealth index are referred to the household.

It is crucial to clarify here that variables used are selected based on the theoretical framework and to respond to the research questions. Obviously, the choice also fell on the variables made available by the DHS dataset, plus those questions that present wide percentage of response to the questionnaires. Some variables, such as the quality of education rather than the years of education, would have been more appropriate, but where it was not possible to find them in the dataset the choice fell on other similar variables. We would like to assess deeply women's empowerment, using also other variables describing the marital status, presence of polygamous relationships, rank of the wife. However, these variables were not available in the dataset.

6.3.1 The Outcome Variable – Children under-five's food security

This analysis seeks to investigate whether in Ethiopia children's food security varies in relation to the position of women within the household.

As already explored in chapter II, food security is a dynamic and multi-dimensional concept, which can be measured in multiple ways. For the purposes of this study, the most suitable measurement is the one provided by anthropometric indicators, as they can encompass all the four dimensions of food security, providing also information on the nutritional and health condition of the child.

In accordance with the preferences expressed by the international organizations, the anthropometric indicator here preferred is the height-for-age, hence stunting is used as the outcome variable (Smith & Haddad, 2015; UNICEF, 2013); it could be in fact determined both by food shortages and chronic diseases, and is therefore a long-term indicator and thus better suited to be explained by socio-economic factors; in addition, it is less likely to be affected from temporary food deficiencies and illness (Giroux, 2008)

The definition of stunting applies to children who result "too short for their age and have suffered from a reduced rate of linear growth" (Giroux, 2008, p. 13). From an operational point of view, a stunted child is one whose height-for-age indicator deviates by two standard deviations from the median international standard reference (for further details see Chapter II, Sections 2.3 and 2.4).

DHS already provides the height-for-age indicator elaborated accordingly to the international standard references, classifying it as follows:

- Children whose height-for-age z-score is below -3.0 standard deviations (SD) below the mean on the WHO Child Growth Standards are considered severely stunted;

- Children whose height-for-age z-score is below -2.0 SD below the mean on the WHO Child Growth Standards are considered moderately stunted;

- Children whose height-for-age z-score in ranging between -2 (excluded) and +2 SD are considered as performing a normal nutrition condition.

We chose to drop the observations refereed to children with a Z-Score higher than 2 SD. This is in order to maintain the interpretation of the outcome variable as clear as possible. The outcome variable in fact has a progressive pattern, moving from -4 SD to +2 SD imply an increase in food security. On the contrary, the individual whose indicator ranging from +2 SD to +4 SD is experiencing a food insecurity condition, as is obese/overweighed. Therefore, the consideration of this observation may lead to a misinterpretation of the estimations.

The observations removed count only for 3,5% of the sample[67].

The figure below shows the distribution of the height for age for children under five years of age.

Figure 6.1: Distribution of height for age for children under five years of age

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[67] The dataset counts for a total of 8.977 observations. Firstly, we drop the 122 observations marked as "flagged". The "flagged" anthropometric indicators are those not considered by the fieldworkers solid and reliable enough to be part of the dataset. Also, the obese/overweight children are dropped, as they are not describing a condition of food security as mentioned above: a total of 308 observations have been excluded from the dataset.

Children's under five height-for-age distribution
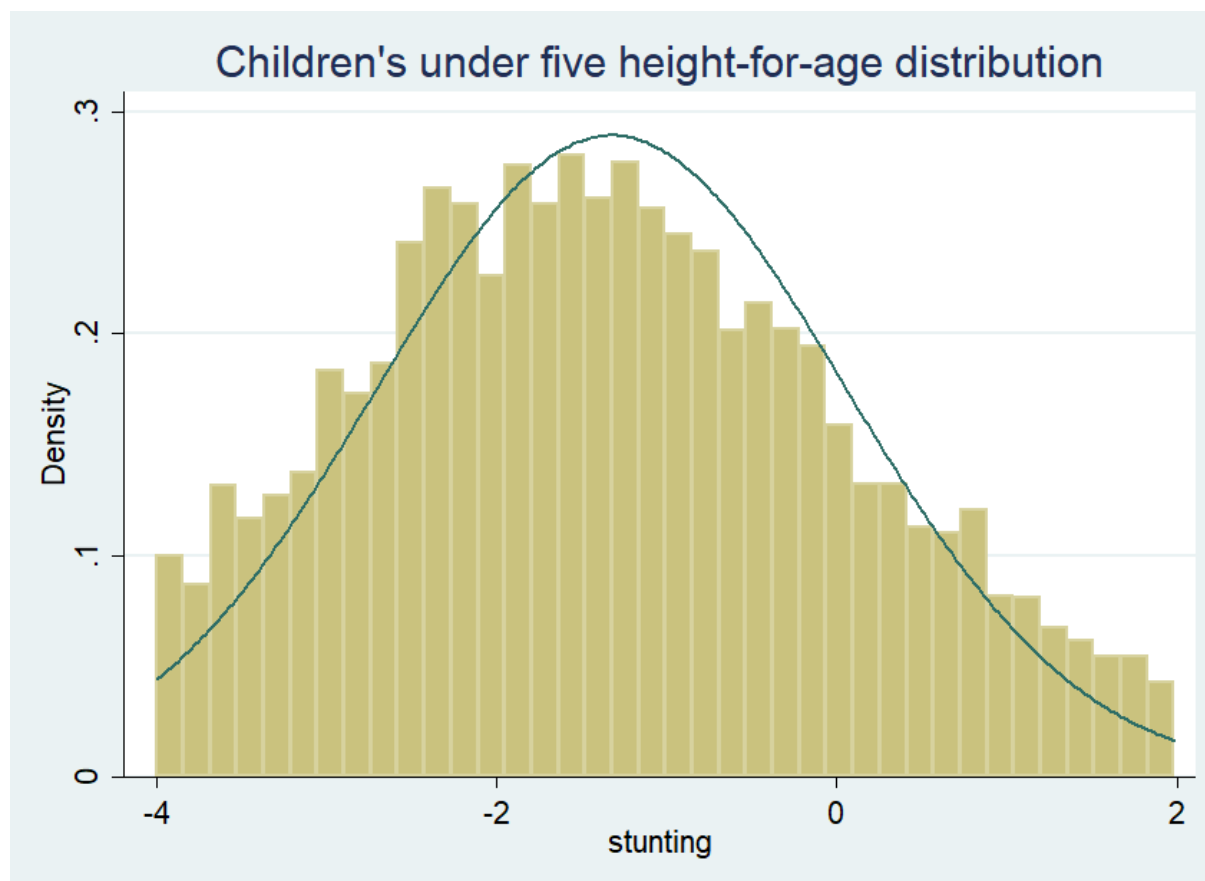
Source: Author's elaboration from data on DHS 2016

Children's food security represents a good proxy to assess the state of food security of the whole household. Additionally, the linkage between children's outcome and women's empowerment is already well established by empirical literature, thus it results easier to interpret the estimated coefficients on the base of an already established relations.

6.4 Independent Variables - Measuring Gender Gap as the Position of Women within the Household

6.4.1 Individual-level variables

The individual-level variables serve to investigate the position of woman within the household, hence both woman and man individual information are considered, when these helping to clarify the woman's gender role or capturing intra-household gender differences in specific areas (employment opportunities and education, for instance). The majority of the variables used were already made available by DHS through the children recode file; however, some others are specifically created, merging information from different variables, in order to attribute maximum informative value to the new variable, avoiding possible repetitions and redundancies.

Mother's Educational Attainment

Women's education plays a key role in reducing children and household's food insecurity and improving health and sanitation conditions at household level, (Burchi & De Muro, 2007). DHS provides several kinds of information[68] on the individual's educational attainment. The variable chosen for this research is the one attesting the highest year of education attained by the respondent. It is a discrete variable ranging from 0 to 22 (years), which attempts to measure the educational accomplishment reached out by the individual (Education Policy and Data Center, 2009). The survey question explicitly queries "What was the highest year of school you completed?". The word *completed* deserves emphasis, as it implies an effective achievement, markedly different from the enrolment.

To avoid the constant marginal return to education[69], we add the squared terms in order capture the marginal contribution of each additional year of education.

The school year's completion allows to overcome some of the limitation brought by the enrolment rate, which does not provide information on the quality of education, on the results reached by the students, and do not deliver data on the school drop-out rate, nor on student's full-time or part-time efforts.

On the contrary, the educational attainment is more informative about the history of the student: it goes beyond the enrolment rate and reveals whether the student achieved a certain grade. However, this has also some limitations as it does not provide crucial information on the quality of education.

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[68] DHS collects several types of information related to educational attainment as well as on school attendance. For the reasons mentioned in the text, we are focused on the school attainment rather than the enrolment.

Thus, regarding the former, along with the completed number of years of schooling already mentioned, there are other qualitative variables which highlight different aspects of the topic. Here follows a brief description of the ones available for Ethiopia: the "highest education level attained" which counts four modalities: "no education", "complete primary", "complete secondary", and "higher". This results less accurate than the variable which expresses the school achievements in completed years of education.

In addition to this, there is also a more detailed "highest education level attained", which actually directly derives from the previously illustrated one, but it is further split into six categories: "no education", "incomplete primary", "complete primary", "incomplete secondary", "complete secondary" and "higher".

For the purpose of this study, the preferable, more accurate one is the one which express educational attainment in completed years of schooling.

[69] However, different authors who dealt with the effects of mother's education on children's outcomes have used only the year of schooling without adding the squared term (Glewwe P., 1999; Thomas, Strauss, & Henriques, 1991; Plug, 2004).

Despite these limitations, the variable remains the most reliable and solid among those investigating the sphere of education, as it allows to quantify precisely the completed years of education (and not the more general information on the level achieved).

Father's Educational Attainment

Like the woman educational attainment, DHS also provides information on the educational attainment of the man.

Alongside to the positive effects of the mother's education on children's outcomes (Burchi F. , 2009; Burchi & De Muro, 2007; Thomas, Strauss, & Henriques, 1991; Glewwe P. , 1999), interest has been raised also in the role of the education of the father (Burchi F. , 2012; Breierova & Duflo, 2004).

Father's educational attainment contributes to the understanding of the effects of parental education on children's food security.

In order to interpret the coefficients coherently with that of mother's schooling, the father's completed years of education are considered. The variable ranges from a minimum value of 0 to a maximum of 22. The squared term is added in order to consider marginal contribution.

Mother's employment opportunities

As extensively explained in Chapters I and III, the effects of women's employment on children's food security are mixed. A diverse effect, in fact, may be generated: on one hand, a woman who has a job outside of the household, hence a source of income, could obtain more bargaining power within the household, as a consequence of economic empowerment and personal achievements. However, on the other hand, a woman could have the necessity to obtain a job (of any kind) outside of the household, as a consequence of poverty. Especially, in this latter case, the child might suffer from a lack of care, as the mother has to balance her availability of time between the role of caregiver and that of a worker.

The present empirical analysis is useful to understand the role played by woman's employment on children's food security, *ceteris paribus* the other variables, in regard to Ethiopian DHS data for 2016.

The employment conditions of women are described by a binary variable, which is characterized as follows:

- 0 describes those cases in which at the time of the interview, a woman does not have a job outside of the household nor a paid job,
- 1 indicates a woman currently working and receiving a payment.

The use of this variable could represent a contribute to the literature as it serves as an explanation and clarification of the role of women's employment outside the household on children's food security in Ethiopia.

Father's Employment Opportunity

Along with the investigation on woman's condition, the understanding of intra-household distribution of power also requires the consideration of a man's characteristics and status.

The variable that describes the husband's employment condition is binary and it is constructed as one related to the woman's employment condition:

- 0 describes those cases in which the man is not currently working;
- 1 indicates those men which are currently working, receiving a form of payment.

Although there is no extensive literature on the direct effects of male employment on children's food security, we add this information in order to draw the most complete picture of the individuals as direct participants of the intra-household power dynamics.

Mother's Acceptance of Domestic Violence

Domestic violence is extensively diffused in Ethiopia both in private and in public sectors and, notably, it is widely accepted rather than contested, most probably favoured by the historical and cultural context (Fite, 2014; Kedir & Admasachew, 2010).

In this study we are interested in verifying the effects, if any, of women's acceptance of domestic violence on children's food security.

Considering the acceptance of the intimate partner violence is relevant for several reasons: firstly, as Bott et al. (2005) pointed out, gender-based violence may have direct negative effects on children's health. In addition, the acceptance of domestic violence might be the expression of the lack of women's empowerment (Linos, Khawaja, & Kaplan, 2012; Hindin M. J., 2003), holding the hypothesis that patriarchal ideology hinders the achievement of gender

equality as well as contributes to the enhancement and supporting of the traditional gender-biased attitudes. We use the acceptance of domestic violence as a proxy for women's empowerment (Lopez-Avila, 2016).

As a consequence, the living context and the related social norms play a crucial role in the process of "acceptance" of domestic violence. Hindin (2003) in fact, in his empirical work on Zimbabwe, suggests that the acceptance of IPV is often determined by social factors, such as living in a rural area and having lower wealth index. Furthermore, some woman's individual characteristics such as the lower level of education and the lower occupational status seem to increase the likelihood to accept domestic violence from man.

DHS proposes five different situations to evaluate women's attitude towards partner's violence[70], but for the purpose of the present study, the author's convenience is to analyse the attitude of a woman towards IPV in case she burns the food[71], which in the author's point of view is the most related with the gender roles.

According to 2016 DHS data, over 45% of women with a child under five in Ethiopia can accept and justify the violent attitude of a man towards his wife in case she burns the food.

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[70] The woman's opinion on acceptance of domestic violence is investigated with a series of questions as follows: "In your opinion, is a husband justified in beating his wife in the following situations:
- If she goes out without telling him;
- If she neglects the children;
- If she argues with him;
- If she refuses to have sex with him;
- If she burns the food"

Unfortunately, the children recode file does not provide data about the man's opinion on acceptance of domestic violence.

[71] We use the scenario that potentially best reflects the women's primary role of caregiver, for children as well as for the household. In addition, this situation provides information on social norms and gender roles society attaches to women, as well as the degree of absorption of these by the woman herself.

Furthermore, it should be stressed that the choice, for theoretical reasons, of a specific scenario does not impact the final results, as it can be seen from the figure below that there are no substantial differences in the figures:

Figure 6.2: Percentage of acceptance of domestic violence by scenario

Variable	Obs.	% of acceptance	Min/Max
If she goes out without telling him	7,346	50,0	0/1
If she neglects the children	7,346	53,8	0/1
If she argues with him	7,346	49,2	0/1
If she refuses to have sex with him	7,346	41,7	0/1
If she burns the food	7,346	45,5	0/1

Source: Author's elaboration from data DHS 2016

It is worth to notice that the sample size is indicated in order to provide information on the number of people interviewed. However, the percentage values are to be considered valid for the entire population, as the estimates have been calculated with the sample weights.

Mother's height-for age

The positive effects of maternal health and nutritional status on child's outcomes are widely accepted in literature. Along with the anthropometric information for children under five years old, DHS also provides the height-for-age Z-score for mothers, obtained with the same rational used for the children's indicators.

Consistent with the considerations made for the children's height-for-age, we drop all the observations describing a condition of obesity also for mothers, as they might make the interpretation of the coefficient quite difficult. However, only 0,67% of the observation were dropped, so it should not interfere with the significance of the estimations.

Mother's age at first birth

The age of the mother at first birth could be useful in order to evaluate both the past and the present woman's condition: on one hand, in fact, it is useful to capture information about the family environment the woman has lived in in her family of origin. Some empirical evidence in fact has demonstrated the existence of the intergenerational transmission of gender roles and attitudes from mother to daughter: this is valid also for what concerns sex-roles. On the other hand, a woman's age at first childbirth could provide information also on the empowerment condition she faces in her current household, as adolescent pregnancy is considered an obstacle to women empowerment. Hindin (2012) suggests that giving birth at an early age could hinder a woman's empowerment. In fact, empirical literature review shows that it is negatively associated with her school attainment [72], as well as it might impair, directly and also through the education channel, her social and economic mobility. Furthermore, early childbearing is associated with an array of negative consequences in health conditions both for the mother and the child as well. In addition, young women could face limitations in their decision-making power, especially on crucial topics such as reproductive health and related to the marital relationship as well (Varga, 2003; Schuler & Rottach, 2011).

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[72] The school drop-out is considered one of the main consequences of early marriage or early childbirth. The competition for time allocation between childcare and education makes the linkage between school drop-out and parenting clear. However, Lloyd and Mersch (2008), conducting an empirical study in francophone Africa, have highlighted that this relation explains just 20% of the school dropouts. The early school leaving seems to be led more by the formation of new "family union", like marriage and cohabitation, rather than early childbirth. Furthermore, Grant and Hallman (2008) have pointed out that, even though the dropouts are due to early childbirth, the nature of the relationship between the events is not clear. It is not clear whether it is the prior school discontinuities performance that leads to pregnancy or the occurrence of pregnancy that leads to school drop-out.

According to 2016 DHS data for Ethiopia, the average age at which women give birth to their first child is around the average value of 19 years old, with a minimum age of 11 and a maximum of 39 years old.

Women have delivered the child in hospital

The decisions over the reproductive health represent a crucial expression of the women's decision-making power within the household. In Ethiopia, even if the antenatal care coverage is quite high, home birth incidence is high as well. Some authors have proven that even in cases in which women have received antenatal care, they prefer to give birth at home, due to traditional beliefs and family influences (Adinew, Assefa, & Adinew, 2018; Shiferaw et al., 2013; Roro et al., 2014). In addition to these studies, the empirical research proposed by Nguyen et al. (2014) on the association between women's empowerment and likelihood to deliver in health facilities, is possible to consider the place of childbirth as a proxy of women's decision-making power.

Thus, we consider a binary variable, which obtains a value of zero when a woman has given birth to the child at home, while it has a value of 1, when a woman has delivered in a public or private hospital.

Mother's perceived size of the child at birth

The size of the child at birth is useful to account for the possible difficulties faced by the mother during pregnancy, such as no sufficient and/or inadequate diet and chronic health problems. Additionally, child malnutrition is associated with small childbirth size. Children who are smaller at birth, in fact, are more likely to be stunted (Central Statistical Agency & ICF, 2016). Hence, the inclusion of this variable results to be a convenient control.

It is a subjective variable, as it corresponds to the mother perception of the size of the child at birth. However, it is commonly used as a proxy for birth weight, since the weight at birth in developing countries is generally not taken or recorded[73] (Channon , 2011). It assumes 5 modalities: i. child is much larger than average; ii. child is larger than average; iii. average size; iv. child is smaller than average; v. child is very smaller than average.

Sex of the Child

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[73] In the 2016 DHS survey for Ethiopia, the question related to exact weight at birth is actually present, however over 77% of the mothers replied that the birth weight of child was not recorded. Thus, the mother's perception of the size at birth, remains the unique possible control.

Similar to what mentioned above for the age variable, anthropometric measurements should already have captured the effect of sex of the child. However, for the same reasons mentioned above, it is considered useful and appropriate regard child's sex as an explanatory variable to control also in this case for unobserved factors.

Child is breastfed

Breastfeeding is strongly associated with child nutrition and as a consequence in child survival (Muchina & Waithaka, 2010). Despite the benefits of breast milk, the prevalence of breastfeeding in Ethiopia is lower than the international recommendation (Alemayehu, Haidar, & Habte, 2009). The introduction of this binary variable (0 if the child is not currently breastfed; 1 otherwise) to control for children breastfeeding appears to be relevant. Clearly it is expected to be more prominent for children under the 6 months, however, DHS data confirm the presence of prolonged breastfeeding till the 5 years of age, thus it is convenient to check for everyone's status.

6.4.2 Relational-level variables

Relational-level variables are built by the author starting from individual information provided by the children file. These are created in order to capture the intra-household gender differences in specific areas, such as educational achievements and employment condition.

The Intra-Household Gender Inequality indicator for Educational Attainment

The present study aims at understanding the possible effects of multi-dimensional gender gap, intended as the position of a woman within the household, on children's food security. Hence, a measurement of the gender gap in educational attainment is needed. Firstly, we assess the gender gap in educational attainment between wife and husband, using the methodology proposed by Vyas and Jansen in their empirical research for the assessment of the unequal power relations within the household in Tanzania (Vyas & Jansen, 2018).

We consider the school's achievements of wife and husband, both provided by DHS as a quantitative variable. Each respondent, as already explained for the educational individual variables, reports the highest year of education achieved, ranging from 0 to 22. The value of zero is attributed to those who have no education, or to those who, even if enrolled in primary, have not completed the first year. The value of 22 is for those who have completed the tertiary education, i.e. have graduated.

Thus, in order to measure the intra-household educational difference between wife and husband, a new variable has been created, processing the quantitative individual ones. The educational gap proposes 4 possible scenarios; two of them describe a situation of equality, while the other two a situation of gap. The variable is categorized as follows:

- 0: if the couple's members are both uneducated;
- 1: if the wife is less educated than her husband;
- 2: if the wife is more educated than her husband;
- 3: describes the cases in which wife and husband have the same years of education completed.

In addition to the variable elaborated as per Vyas and Jansen's study, an additional variable is proposed in order to account for the actual difference in terms of years of education between wife and husband. It can capture the distance between spouses, and it is measured as:

$$Gap\_years = mother's\ years\ of\ schooling - father's\ years\ of\ schooling$$

This new variable varies from -22 to + 22. The lower bound identifies the case in which mother has no education while the father has achieved the maximum grade. The upper bound stays for father with no education at all while mother has completed it.

This variable needs a further elaboration as the value zero corresponds to equality and it applies both in case the spouses have the same years of schooling and the case in which both have no education at all. Both the cases are the expression of a condition of equality; however, the circumstances are substantially different. Therefore, a distinction between the two cases will be accounted in the analysis.

While the role of women's education on children's welfare outcomes is well clarified in literature, Chou, Liu, Grossman and Joyce (2010) found positive effects of both mother's and father's education on child's survival; an in-depth literature on the role of intra-household differences in education has not been fully developed, yet. However, at this point, an important argument is raised by Sell and Minot who highlight that the equality of education between spouses is more relevant in regard to women's empowerment than the average level of education. Hence, as women's empowerment implies better children outcomes in term of well-being, as a consequence, the equality of education seems to be crucial, at least indirectly, for children's food security.

Therefore, the studies mentioned contribute to the elaboration of the ordinal value of this variable: the highest social preference is attributed to the situation where both partners have the same level of education, which has to be different from zero. Coherently, the lowest social preference is given to the situation in which both partners did not acquire the minimum educational level. The two central modalities have been attributed taking into account the existing literature: maternal education has an undisputed central role for children's well-being;

therefore, the case in which the mother is more educated than the father is to be preferred compared to the cases in which the husband has higher education than his wife[74].

In addition, the existence of a theory stating the positive relation between education and decision-making power within the household[75] (Smith & Haddad, 2015; Frempong & Stadelmann, 2017), as well as the fact "that educated women have a better chance of meeting their livelihood needs outside of marriage, which makes them relatively more independent of their spouses" (Frempong & Stadelmann, 2017, p. 3), constitutes a reason to justify the inclusion of education achievements' differences among spouses, in order to measure the effects that could have on children's food security.

The added value of including a relative variable among partners lies in the possibility of expanding the investigation of intra-household determinants of child food security, going beyond the analysis of the individual educational level.

The Intra-Household Gender Inequality indicator for employment condition

The analysis of the intra-household gender gap in employment condition could reveal useful information on the dynamics of power within the household. It helps in understanding whether children's food security benefits more from a breadwinner model than a dual-earner familial scheme.

The variable is generated starting from the spouses' individual data on working condition and it assumes four categories, as per methodology proposed by Vyas and Jansen (2018):

- 0: both partners are not working,
- 1: the wife is currently working, while the husband is not;
- 2: the wife is not working at the moment of the interview, while the husband has a paid work;
- 3: both partners have currently a paid work.

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[74] On the opportunity of assessing the effects of intra-household gender gap through a binary variable, i.e. the inequality exists or does not exist; we believe that it is neither exhaustive, nor consistent with the purpose of the research. The present study, in fact, aims at analysing the gap as the reflection of the position of women within the household. Therefore, the family in which wife and husband have both no education, is certainly the expression of a situation of equality. However, it is not similar to a condition of equality but with a certain level of education. As education represents a key point to trigger social and cultural change, we chose to further differentiate the categories.

[75] It is important to point out that the empirical study by Frempong and Stadelmann, aimed at investigating the role of female education on women's bargaining power in Ghana and Uganda, assumes as central hypothesis that woman with higher education compared with that of her husband has more bargaining power within the household. This is a crucial assumption allows to study with greater theoretical support the intra-household differences in education based on the elaborated relational variable.

The study of this variable attempts to understand the dynamics of power generated by eventual different condition of working status.

6.4.3 Household-level variables

Wealth Index

Wealth index is a composite indicator of household's cumulative living standard. It is offered ready to use directly within the DHS data and it is calculated using the Principal Component Analysis (PCA) technique to not arbitrarily derive the weights.

The wealth index is calculated using firstly data collected for other purposes than the index, and in a second stage, more specific information is required and added in order to better specified the index. The data entering the wealth index concern the household's ownership of selected goods and assets such as chairs, beds, refrigerator but also watches and mobile phones; the materials used for building the house (main roof and walls materials) and finally the kind of water the household can access and the sanitation facilities.

For tabular analysis with the wealth index, quintiles are used. These quintiles are based on the distribution of household population. Each individual gets a score and then all people are distributed according to the score obtained; the objective consists in forming the five quintiles, representing each 20% of the population. Therefore, each person obtains a score that reflects that of his/her household.

Wealth index represents a more permanent status than income or family expenditures or consumption behaviour do, it is easily measurable and, for developing countries, it is more accurate than household income-based measures (Rutstein & Johnson, 2004). Furthermore, wealth index seems to better fit explaining child nutrition, educational attainment and child mortality (Montgomery, 2000; Filmer & Pritchett, 1998; Sahn & Stifel, Poverty Comparisons Over Time and Across Countries in Africa, 2000).

Place of residence (urban/rural area)

A dummy variable to account for place of residence is included in the model. Controlling the estimates for urban and rural areas of residency constitutes a major point, as it could encompass major differences within the samples, especially with regard of gender roles.

DHS does not provide a unique definition for urban and rural areas for the surveyed countries; rather it adopts the country-specific definition. According to the definition provided by the Central Statistical Agency (CSA) for the 1994 Census: "Urban centre was defined as a

locality with 2,000 or more inhabitants. Moreover, all administrative capitals (Region, Zone and Wereda), and localities in which urban dwellers' associations were established were considered as urban centres, regardless of the population size" (Central Statistical Agency, 2012). Thus residually it is defined by the rural areas, as the Ethiopian Administration chose to operate differentiation based on the population density.

Household Composition

Family size is an important factor which can affect the household's food security, especially in terms of availability. However, due to economies of scale in consumption, we applied the OECD Square root scale ($\sqrt{n}$). Generally, the application of the equivalence scale implies some degree of arbitrariness. In fact, it is possible to assign different weights to family members on the base of individual characteristics (i.e. age). However, in this study, since the outcome variable is the food security of children under five years old, it is preferred to not distinguish between children and adults within the family (OECD, 2019).

Furthermore, in order to consider properly the composition of the household we account also for the proportion of child under the five years of age. This variable is calculated as the proportion of household members with less or equal than five years old (Burchi F. , 2009).

6.5 Descriptive Statistics

Table 5.2 shows the descriptive statistics for variables accounted in the regression models. For binary variables, and more in general for categorical factors, the value in percentage is proposed as the mean, and the relative standard error is not informative in these cases.

The first element we consider is the outcome variable, i.e. the anthropometric indicator for children under five years of age. The measure is expressed in standard deviation, and the value of -2 is the international threshold for delimiting the stunting condition. The mean value below that threshold indicates that on average Ethiopian children under five years of age are in a situation of food insecurity. It is interesting to note that the mothers, compared to their children, have on average a worse condition of food security.

Comparing the average years of education of mothers and fathers, we note that on average the father has over one year more of education than the mother; consistently with the trend shown in table 3.4 in chapter III.

Figure 6.3 – Descriptive Statistics

Variable	Mean or %	St. Error	Min.	Max.
Child Height-for-age (SD)	-1.396	1.368	-4	1.99
Mother Education (year)	1.925	3.441	0	22
Father Education (year)	3.256	4.149	0	22
Education Gap *(Both 0)*	40.41%	-		
Wife less than Husband	40.87%	-		
Wife more than Husband	13.56%	-		
Same Education	5.17%	-		
Mother is working *(Yes)*	26.49%	-	0	1
Father is working *(Yes)*	92.78%	-	0	1
Employment Gap *(Both not working)*	5.96%	-		
Wife working, husband not	1.26%	-		
Husband working, wife not	67.56%	-		
Both working	25.22%	-		
Mother's acceptance of IPV *(Yes)*	45.62%	-	0	1
Mother's height for age (SD)	-1.093	0.994	-5.47	1.99
Mother's age at first birth	18.780	3.454	11	39
Delivered in Hospital *(Yes)*	28.53%	-	0	1
Perception of child's size *(much smaller)*	15.35%	-		
Smaller than average	10.22%	-		
Average	42.88%	-		
Larger than average	13.76%	-		
Much larger than average	17.78%	-		
Age of the child *(months)*	28.703	17.561	0	59
Sex of the child *(female)*	48.79%	-	0	1
Child is breastfed *(Yes)*	70.94%	-	0	1
Wealth Index *(Poorest)*	21.77%	-		
Poorer	23.54%	-		
Middle	21.39%	-		
Richer	18.71%	-		
Richest	14.58%	-		
Place of Residence *(Rural)*	89.07%	-	0	1
Household composition	6.101	2.108	2	19
Sample				7,222*

*All the values are to be considered valid for the Ethiopian population.

Slightly more than 5% of couples shares the same years of education, while a cumulative percentage over 80% account for a situation in which the wife has no education or has a lower level compared with education of husband.

Almost 46% of women declare to accept the domestic violence perpetrated by partners and less than 30% of women have delivered in hospital. The woman's average age at first birth

is quite early, as it ranges between 18 and 19 years old. The proportion of women with a paid-job is around 26%, while that of men is over 92%. Looking at the relational factors, a small proportion of the couples – slightly over 1% - describes a situation in which a woman has a paid-job, while her husband does not, which partially reflects the differences observed for the individual variables.

6.5.1 Correlation analysis

After the exploration of the descriptive statistics, a correlation analysis is performed in order to investigate the relationship between some of the covariates, selected on the basis of the research's purpose.

Child's height-for-age is highly correlated with both parents' education, with mother's nutritional condition, with being born in hospital and the wealth index. It is highly, but negatively correlated with living in a rural area.

The women's education has interesting highly correlation with most of the considered variables. It is positively correlated with the household wealth index, with her own working condition and with having given birth in a hospital. On the contrary, it has negative correlation with the acceptance of domestic violence and living in a rural place.

The man's education behaves quite similar to that of woman: it has positive correlation with the fact that child has been delivered in hospital and with the wealth index. In addition, it is negatively correlated with the woman's acceptance of domestic violence.

Furthermore, living in a rural area is negatively correlated with all the variables considered, while the wealth index is correlated positively with all the variables, expect that the acceptance of domestic violence.

Figure 6.4: Correlation Matrix

	Stunting	Edu_wom	edu_man	edu_gap	wom_work	diff_work	accep_dom_viol	stunting_moth	deliver_hosp	wealth_index	Rural
Stunting	1.000										
Edu_wom	0.1641*	1.000									
edu_man	0.1566*	0.6671*	1.000								
edu_gap	0.0978*	0.6494*	0.4853*	1.000							
wom_work	-0.0201	0.1791*	0.1330*	0.1418*	1.000						
diff_work	-0.0440*	0.1696*	0.1428*	0.1758*	0.6439*	1.000					

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accep_dom_viol	-0.0893*	-0.2191*	-0.1669*	-0.1250*	-0.0400*	-0.0364*	1.000			
stunting_moth	0.1810*	0.0673*	0.0906*	-0.0008	0.0054	-0.0681*	-0.0457*	1.000		
deliver_hosp	0.1284*	0.4548*	0.3946*	0.3255*	0.1154*	0.1175*	-0.1770*	-0.0124	1.000	
wealth_index	0.1324*	0.4833*	0.4585*	0.3776*	0.1669*	0.1830*	-0.1856*	-0.0170	0.4642*	1.000
Rural	-0.1338*	-0.5160*	-0.4431*	-0.2689*	-0.1336*	-0.1030*	0.2426	-0.0470*	-0.4741*	-0.6065*	1.000

* Coefficients are statistically significant at 0.05

The relationship between the intra-household educational attainment gap and the child's height-for-age indicator deserve further investigation, as the correlation coefficient it is not fully informative.

The box plot below aims at illustrating the distribution of the child's nutritional status over the different educational attainment gap categories.

Figure 6.5: Distribution of children under five height for age indicator by educational gender gap between spouses

Actually, the distribution is quite similar across the different categories, however the median value is higher (albeit slightly) for the category which describes the parents' equality in education, while the lower value is recorded for the category in which both parents have no education. Thus, the opportunity to keep the two categories separated is furtherly confirmed, even if both express a situation of equality.

Moreover, since the correlation matrix highlights the importance of distinction between rural and urban areas, the following box plots accounts for the place of residence distinction.

Figure 6.6: Distribution of children under five height for age indicator by place of residence
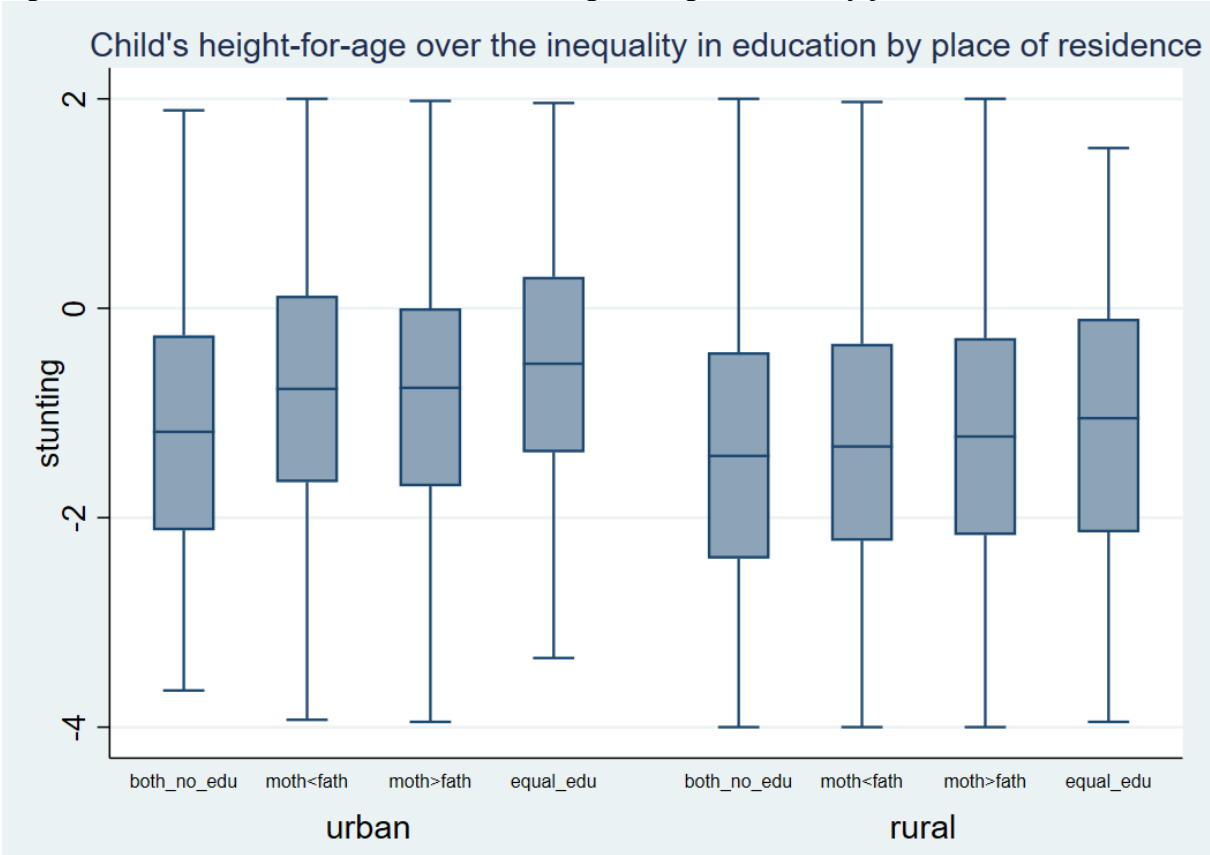
Source: Author's elaboration on data DHS 2016

Children who live in urban areas present a higher value of height-for-age indicator, regardless of the educational gap between the parents. However, the group of children with parents belonging to the category 3 recorded a higher median value of food security, compared to that of all the other categories.

Given this preliminary analysis, we expect that a situation of educational equality between partners (but an equality in which both spouses have completed at least one year of schooling) fosters the children's food security. However, we expect that women's individual educational attainment has a greater impact on children's food security, compared to the relational factor. Also, the father's education is expected to be relevant for children's food security, although with a lower impact than that produced by the mother's education.

Women's education is also positively correlated with her working position, meaning that eventually women with a higher educational level are more likely to be involved in a paid-job.

Wealth index is expected to be a crucial determinant of children's food security, consistently with the Capability Approach, for which it represents a mean to expand

capabilities. Living in a rural area is expected to lower the likelihood to be food secure, rather than living in an urban place.

6.6 Estimation of the Results

The present section aims at discussing and presenting the results estimated using a multiple linear regression model (OLS), general equation as follows:

$$y_i = \alpha + \beta_0 X_{1i} + \beta_1 X_{2i} + \cdots + \beta_k X_{ki} + \varepsilon \qquad i=1,...,N \qquad (5.1)$$

(where *k* is the *k*-th observation for each of the *i*-th regressor)

A sequential strategy is applied: firstly, we estimate the model using only mother and father individual level variables, plus some household and child variables. In the second model we replace the education and work-related individual factors, with relational ones, while maintaining the others.

Furthermore, a preliminary analysis showed the presence of heteroscedasticity problems, so the regressions were run with robust option, in order to avoid biased standard deviations.

6.6.1 Main Findings

Table 6.3 shows the estimated coefficients and the standard errors relative to the relationship between gender gap and women's empowerment variables to children under-five's height-for-age indicator.

Following the methodology proposed by Vyas and Jansen (2018, p. 5), two sets of multivariate regressions are presented. In the first model, we only consider the individual level factors, while in the second model we consider instead the relational variables for education and working condition.

The first two columns of table 6.3 show the coefficients and standard error of the first model, the one that considered the individual variables. The consideration of individual level variable allows us to investigate the effects of the individual factors on children's food security. It follows the model's equation:

$$Child\ HAZ = \alpha + \beta_{0i}edu\ mother_i + \beta_{0j}\ edu\ father_j + \beta_{1i}\ squared\_edu\ mother_i\ +$$
$$\beta_{1j}\ squared\_edu\ father_j\ + \beta_{2i}mother\ works_i + \beta_{2j}\ father\ works_j +$$
$$\beta_{3i}\ haz\ mother_i + \beta_{4i}\ mother\ age\ first\ birth_i + \beta_{5i}accept\ IPV_i +$$
$$\beta_{6i}\ deliver\ hosp_i + \beta_{0h}\ rural_h + \beta_{0c}breastfed_c + \beta_{1c}\ sex\ of\ the\ child_c +$$
$$\beta_{2c}childsize\ birth_c + \beta_{2h}\ N.HH_h + \varepsilon^{76}$$

A variant of the model that considers only the individual variables is proposed, in order to consider also the wealth index. The equation is as follow:

$$Child\ HAZ = \alpha + \beta_{0i}edu\ mother_i + \beta_{0j}\ edu\ father_j + \beta_{1i}mother\ works_i$$
$$+ \beta_{1j}\ father\ works_j + \beta_{2i}\ haz\ mother_i + \beta_{3i}\ mother\ age\ first\ birth_i$$
$$+ \beta_{4i}accept\ IPV_i + \beta_{5i}\ deliver\ hosp_i + \beta_{0h}wealth\ index_h + \beta_{1h}\ rural_h$$
$$+ \beta_{0c}breastfed_c + \beta_{1c}\ sex\ of\ the\ child_c + \beta_{2c}childsize\ birth_c$$
$$+ \beta_{2h}\ N.HH_h + \varepsilon^{77}$$

In the last two columns of table 6.3 we proposed the estimation of the model that account for relational variable. Through the relational variable we capture the effects of the intra-household power dynamics. The second model equation is:

$$Child\ HAZ = \alpha + \beta_{0g}edu\ gap_g + \beta_{1g}\ employ\ gap_g + \beta_{0i}\ haz\ mother_i$$
$$+ \beta_{1i}\ mother\ age\ first\ birth_i + \beta_{2i}accept\ IPV_i + \beta_{3i}\ deliver\ hosp_i$$
$$+ \beta_{0h}wealth\ index_h + \beta_{1h}\ rural_h + \beta_{0c}breastfed_c$$
$$+ \beta_{1c}\ sex\ of\ the\ child_c + \beta_{2c}childsize\ birth_c + \beta_{2h}\ N.HH_h + \varepsilon^{78}$$

The coefficients of the first model respond as expected to children's food security.

Mother's education has a positive and significant association (p-value < 0.05) with her child's food security. In particular, the coefficient for the quadratic term is positive and significant, suggesting that an increasing marginal contribution of maternal schooling to child's food security exists – that is, an additional year of maternal schooling matters more when the level of schooling is higher.

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[76] The notation is as follow: *j* is the j-th characteristic of the father, *i* identifies the i-th characteristic of the mother, *h* denotes the h-th characteristic of the household and *c* is the c-th characteristic of the child.

[77] The notation is as follow: *j* is the j-th characteristic of the father, *i* identifies the i-th characteristic of the mother, *h* denotes the h-th characteristic of the household and *c* is the c-th characteristic of the child.

[78] The notation is as follow: *g* is the g-th characteristic of the intra-household difference, *i* identifies the i-th characteristic of the mother, *h* denotes the h-th characteristic of the household and *c* is the c-th characteristic of the child.

Father's education, in terms of years of schooling is positively and significantly associated, at 10% confidence with the height-for-age indicators for children under five years old. For each additional year of schooling, the food security of the child increases constantly of 0.027.

Education of both parents, as literature suggests, increases child's food security.

The estimated coefficients on the effects of the current working conditions of mother and father on children's food security depict different outcomes. The father working condition has no effects, *ceteris paribus* the other variables, on child's food security. While the working condition of the mother has a significant and negative effect on child's food security. The sign of the association seems to reflect the difficulties that woman faces in order to balance child-care and a paid job, as extensively explored in Chapter III. Children whose mothers are engaged in a job "outside of the household", in questionnaire's words, are more likely to experience lower levels of height-for-age than children whose mothers are not currently employed. That might provide evidence on the condition of working women in Ethiopia, which seems to be coherent with the "poverty of time" idea proposed by Blackden and Wodon (2006). Working outside the home would seem to imply a reduction of the time spent in domestic activities, such as fetching of the water and collecting woods. Although the mother's work can effectively improve, through the channels of income and empowerment, child's food security, the aspect of the poverty of time seems to have greater impact (Popkin, 1980).

Furthermore, it might be possible that this result reflects a sample selection problem: i.e. women who work outside of the household might belong to the poorest quintiles of the wealth distribution, therefore that households might be more exposed to food security problems. In order to account for this possibility, we propose the analysis, for both the models, of the interaction between wealth index and working condition of women in Annex C. The results of the interaction term suggest that children whose mother has a work outside of the household and whose family belong to the lower quantiles of the wealth distribution (poorest, poorer and middle) are more likely to be food insecure than those whose mother is not working and whose family belong to the poorest quintile of the distribution. This result seems to suggest the protective effect of the mother during the first 5 years of the child's life as well as it confirm the importance of wealth condition of the household.

Wealth index seems to count more in those households where the head of the household is a man.

The woman's health and nutritional condition, measured through the height-for-age SD, is confirmed to be a key determinant for children's food security. The increase of one unit of

the mother's food security results in an average increase of 0.023 points expressed in standard deviation in child's food security, while holding the other variables constant.

Conversely, the mother's age at first birth seems not to be relevantly associated with child's height-for-age.

Additionally, the woman's attitudes toward domestic violence, considered as a proxy of her empowerment within the household, is negatively associated with children's food security. Women who declare to accept and justify domestic violence from their husbands/partners are more likely to have children on average 0.121 points in term of standard deviation less food-secure than children whose mother declare to not accept/justify domestic violence.

Being born in hospital, instead of at home, a proxy of women's empowerment, has a positive and significant relationship with children's food security. The height-for-age of children born in hospital is on average 0.136 higher than those born at home, keeping constant the other variables.

Regarding the individual child's control variables, the signs of the estimated coefficients, i.e. whether it is breastfed and the child's size at birth are as expected. The breastfed - at the time of the interview - children are more likely to perform a better score of height-for-age than those who are no longer breastfed. Children who were born much smaller than average at birth have usually a significant difference from zero lower score of height-for-age than those born much larger than average.

Furthermore, results suggest that little girls are more likely to be well-nourished than boys. Similar findings were also found by Gebre et al. (2019) and Alemayehu et al. (2015), who reported that being a male significantly increases the odds of stunting. Further studies have shown that girls in Ethiopia record better food security than their male peers (Sisha, 2020; Berhane, Hoddinot, & Kumar, 2017; Haile et al., 2016; Asfaw et al., 2015). Kassie and Workie (2020) suggest as a possible explanation that childhood morbidity is higher among males rather than females.

The size of the household is assessed by two variables, the number of family members and the proportion of child under five years old. Both the household size and the proportion of children under five seems to positively affect child's food security. This result should be further investigated as it is not in line with the literature. The dataset does not provide further details to understand and study the composition of the household, which could help in clarified the nature of this association.

Further analysis accounting also for the sex of the household head is presented in Annex B. Data shows that the sex of the household is not significantly related with the child's food security. However, it might be interesting look at the effect of the interaction between sex of household's head and wealth index of the household[79]. The interaction term shows that children who belong to rich households (richer and richest quintiles of the wealth index distribution) and with a male as head of the household are more likely to be food secure than those with male head of household (same condition) but belonging to the poorest quantile of the wealth index distribution. Interestingly, children who belong to a family with woman as the head of household and belong to the poorest quantile of wealth distribution have better food security than those who are in the same quantile of wealth distribution and have a male as the head of the household. This result seems to suggest that within the poorest households, women head of the household can ensure a better food security condition to child than male head of the household, a similar conclusion was also proposed by an empirical study conducted in Malawi and Kenya (Kennedy & Peters, 1992). Better wealth conditions seem to affect more the child's food security in households led by a male, while looking within the poorest quantile of the wealth distribution the sex of the household's head seems to gain importance.

The place of residence (urban/rural) have significant effects on child's food security Living in a rural rather than an urban area seems to diminish the stunting indicator of the child by 0.177.

In the second model with individual variables we add the wealth index term in order to account for significant changes, we also decide to remove the squared terms in order to catch the effect of the years of schooling both from mother and father. This model confirms the main results we commented for the model I. Furthermore, looking at education expressed in years of school attainment, that of mother is significant at 0.01 level and affects positively the child's food security, while that of the father seems not to have significant effect on the output. The wealth index, which is the only variable we add in this second model, affects negatively and significantly (0.01) the food security of the child in case the household is among the poorer

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[79] As suggested by Milazzo and Van De Walle (2015), one of the stylised facts of development economics literature is that female headed households tend to be poorer than those with male head of household. Less access to resources and a unique pattern of income might be the reasons for this. However, the simple male-female dichotomy might be oversimplified. In fact, it would be crucial consider the households composition, the demographic evolution and the changing in social norms occurring in the country (Kennedy & Peters, 1992). Furthermore, the intrahousehold distribution of power and resources is not considered when looking at the sex of the head of the household. Beegle and Van De Walle (2019)raised some interesting points on this issue.

quintile of the distribution. While it has a positive and significant effect when the household belongs to the richest quantile of the distribution. The other variables behave as expected and as per the first model showed.

As already explained, in the second column we replace the individual variables with the relational variables. This is in order to capture if and to what extent intra-household power dynamics between the spouses affect their children's food security.

<u>Intrahousehold inequality in education</u>

Looking at the educational gap, we note that children whose parents record a situation of inequality in education or are not educated at all are more likely to be food insecure than the children whose have same level of education (at least one year).

It is worth pointing out that the situation in which both parents have no education at all describe an equality status, even if not the preferable one. The difference between the two modalities is in fact substantial and this is the reason we split the equality conditions in two different categories.

Literature, in fact, confirms that education plays a key role in social and cultural change. Therefore, we assume that partners with at least one year of education cannot be considered equivalent to couples who have no education at all. This assumption is consistent with the objectives of the research. This variable in fact serves to investigate the effects of intra-household differences on children's food security, not simply the effects of parental education. Although a situation in which both partners are not educated clearly represents a condition of equality, the uneducated status could encourage the replication of social and gender norms that are disadvantageous for women, which effectively blocks the channel of transmission from empowered women to better outcomes for child[80].

Intra-household gender inequality in education seems to worsen the status of child's food security, however the condition in which both partners are uneducated seems to be the one with the greatest negative impact on the child's food security.

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[80] We are interested in understanding whether the gender gap, as the position of woman within the family, affects the food security of children. Then, producing a binary variable that simply describes whether the child's parents are in a disparity condition or on the same education condition (and thus, for this last case combining the children whose both parents are not educated with children whose both parents, instead, have some educational level) is not considered optimal. For this reason, a further distinction among the possible situations has been preferred, as the living condition as well as the position of women within the family differ substantially, depending on the situation.

This variable could flatten the result as we only categorized the condition of inequality without verifying the effect of the actual distance between wife and husband. In Annex E we therefore propose an analysis that considers the difference in year of education between wife and husband. The results are mixed and do not delineate a univocal pattern, however also in this analysis emerges the positive and significant effect for child's food security of having parents with the same years of education (than parents with no education at all, which is the baseline). In order to study the effect of intra-household education on child's food security, it would be more appropriate a variable that account for the quality of education, this would enrich the analysis.

Intrahousehold inequality in working condition

The second relational variable intends to capture the intra-household differences in terms of working conditions, i.e. the differences between the breadwinner model versus the dual-earner familial scheme. The baseline is constituted by those couples in which none of the partners has a paid job. The estimations suggest that children whose parents are both workers are on average more likely to record a lower score of height-for-age, compared with children whose parents are not doing any paid jobs. Furthermore, the unequal situation in which the mother works and the father does not, has a negative impact on the child's food security (with 5% significance level). While the situation in which the father is working and the mother does not is not statistically significant. It may be interesting to interact the working condition with the wealth status of the household. The results presented in the Annex D suggest that the negative effect of both parents working outside of the households on child's food security compared to those child's that belong to the poorest quintile but whose parents are not working is statistically significant only for the lowest quintiles of the distribution of wealth index (poorest, poorer and middle). A further negative impact on child's food security is estimated for those mothers who are working and belong to the poorer quintile of the wealth distribution, thus showing the existence of a joint effect by household's wealth and mother's protective effect. Consistently, those households in which father is working (and mother is not) that belong to the richest quintile of the wealth distribution seem to have a positive and statistically significant effect on child's food security. Analysing the coefficient estimated for the combined effects of both the poverty of time and the wealth condition, we noticed that the effects caused by both parents working as well as only mother working in the case of poor wealth condition are quite similar.

Figure 6.8: Model I and II (Robust Standard Error)

Children's Height for Age	Individual Variables Mod I		Individual Variables Mod II		Relational Variables	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Gap in Education (both same education)						
Disparity - Woman less educated	-	-			-0.125*	0.073
Disparity - Woman more educated	-	-			-0.163**	0.080
Both no education	-	-			-0.275***	0.076
Woman schooling	0.001	0.012	0.025***	0.006	-	-
Man schooling	0.027**	0.010	0.017	0.004	-	-
Woman schooling sq	0.002**	0.001				
Man schooling sq	-0.000	0.001				
Gap in employment condition (both not work)						
Disparity - Only Woman works	-	-			-0.179**	0.082
Disparity - Only Man works	-	-			-0.035	0.041
Both working	-	-			-0.169***	0.050
Woman Currently working	-0.163***	0.037	-0.160***	0.035	-	-
Man currently Working	-0.036	0.036	-0.022	0.036	-	-
Mother's Height for Age	0.023***	0.008	0.024***	0.008	0.024***	0.008
Wealth Index (poorest)						
Poorer			-0.110***	0.046		
Middle			-0.017	0.049		
Richer			0.083*	0.051		
Richest			0.168***	0.068		
Mother's Age at first Birth	0.006	0.005	0.008*	0.004	0.011**	0.005
Women's Acceptance of Domestic Violence	-0.121***	0.033	-0.118***	0.033	-0.141***	0.034
Place of Residence (Rural)	-0.177***	0.050	-0.0478	0.064	-0.308***	0.047
Deliver in Hospital	0.136***	0.039	0.111***	0.038	0.179***	0.039
Child is breastfed	0.079**	0.033	0.080***	0.033	0.071**	0.039
Child is female	0.076***	0.032	0.081***	0.033	0.076**	0.032
Child Size at Birth (very large)						
larger than average	-0.043	0.057	-0.038	0.055	-0.039	0.057
Average	-0.152***	0.046	-0.148***	0.045	-0.148	0.046
smaller than average	-0.223***	0.064	-0.258***	0.063	-0.220***	0.064
very small	-0.300***	0.056	-0.296***	0.054	-0.299***	0.065
Family members	0.164***	0.051	0.032***	0.008	0.131***	0.050
Proportion of child<5	0.005***	0.001	0.005***	0.001	0.005***	0.001
Constant	-1.482***	0.197	-1.705***	0.192	-0.991***	0.204
R-sq		0.055		0.057		0.047
R-sq Adj		0.063		0.055		0.064
Observation		6.950		6.950		6.950

Significance level: *, **, *** indicate that statistics are significant at 10%, 5%, and 1% level of significance, respectively.

The coefficients magnitude as well as the signs and significance of the other variables included in this second model are consistent with those already commented for the first model.

The relational variables have the merit to contribute to the investigation of the effects of the intra-household power dynamics on children's food security. More explicitly, through the individual variables we can confirm that women's education enhances children's food security, which is a result definitely consistent with the literature. However, this channel of transmission could be hindered or strengthened by the relationship with her husband, who in turn is influenced by social rules and gender roles.

6.7 Concluding remarks

The empirical analysis presented in this chapter aimed at investigating whether and how the intra-household power dynamics and women's empowerment affect the food security of child under 5 years of age.

The existing empirical literature for developing countries have well emphasized the relation between the role of women's empowerment and bargaining power with the child's outcomes. Less has been said about the role of the father, and even less about the effects caused by the intra-household power dynamics.

The present analysis, therefore, intends to measure the effects of multi-dimensional intra-household gender inequalities on children's food security in Ethiopia.

Analysing DHS data for Ethiopia, two models were carried out taking into account the intra-household differences between wife and husband in education, health, economic empowerment and employment opportunities. The two models take into account variables aimed at expressing and capturing the multi-dimensional intrahousehold position of power of women, considering also variables that account for women's empowerment.

Furthermore, traits of the father are also accounted, firstly at individual level, and then those are used in order to capture the relational aspects.

The first model attempts to point out separately the effect of the father and mother characteristics on the children's food security.

The main findings are consistent with the existing literature explored in the previous chapters. The role of the mother is confirmed to play a crucial role in determining the children food security. Mother's education has a more significant effect on child's food security than

that of the father. Regarding the dimension of health, a general overview of the results confirms that a woman with more empowerment has positive effects on the food security of the child. Going into more detail, the children of women who refuse domestic violence and have given birth in hospital are more likely to be more food secure than the children of mothers who do not have these characteristics. Similarly, the children of mothers who are in a good health and nutrition condition are safer in terms of food security than those children whose mothers are not in good health. Not surprisingly, women who work outside the home have negative effects on the food security of their children. Henceforth, Ethiopian women seems to suffer from the poverty of time theorized by Blackden and Wodon (2006), which implies that it is women exclusively that fulfil the primary role of the caregiver. When this is in conflict with active labour market participation, then the child may experience a worse condition of food security. In this model neither the age of the mother at first birth, nor the working condition of the father seem to be relevant to child's food security. So, the first model contributes confirming the crucial and primary role of the mother ensuring a good food security condition to the child. On one hand it is a comforting result, as it confirms the centrality of the mother in the process of development and growth of the child. On the other hand, however, it confirms the importance of the established gender roles in Ethiopia; this is especially evident with the variable that captures the working status of women.

The second model allows to add the relational element for at least two dimensions to the analysis. We want to see whether and how the intra-household relationship between husband and wife in education and working conditions can influence the food security of children. In other words, we want to see the effects disparities and/or equalities between wife and husband have on the children's food security.

Regarding education, inequality, expressed both by the condition of wife more or less educated than her husband, seems to weaken the food security of child under five years of age. Similar result is estimated also in the case in which both parents have no education at all. This is an interesting result as it seems to suggest that educated women are more likely to expand child's capability of being well-nourished if their husband is equally educated.

We expected, as for the theoretical framework presented in chapter, that the condition of intra-household equality fosters food security condition of child. Henceforth, the data confirms the preferability in order to achieve children's food security, of having the father educated (compared to a mother with no education) rather than both parents not educated (see Annex A for a further decomposition of the variable). However, it is not possible to say much

about the situation in which the woman is more educated than her husband, due to the non-significance of the coefficient. Further analysis presented in Annex F show that the sum of years of education of mother and father is significant and positive related with the child's food security. While in this model the distribution of education between wife and husband is not statistically significant. This result surely confirms what already noted by the existing literature on the importance of education for food security, while not much can be commented about the importance of intra-household equality in education due to the non-statistical significance of the estimations.

The results seem to be a bit puzzling among the models, however we have to account for the social norms keeping the majority of women at a lower educational level than men as well as the fact that this survey is not designed to catch intra-household inequalities.

Regarding the economic opportunities, the relational variable shows that the situation in which both parents have a job outside of the household has a negative effect on children's food security. This might be caused mostly by the effect generated by the working condition of the mother, as confirmed by the estimation with the negative sign of the coefficient in case in which only the mother has a job outside of the household. This negative effect might be caused by the "poverty of time", the difficulty of finding a balance between the necessity of the child and the time dedicated to the job or it may be due to the wealth condition of the family (i.e. women may want to find a job outside of the household only in poorer conditions).

While the situation in which only the father has a job outside of the household is not statistically significant.

All the other individual variables are consistent with the results described for the first model.

Finally, the wealth index has a positive effect on children's food security: wealthier households are more likely to ensure a better food security condition to their children. The food security of children leaving in rural area is negatively affected than children leaving in urban area. However, the effect disappears when we insert the wealth index in the regression model, the effect of the place of residence seems to be captured by the wealth condition of the household.

The added value of the intra-household relational variables lies in the possibility to use an additional approach to understand the effects mother and father have on children's outcomes, keeping also into account a family dialectic that respond and is shaped by the established social norms.

Conclusions

Gender inequalities refer to the systematic inferior position of women both in private and public spheres in legal, social and political situation. The presence of inequalities negatively affects women's quality of life, hindering the achievement of their full empowerment and impeding the exercise of agency.

Despite the fact that international public policies have been oriented by international organizations and academic community to close the existing gap, gender inequalities still represent a crucial obstacle to reach human and economic development. Gender disparity in developing countries is highly rampant than compared to that present in developed countries; it results therefore worthwhile to have centred the present research on the multi-dimensional gender inequalities in developing countries. Furthermore, this work intended to focus on intra-household gender inequalities. A wide strand of literature has recognized the collective model (resources distributed equally within the household) as a theory not completely exhaustive in the analysis of intra-household dynamics. This work refers to the bargaining model aiming at account for the differences in the distribution of resources within the household. The use of this framework might represent an added value, as there are few empirical studies that try to measure the impacts of the intra-household inequalities on family's members.

At first, in order to clarify the fundamental concepts guiding the entire work, we have defined the theoretical framework we are referring to. The Capability Approach represents the most appropriate theoretical framework to study the relations between intra-household power dynamics, multi-dimensional gender inequalities and food security. The Capability Approach is a people centred approach able to emphasize women's agency and women's empowerment, which are two concepts we strongly address in this work.

Then, chapter two aimed at outlined the concept of multi-dimensional gender inequalities. Gender inequalities are multi-dimensional, in the sense that they can occur, even simultaneously, in different spheres of women's life. Therefore, we focused on the way in which specific gender inequalities in education, health and economic and employment opportunities hinder the full realization of women's empowerment, and consequently affecting the child's food security. This chapter contributes to outline a general overview on gender inequalities in developing countries, we especially privilege the literature coming from Sub-Saharan African countries. This chapter is not specific on intra-household gender inequalities, but it is useful to tools to understand the social dynamics and social norms that prevent women's

empowerment and hinder the realization of women's agency. The dimensions considered are education, health and economic and employment opportunity. These should not be considered as sealed compartments: the presence of a specific inequality in one dimension may trigger the emersion of some others in other dimensions. Inequalities and the interaction among them have a crucial role in impeding the enhancement of women's empowerment.

Along with gender inequalities, food security constitutes the second fundamental pillars of this research. Food security is a dynamic concept born around the 1950s in order to provide quick and responsive solutions to the global food crisis. It has been thought to be operational and responsive; and as it has a direct effect on people's daily life, it has been the centre of numerous academic contributions, which have further developed the concept.

Food security is based on four pillars, which are availability, access, utilization and stability; a person is food secure when all the four pillars are simultaneously achieved. The reference to the individual provides an important point of definition: we, in fact as already mentioned, reject the unitary family model which assumes that the resources are equally allocated among all the family's members. This model is based on an unrealistic assumption; family members do not negotiate the distribution of resources, while for sure they do. Amartya Sen precisely referred to the cooperative conflict, identifying clearly the dual behaviour of the members of the family: on one hand they cooperate in order to pool resources together , on the other hand, however, they are in conflict over the re-distribution.

The individual, multi-dimensional and operational nature of food security makes the concept highly measurable. There are several estimation methods, each one aimed at highlighting specific characteristics. For the purpose of the present research, it appears convenient to focus on anthropometric indicators, through which the combination of objective anthropometric measures we acquired individual and comprehensive information on the health and nutrition condition. Food security and all the related issues are widely explained in chapter three.

The research objective is the investigation of the influence that the multi-dimensional intra-household gender inequalities have on children's food security in Ethiopia; henceforth the concepts previously explored constitutes the basis to understand the women's position and the intra-household food security in Ethiopia.

Social norms and gender roles profoundly shape and define the women's position in Ethiopia, both at household and intra-household level. The figure that emerges shows a disadvantaged position of women in all the dimensions considered, such as education, health

and economic empowerment. Women, therefore, may be unable to exercise their agency and fail to trigger a process of empowerment, as they are trapped in a restrictive social framework that sharpens the established gender roles.

Institutions, therefore, behave as a filter; their actions could facilitate or hinder the transmission channels bringing the intra-household women's position of power to the enhancement of child's food security, as we can observe in the framework proposed in chapter IV.

The empirical models proposed in chapter VI estimate separately the individual and the relational effects of the multi-dimensional gender inequalities on the food security of children under five years of age. As expected, women's empowerment results as a key-point to expand the children's capability of being well-nourished, this confirm the existent literature. The primary role of mother as caregiver is crucial to ensure the food security of her child. Interestingly, the estimation about inequalities between partners have mixed effects depending on the dimensions. Equality in education seems to have a better impact on child's food security: parents with the same education (at least one year) drive to a better outcome for child than inequalities (even if the mother has more education than the father). While inequality in working conditions seems to worsen the child's food security, especially when the mother has a paid job outside the household.

The first model which includes individual variables presents results consistent with the literature. The primary role of the mother in order to enhance the child's food security through the channel of education as well as through the possibility to exercise decision over the body is confirmed.

However, the main findings remark also the pervasive role of the established social norms and gender roles, especially through looking at the dimension of economic empowerment. The estimation in this case seems to suggest, in fact, that children whose mother is involved in a paid job outside of the household is less food secure than children whose mother is not working. This result can confirm that Ethiopian women might suffer from the so-called "poverty of time" providing indirectly a picture of the gendered division of labour, which is an expression of gender roles within the household.

The second model focused on the dynamics of power within the household: using the relational variable, aiming at capturing the effects produced by the extent of intra-household differences between wife and husband on child's food security. Due to lack of data, the gender gap, *strictu sensu*, could only be measured for the education and working condition dimensions.

The main results show that children whose parents have the same level of education are more likely to be food secure than children whose parents have no education at all. Therefore, the equality (and obviously the presence) of education between parents seems to facilitate the enhancement of children's food security. Inequality instead, in any case seems to negatively affect food security. It is worthy to notice however that the cases in which woman with more education than her husband are few. This suggest that the intra-household asymmetry of education is highly present in Ethiopia, thus reflecting the presence of an actual different access to education at country-level between men and women.

Henceforth, both the models might suggest indirectly that the social norms drive and shape the behaviour and attitude of individuals and families.

The analysis of the difference in working condition between the parents show that children whose parents are both working are less food secure compared to children whose both parents are not working. Food security is also negatively affected in those cases in which only the mother has a job outside of the household. The estimations might suggest that working women disadvantaged children's food security, this figure could be due to the poverty of time as well as can be due to the wealth condition. Further analysis presented in Annexes shows that this specific negative effect is relevant only in those case in which the household belongs to the poorer, in terms of wealth, quintile of the distribution. Furthermore, the effect on child's food security is still negative also in those cases in which the mother is not working outside of the household, but the household belong to the poorer quintile of the wealth distribution, showing the importance of wealth. However, in order to separate the effects of poverty of time and wealth index would require more specific data. The mother who does not work outside the household could still have of overload of non-remunerated work within the household and therefore have the same issues as the woman who works outside the home.

Place of residence is important for children's food security: living in rural areas has a negative impact on child's food security. This effect is not anymore statistically significant when we add the wealth index in the model, as if the effects were captured by this indicator.

The wealth status of the family is always crucial. Wealthier households can guarantee more food security to children, *ceteris paribus* the other variables.

This study suggests that equality in intra-household education as well as women's empowerment are useful to expand children's capabilities. Further analysis is needed instead to clarify the effects of wealth condition and poverty of time for working women.

The limitation of this study lies mainly on the fact that the data used was not collected to specifically study the intra-household gender differences, henceforth, it was not possible to consider appropriate variables and indicators to assess the intra-household power dynamics and the established social norms.

In addition, DHS are not intended to be collected as a time series, henceforth, we just propose a static photograph of the situation in Ethiopia. Thus, the temporal dynamics is missing.

However, this research contributes to opening the space for the analysis of intra-household gender gap, which is not adequately empirically investigated in the literature.

The last considerations attain to the potential extension and reproducibility of the present empirical analysis. Firstly, it would be desirable to include variables related to the social norms, aimed at capturing the dynamics that differently affect the regions and areas.

The study proposes a methodology potentially applicable to different countries, so it would be interesting to investigate the transmission channels of multiple dimensions of gender gap among different countries, making comparisons.

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Annex A

OLS regression analysis with the educational inequality further decomposed.

Children's Height for Age	Coef.	Std. Err.
Inequality in Education		
Woman no Education, Husband at least 1 year	0.158**	0.082
Disparity - Woman less educated	0.081	0.110
Husband no education, Wife at least 1 year	-0.110	0.110
Disparity – Man less educated	-0.070	0.122
Both same years of education	0.041**	0.145
Inequality in employment condition		
Disparity - Only Woman works	-0.113	0.115
Disparity - Only Man works	0.008	0.060
Both work	-0.147**	0.071
Mother's Height for Age	0.222***	0.024
Women's Acceptance of Domestic Violence	-0.111**	0.048
Wealth Index		
poorer	0.162**	0.071
middle	0.178***	0.070
richer	0.236***	0.071
richest	0.415***	0.104
Deliver in Hospital	-0.166***	0.057
Child is breastfed	0.089*	0.050
Child is female	0.171***	0.046
Child Size at Birth		
larger than average	0.094	0.083
average	-0.064	0.067
smaller than average	-0.107	0.093
very small	-0.228***	0.083
Family members	0.108**	0.056
Constant	-2.092***	0.303

Annex B

OLS Regression analysis with the sex of the head of the household (the baseline is the head of the household is a female).

```
Linear regression                              Number of obs   =      6,950
                                               F(20, 6929)     =      21.92
                                               Prob > F        =     0.0000
                                               R-squared       =     0.0541
                                               Root MSE        =     1.3064
```

stunting	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
moth_edu	-.0006799	.0126083	-0.05	0.957	-.0253961	.0240362
fath_edu	.0277154	.0105049	2.64	0.008	.0071225	.0483082
m_edu_2	-.0006691	.0007745	-0.86	0.388	-.0021874	.0008491
w_edu_2	.002333	.0009753	2.39	0.017	.0004211	.0042449
moth_work	-.1649297	.0366206	-4.50	0.000	-.2367173	-.0931421
fath_work	-.0344808	.0371473	-0.93	0.353	-.107301	.0383393
moth_stunt	.0227208	.008013	2.84	0.005	.0070128	.0384287
age_1_birth	.0054504	.0047638	1.14	0.253	-.0038881	.0147889
accep_viol	-.1221506	.033498	-3.65	0.000	-.1878169	-.0564842
rural						
rural	-.1753293	.0500563	-3.50	0.000	-.2734551	-.0772035
deliver_hosp	.1375175	.0394365	3.49	0.000	.0602099	.214825
breastfeed	.0798055	.0344325	2.32	0.020	.0123073	.1473038
child_f	.0763113	.0315236	2.42	0.016	.0145154	.1381072
size_child						
larger than average	-.0436756	.0565443	-0.77	0.440	-.1545198	.0671685
average	-.1522982	.0460726	-3.31	0.001	-.2426145	-.0619818
smaller than average	-.2236666	.0643356	-3.48	0.001	-.349784	-.0975492
very small	-.3017766	.0558955	-5.40	0.000	-.4113489	-.1922042
hh_size	.1685239	.0514191	3.28	0.001	.0677267	.2693212
child_prop	.0049647	.0014056	3.53	0.000	.0022093	.0077201
hh_fem	.0516221	.0468947	1.10	0.271	-.0403059	.1435502
_cons	-1.731757	.1851715	-9.35	0.000	-2.09475	-1.368764

OLS Regression analysis with the interaction terms between the sex of the head of the household and wealth index (the baseline is the head of the household is a female # poorest quintile).

```
Linear regression                               Number of obs   =      6,950
                                                F(28, 6921)     =      16.64
                                                Prob > F        =     0.0000
                                                R-squared       =     0.0575
                                                Root MSE        =     1.3048
```

stunting	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
moth_edu	-.0039794	.0126464	-0.31	0.753	-.0287703	.0208115
fath_edu	.0238442	.0105943	2.25	0.024	.0030761	.0446123
m_edu_2	-.0005258	.0007764	-0.68	0.498	-.0020478	.0009963
w_edu_2	.0023743	.0009767	2.43	0.015	.0004597	.0042889
moth_work	-.1668295	.0366638	-4.55	0.000	-.2387018	-.0949572
fath_work	-.0429732	.0372203	-1.15	0.248	-.1159365	.0299901
moth_stunt	.0226917	.0079881	2.84	0.005	.0070325	.0383509
age_1_birth	.0050789	.0047569	1.07	0.286	-.004246	.0144038
accep_viol	-.1240969	.0334918	-3.71	0.000	-.189751	-.0584428
rural						
rural	-.0591985	.0654234	-0.90	0.366	-.1874485	.0690515
deliver_hosp	.1265377	.0398303	3.18	0.001	.0484581	.2046173
breastfeed	.0804582	.0344596	2.33	0.020	.0129068	.1480096
child_f	.0757079	.0315268	2.40	0.016	.0139057	.1375102
size_child						
larger than average	-.0393275	.0565235	-0.70	0.487	-.1501308	.0714758
average	-.1511	.0460596	-3.28	0.001	-.241391	-.060809
smaller than average	-.2186984	.0645358	-3.39	0.001	-.3452084	-.0921883
very small	-.3048576	.0559402	-5.45	0.000	-.4145176	-.1951976
hh_fem#wealth_index						
male#poorer	-.072539	.0506153	-1.43	0.152	-.1717604	.0266825
male#middle	.0326214	.052738	0.62	0.536	-.0707612	.1360041
male#richer	.1121736	.055825	2.01	0.045	.0027396	.2216077
male#richest	.2235218	.0728139	3.07	0.002	.0807843	.3662593
female#poorest	.1632631	.0736297	2.22	0.027	.0189264	.3075999
female#poorer	-.103015	.1238392	-0.83	0.406	-.3457778	.1397478
female#middle	-.0291518	.1402786	-0.21	0.835	-.3041408	.2458372
female#richer	.1710345	.1393844	1.23	0.220	-.1022016	.4442706
female#richest	.1299403	.1016298	1.28	0.201	-.0692853	.329166
hh_size	.1657812	.05155	3.22	0.001	.0647274	.2668351
child_prop	.0054163	.0014246	3.80	0.000	.0026238	.0082089
_cons	-1.802588	.1838536	-9.80	0.000	-2.162998	-1.442179

Annex C

OLS Regression analysis with interaction terms between mother working condition and wealth index (baseline is mother is not working # poorest quintile).

```
Linear regression                               Number of obs   =      6,950
                                                F(27, 6922)     =      16.92
                                                Prob > F        =     0.0000
                                                R-squared       =     0.0567
                                                Root MSE        =     1.3052
```

stunting	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
moth_edu	-.0027304	.012683	-0.22	0.830	-.0275931	.0221322
fath_edu	.0228322	.0105754	2.16	0.031	.0021011	.0435632
m_edu_2	-.0004376	.0007753	-0.56	0.572	-.0019574	.0010821
w_edu_2	.0022126	.0009904	2.23	0.026	.0002711	.004154
moth_work#wealth_index						
no#poorer	-.1076121	.054026	-1.99	0.046	-.2135196	-.0017046
no#middle	-.0089003	.0568661	-0.16	0.876	-.1203754	.1025747
no#richer	.0541924	.0604724	0.90	0.370	-.0643519	.1727368
no#richest	.1537377	.0760767	2.02	0.043	.004604	.3028713
yes#poorest	-.2102905	.0724759	-2.90	0.004	-.3523654	-.0682155
yes#poorer	-.3088271	.0804971	-3.84	0.000	-.4666261	-.151028
yes#middle	-.1899046	.0853211	-2.23	0.026	-.3571601	-.022649
yes#richer	-.0337579	.0876549	-0.39	0.700	-.2055884	.1380726
yes#richest	.0287361	.0838693	0.34	0.732	-.1356735	.1931457
fath_work	-.0426344	.0372163	-1.15	0.252	-.1155897	.0303208
moth_stunt	.0227782	.0080394	2.83	0.005	.0070184	.0385379
age_1_birth	.0053073	.0047543	1.12	0.264	-.0040126	.0146273
accep_viol	-.1214207	.033481	-3.63	0.000	-.1870537	-.0557877
rural						
rural	-.0585824	.0650839	-0.90	0.368	-.1861669	.069002
deliver_hosp	.1240426	.0397575	3.12	0.002	.0461058	.2019795
breastfeed	.0823297	.0345065	2.39	0.017	.0146865	.149973
child_f	.0730289	.0315198	2.32	0.021	.0112405	.1348173
size_child						
larger than average	-.0413264	.0565133	-0.73	0.465	-.1521098	.0694569
average	-.1511595	.0460096	-3.29	0.001	-.2413524	-.0609665
smaller than average	-.2157739	.0643624	-3.35	0.001	-.341944	-.0896037
very small	-.3017978	.0559285	-5.40	0.000	-.4114349	-.1921607
hh_size	.1590021	.0514202	3.09	0.002	.0582028	.2598014
child_prop	.0054873	.0014189	3.87	0.000	.0027058	.0082688
_cons	-1.755401	.1833831	-9.57	0.000	-2.114888	-1.395914

.

Annex D

OLS regression analysis with interaction terms between intrahousehold working inequality and wealth index (baseline is both not working # poorest quintile).

Source	SS	df	MS			
Model	648.608842	35	18.5316812			
Residual	11852.7939	6,914	1.71431789			
Total	12501.4028	6,949	1.79902184			

Number of obs = 6,950
F(35, 6914) = 10.81
Prob > F = 0.0000
R-squared = 0.0519
Adj R-squared = 0.0471
Root MSE = 1.3093

stunting	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
edu_gap						
both_not_edu	-.2147552	.0793858	-2.71	0.007	-.3703758	-.0591347
wife_less_husb	-.0935091	.0764009	-1.22	0.221	-.2432783	.0562602
husb_less_wife	-.1341634	.083622	-1.60	0.109	-.2980881	.0297613
work_gap						
only_moth_work	-.2046306	.1358498	-1.51	0.132	-.470938	.0616767
only_fath_work	-.0372569	.0630714	-0.59	0.555	-.1608963	.0863825
both_work	-.2533044	.0861486	-2.94	0.003	-.4221821	-.0844267
wealth_index						
poorer	-.1564528	.0935798	-1.67	0.095	-.3398979	.0269924
middle	.0794237	.1041001	0.76	0.446	-.1246445	.283492
richer	.0543493	.120995	0.45	0.653	-.1828382	.2915367
richest	.1898627	.1280887	1.48	0.138	-.0612306	.4409559
work_gap#wealth_index						
only_moth_work#poorer	.0133497	.2266835	0.06	0.953	-.4310195	.4577189
only_moth_work#middle	-.0642124	.2482188	-0.26	0.796	-.5507974	.4223727
only_moth_work#richer	.0997995	.2925514	0.34	0.733	-.4736911	.6732902
only_moth_work#richest	.1896243	.2461881	0.77	0.441	-.2929801	.6722287
only_fath_work#poorer	.0512492	.1124217	0.46	0.649	-.169132	.2716303
only_fath_work#middle	-.134527	.1230436	-1.09	0.274	-.3757303	.1066763
only_fath_work#richer	.0052812	.1390805	0.04	0.970	-.2673593	.2779218
only_fath_work#richest	.0914174	.1397352	0.65	0.513	-.1825065	.3653413
both_work#poorer	.0572387	.1421316	0.40	0.687	-.2213829	.3358602
both_work#middle	-.0748982	.1547091	-0.48	0.628	-.3781755	.2283791
both_work#richer	.1509382	.1625465	0.93	0.353	-.167703	.4695793
both_work#richest	.2601739	.155168	1.68	0.094	-.0440031	.5643508
moth_stunt	.0236426	.0046657	5.07	0.000	.0144965	.0327887
age_1_birth	.0098694	.0046615	2.12	0.034	.0007314	.0190073
accep_viol	-.1414615	.0329488	-4.29	0.000	-.2060513	-.0768717
rural	.2400124	.0903911	2.66	0.008	.0628181	.4172067
deliver_hosp	.1664494	.0400458	4.16	0.000	.0879475	.2449514
breastfeed	.0732448	.0348032	2.10	0.035	.0050198	.1414698
child_f	.0722602	.0316173	2.29	0.022	.0102806	.1342399
size_child						
larger than average	-.0362199	.0570217	-0.64	0.525	-.148	.0755602
average	-.1480582	.0462972	-3.20	0.001	-.2388148	-.0573015
smaller than average	-.2108183	.0640309	-3.29	0.001	-.3363385	-.085298
very small	-.3036454	.0556102	-5.46	0.000	-.4126585	-.1946322
hh_size	.1318218	.0505005	2.61	0.009	.0328253	.2308183
child_prop	.0057255	.0014087	4.06	0.000	.002964	.008487
_cons	-1.632509	.1845137	-8.85	0.000	-1.994212	-1.270805

```
Linear regression                      Number of obs   =      6,950
                                       F(35, 6914)     =      11.16
                                       Prob > F        =     0.0000
                                       R-squared       =     0.0513
                                       Root MSE        =     1.3097
```

stunting	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
edu_qual						
0	-.2283147	.0765579	-2.98	0.003	-.3783918	-.0782376
1	-.1035974	.0735024	-1.41	0.159	-.2476847	.04049
2	-.1434647	.0801993	-1.79	0.074	-.3006799	.0137505
gap_work#wealth_index						
both not work#poorer	-.1528739	.0946511	-1.62	0.106	-.3384191	.0326712
both not work#middle	.0785411	.1053315	0.75	0.456	-.1279411	.2850232
both not work#richer	.0525135	.1117152	0.47	0.638	-.1664826	.2715096
both not work#richest	.1136222	.132337	0.86	0.391	-.145799	.3730433
disparity_only mother works#poorest	-.2060804	.1495739	-1.38	0.168	-.4992912	.0871305
disparity_only mother works#poorer	-.3450362	.1514705	-2.28	0.023	-.6419648	-.0481076
disparity_only mother works#middle	-.1952899	.1837335	-1.06	0.288	-.555464	.1648843
disparity_only mother works#richer	-.055195	.2610335	-0.21	0.833	-.5669008	.4565109
disparity_only mother works#richest	.0948963	.171484	0.55	0.580	-.241265	.4310577
disparity_only father works#poorest	-.0365036	.0657718	-0.56	0.579	-.1654366	.0924294
disparity_only father works#poorer	-.1420147	.075069	-1.89	0.059	-.289173	.0051436
disparity_only father works#middle	-.0927158	.0764565	-1.21	0.225	-.2425941	.0571625
disparity_only father works#richer	.0167854	.0801369	0.21	0.834	-.1403075	.1738783
disparity_only father works#richest	.180039	.0897919	2.01	0.045	.0040192	.3560587
both work#poorest	-.2566794	.0913483	-2.81	0.005	-.4357501	-.0776087
both work#poorer	-.347474	.1006598	-3.45	0.001	-.5447982	-.1501498
both work#middle	-.2477115	.1033663	-2.40	0.017	-.4503411	-.0450818
both work#richer	-.0522037	.1013378	-0.52	0.606	-.2508569	.1464495
both work#richest	.1180205	.0950574	1.24	0.214	-.0683211	.3043621
moth_stunt	.0236355	.0083405	2.83	0.005	.0072855	.0399856
age_1_birth	.009918	.0047277	2.10	0.036	.0006504	.0191857
accep_viol	-.1360943	.033589	-4.05	0.000	-.201939	-.0702496
rural	-.11885	.0647676	-1.84	0.067	-.2458144	.0081145
deliver_hosp	.1569762	.0396552	3.96	0.000	.0792399	.2347125
breastfeed	.0764992	.0346182	2.21	0.027	.0086369	.1443616
child_f	.0718132	.0316551	2.27	0.023	.0097594	.1338669
size_child						
larger than average	-.0378724	.0568945	-0.67	0.506	-.149403	.0736582
average	-.149397	.0463854	-3.22	0.001	-.2403266	-.0584673
smaller than average	-.2131237	.0647333	-3.29	0.001	-.3400208	-.0862266
very small	-.3038285	.0563041	-5.40	0.000	-.4142019	-.1934552
hh_size	.1329415	.050883	2.61	0.009	.0331952	.2326877
child_prop	.0054585	.0014246	3.83	0.000	.0026659	.008251
_cons	-1.381197	.234034	-5.90	0.000	-1.839975	-.9224183

Annex E

Regression analysis considering the intra-household education inequality as the difference between mother and father

```
Linear regression                                    Number of obs    =      6,950
                                                     F(46, 6903)      =       8.74
                                                     Prob > F         =     0.0000
                                                     R-squared        =     0.0516
                                                     Root MSE         =     1.3106

                     |                Robust
            stunting |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------------+--------------------------------------------------------------
             edu_gap |
           fath +17  |  1.311343   1.063657    1.23   0.218    -.7737511    3.396438
           fath +16  | -.7101187   .3297751   -2.15   0.031    -1.356579    -.063658
           fath +15  |  .1512661   .1753286    0.86   0.388    -.1924319    .4949641
           fath +14  |   1.00502   .3085133    3.26   0.001     .4002394    1.609801
           fath +13  |   1.08776   .7508441    1.45   0.147    -.3841257    2.559645
           fath +12  |  .4138548    .168743    2.45   0.014     .0830666     .744643
           fath +11  |  .2254195   .2556228    0.88   0.378    -.2756798    .7265188
           fath +10  |  .0732666   .1469036    0.50   0.618    -.2147097    .3612428
            fath +9  |  .0959964   .1667641    0.58   0.565    -.2309126    .4229054
            fath +8  |  .2046422   .0971723    2.11   0.035     .0141546    .3951298
            fath +7  |  .1666883   .1005128    1.66   0.097    -.0303478    .3637243
            fath +6  |  .1382723   .0840937    1.64   0.100    -.0265773    .3031219
            fath +5  |  .2018414    .077915    2.59   0.010     .0491039    .3545788
            fath +4  |   .122704   .0690898    1.78   0.076    -.0127333    .2581413
            fath +3  |  .1737462   .0687791    2.53   0.012      .038918    .3085743
            fath +2  | -.0009732   .0719176   -0.01   0.989    -.1419538    .1400075
            fath +1  |  .2396503   .0839691    2.85   0.004     .0750451    .4042556
           fath=moth |  .2793828   .0758966    3.68   0.000     .1306022    .4281634
            moth +1  |  .1535156   .0998831    1.54   0.124    -.0422859    .3493171
            moth +2  |  .0006237   .0901764    0.01   0.994    -.1761498    .1773973
            moth +3  |  .1494207   .0984744    1.52   0.129    -.0436195    .3424608
            moth +4  | -.0228523   .1315329   -0.17   0.862    -.2806973    .2349927
            moth +5  |  .3977854   .1427978    2.79   0.005     .1178578     .677713
            moth +6  | -.0566627   .1763876   -0.32   0.748    -.4024367    .2891112
            moth +7  |  .0439961    .189379    0.23   0.816     -.327245    .4152372
            moth +8  | -.0408697   .3104842   -0.13   0.895    -.6495141    .5677748
            moth +9  |  .4524458   .3239447    1.40   0.163    -.1825855    1.087477
           moth +10  |  .5579255   .2314108    2.41   0.016     .1042891    1.011562
           moth +12  |  1.224759   .6725966    1.82   0.069    -.0937372    2.543255
           moth +15  |  .5984249   .9565928    0.63   0.532    -1.276791    2.473641
                     |
            gap_work |
disparity_only moth..| -.1745826   .0826945   -2.11   0.035    -.3366893   -.0124759
disparity_only fath..| -.0299009   .0417972   -0.72   0.474    -.1118363    .0520344
           both work |  -.163147   .0499513   -3.27   0.001    -.2610668   -.0652271
                     |
          moth_stunt |  .0230787   .0082545    2.80   0.005     .0068972    .0392601
         age_1_birth |   .010956   .0047404    2.31   0.021     .0016633    .0202486
          accep_viol | -.1423084   .0336202   -4.23   0.000    -.2082144   -.0764025
               rural | -.2927702   .0469139   -6.24   0.000    -.3847358   -.2008046
        deliver_hosp |  .1763692   .0391395    4.51   0.000     .0996437    .2530947
           breastfeed|  .0728814   .0345408    2.11   0.035     .0051709     .140592
             child_f |  .0800621   .0317255    2.52   0.012     .0178703    .1422539
                     |
          size_child |
 larger than average | -.0434202   .0570527   -0.76   0.447    -.1552611    .0684206
             average | -.1550087   .0464582   -3.34   0.001     -.246081   -.0639364
smaller than average |  -.230651   .0646054   -3.57   0.000    -.3572975   -.1040046
          very small | -.3031689   .0562947   -5.39   0.000    -.4135239   -.1928139
                     |
             hh_size |   .124448   .0509408    2.44   0.015     .0245884    .2243076
          child_prop |  .0047117   .0014027    3.36   0.001     .0019619    .0074614
               _cons | -1.282907   .1947519   -6.59   0.000    -1.664681   -.9011337
```

Annex F

Regression analysis considering the intra-household education inequality as the difference between mother and father and the sum of year of education of mother and father

Source	SS	df	MS		
Model	706.08372	24	29.420155		
Residual	11795.319	6,925	1.70329517		
Total	12501.4028	6,949	1.79902184		

Number of obs = 6,950
F(24, 6925) = 17.27
Prob > F = 0.0000
R-squared = 0.0565
Adj R-squared = 0.0532
Root MSE = 1.3051

stunting	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
edu_sum	.0211634	.0033235	6.37	0.000	.0146484	.0276784
edu_gap						
both_not_edu	.039983	.0889968	0.45	0.653	-.1344779	.2144439
wife_less_husb	-.0066325	.0774746	-0.09	0.932	-.1585066	.1452415
husb_less_wife	-.0076432	.085715	-0.09	0.929	-.175671	.1603845
work_gap						
only_moth_work	-.1773771	.0819127	-2.17	0.030	-.3379512	-.016803
only_fath_work	-.0488675	.0412435	-1.18	0.236	-.1297175	.0319825
both_work	-.1980492	.0496455	-3.99	0.000	-.2953696	-.1007288
wealth_index						
poorer	-.1078705	.0461653	-2.34	0.019	-.1983686	-.0173725
middle	-.0004563	.0501264	-0.01	0.993	-.0987195	.0978068
richer	.0886736	.0532188	1.67	0.096	-.0156515	.1929987
richest	.2120506	.0578454	3.67	0.000	.0986558	.3254453
moth_stunt	.0225011	.0046477	4.84	0.000	.0133902	.031612
age_1_birth	.0062971	.0046728	1.35	0.178	-.0028629	.0154572
accep_viol	-.123548	.0329484	-3.75	0.000	-.1881369	-.0589591
rural	.1912236	.0900896	2.12	0.034	.0146203	.3678269
deliver_hosp	.1255622	.0403845	3.11	0.002	.0463962	.2047283
breastfeed	.0775645	.0346372	2.24	0.025	.009665	.1454639
child_f	.0728679	.0314875	2.31	0.021	.0111427	.1345931
size_child						
larger than average	-.0428059	.0568098	-0.75	0.451	-.1541706	.0685588
average	-.1505923	.0461004	-3.27	0.001	-.2409633	-.0602213
smaller than average	-.2143275	.063768	-3.36	0.001	-.3393323	-.0893228
very small	-.2999826	.0553519	-5.42	0.000	-.4084894	-.1914758
hh_size	.1673067	.0505836	3.31	0.001	.0681473	.266466
child_prop	.0056476	.0014018	4.03	0.000	.0028996	.0083956
_cons	-1.888471	.184857	-10.22	0.000	-2.250848	-1.526095