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Analysis of Intra-Household Allocation; Implications for the Nutritional Well-being of Women and Children

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submitted

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List of abbreviations

ANC	African National Congress
BMI	Body Mass Index
CEDAW	The Convention on the Elimination of all Forms of Discrimination Against Women
CLARA	Communal Land Rights Act
FAO	Food and Agriculture organisation
GAAP	Gender Agriculture and Asset Project
HAZ	Height-for Age Z-score
HHS	Household Hunger Scale
ICESCR	International Covenant on Economic, Social and Cultural Rights
IFSS	Integrated Food Security Strategy
INP	Integrated Nutrition Programme
OLS	Ordinary Least Squares
RAI	Relative Autonomy Index
RBA	Right Based Approach
SAHRC	South African Human Rights Commission
SDG	Sustainable Development Goals
WAZ	Weight-for Age Z score
WDDS	Women Dietary Diversity Score
WEAI	Women Empowerment in Agriculture Index
WHO	World Health Organisation
WHZ	Weight-for -height Z-score

Chapter 1: Introduction and summary

1.1 Background

The nutritional well-being of individual people is largely a function of decisions made within households. Premised on this basic assumption, efforts of understanding the nature of differences in allocation of resources within household, as well as their subsequent outcomes have over the years intensified. The analysis of allocation of resources, including time and money within households is important for development policy processes, whose main aim is to improve the overall well-being of people. The household thus remains an important analytical focus, for the simple reason that among traditional communities, it serves as an arena where production, consumption, as well as resource allocation decisions are taken (Fraad, Resnick and Wolff,1989 quoted by Folbre and Hartmann, 1989). Within the context of food security policy and programming, an analysis of these dynamics matters for a number of reasons.

Firstly, it has since been proven that intra-household dynamics are largely influential in determining the nutritional well-being of individual women and children; both groups of which are presumed to be vulnerable. The design of interventions aiming at improving the nutritional well-being of individual members of household may benefit from an enhanced understanding of intra-household resource distribution patterns which is useful in predicting consequences of food security interventions. Secondly for more effective targeting of interventions, and distributional analysis, it is important to firstly determine who is hungry and who is not, and to locate them. In that regard, the importance of measures of individual nutritional well-being, cannot be over emphasized, particularly in locating hungry individuals within households. Furthermore, the individual level measures of nutritional well-being are useful in determining whether within the same households, there is a systematic variation in nutritional well-being by sex, age or other aspects and/or basis on which differences in allocation may occur, such as relationship to household head for example. An understanding of these dimensions is key in ensuring that development practice does not only impact on the individuals that need the intervention most (household members presumed to be vulnerable), it also ensures that such interventions do not perpetuate existing intra-household inequalities. Finally, an analysis of intra-household dynamics brings to light the key determinants of the variations in well-being outcomes, thus guiding how policy instruments could be directed in response.

In light of the above, intra-household dynamics in well-being have over the years received attention among scholars. With a proliferation of household analytical models that attempt to address the arguments as indicated above, a more sharpened insight into these dynamics and their impact on individual people's well-being starts to emerge. This development can be attributed to two strands of literature that this dissertation has drawn upon, namely, the neo classical micro-economics literature and the feminist literature, both of which have used the critique of the unitary or unified model as a point of departure. The unitary model of households, dominating development practise in many developing countries, hinges on the assumption that households are groups of individuals who have the same preferences and fully pool their resources (Haddad et al., 1997; Berhman, 1997).

An increasing amount of literature contradicts the assumptions of common preferences, joint resources, and joint welfare that are central to the unitary model. In critiquing the unitary model of household analytical approach, the neoclassical micro-economics' contribution to the household economy debate has given an impetus to analysis that focuses on individuals that compose of households. Elizabeth Katz (1997) describes this paradigm as a "deconstruction and reconstruction of households" (Katz, 1997:3) that enable an analysis that disentangles the impact of household resources from that of the heterogeneity in individual members' preferences (being a function of one's bargaining power) on well-being outcomes. The 'individualistic' approach therefore casts away the notion of joint-welfare that claim that household members experience deprivation the same way. Thus, within the food security context, this so called "microeconomics of households" (Katz, 1997:3) will enable an intra-household analysis that accounts for the variation in decision-makers` preferences and their role in determining the relative deprivation of one gender-age cohort group over another. The most widely cited literature in this regard is McElroy and Horney's (1981;1987) Cooperative bargaining models, as well as Lundbeck and Pollack (1993) Non- cooperative models, both of which rely on the notion of bargaining as a form of decision-making, and the well-being outcome as a result of the bargaining.

The feminist discourse on the other hand has extended the household economy theory that places emphasis not only on the individualistic nature of household members, but also on their gendered nature. In other words, an analysis that integrates the feminist aspect will take into consideration the social construct of being a man or a woman for individual members of households, as well as how this impinges on intra-household decision making processes and well-being outcomes (Agarwal, 1997; Katz, 1997). Empirically and theoretically, this can be

viewed as a recognition of a heterogeneity in preferences and power by gender, which has a bearing on intra-household resource allocation patterns, and ultimately the well-being outcomes of respective household members. Finally, the feminist scholars bring to our attention the institutional content of household decision-making processes; namely the rules, norms, and traditional belief systems that govern decision making in relation to resource allocation. How these institutional elements of traditional households impinge on nutritional well-being outcomes is of paramount importance to distributional analysis of food security.

In view of the above arguments that support an intrahousehold analytical approach over a unified framework approach; this Dissertation is a cumulative work that constitutes four contributions, which reflect on the nutritional well- being of women and children, firstly from a human rights perspective, and secondly, from an empowerment perspective. The rationale for pursuing this work is outlined below. Also included in the next section is the summaries of the four essays that make this dissertation. The rest of the Dissertation is arranged as follows; the first contribution in Chapter 2 uses South Africa as a case study and will argue that rural women's right to access food, as stipulated in the Constitution, is not realizable given the inadequacies of this approach in enabling an analysis of intra-household dynamics. The second contribution in Chapter 3 follows, and it makes use of data collected in the Northern part of Ghana, to shed light on evidence of inequalities in nutritional well-being of women relative to other members of the households. Chapter 4, being the third contribution will move towards providing evidence of the role of unequal power relation in reproducing and sustaining the relative deprivation of women. Lastly, in the last contribution (Chapter 5), the analytical focus shifts to the nutritional well-being of children of ages 0-60 months. Here the focus is on determining which empowerment measure based on the "who" or the "why" of women's decision-making power is relevant in determining children's nutritional outcomes.

1.2 Making a Case for Intrahousehold Analysis in Developing Countries

In adopting the Sustainable Development Goal number 2 (SDG2), the international community once again reaffirms its commitment towards ending hunger and poverty. The SDG agenda sets an ambitious goal of ensuring a more equitable and sustainable development that puts people at its centre and is explicitly grounded in all human rights, where "no one is left behind." The notion of "*zero hunger*" has of late been a dominant topic among international scholars and practitioners. Prior to the adoption of the SDGs the Food and Agriculture Organisation (UN-

FAO) council adopted the 2004 Voluntary Guidelines on the implementation of *The-Right-to-Food* by member countries and other stakeholders. The human rights approach was meant to shape policy towards eliminating inequalities and inequitable distribution of food related resources among individual people. Thus, the 2030 Agenda of the achievement of SDG2 provides a pathway through which a progressive realization of the right to food can be achieved. With that in mind, chapter two of this dissertation demonstrates, theoretically, how the right to food for rural women cannot be realised without considering intra-household dynamics.

The international community has since embarked on putting into practise measures towards the realization of *zero hunger*, that include policy making and advocacy, as well as the monitoring of interventions. As a concept for analysis, hunger is a uniquely individual phenomenon, that is experienced by individual people; yet decision-making and policy processes that affect this key development outcome, are often done at household level premised on the assumption of the unitary model of household economy analysis as indicated in the previous section. Consequently, there has been a neglect of individual level nutritional well-being in distributional analysis of food security intervention, and this has led to ambiguities in determining who is hungry and where they are located. Furthermore, with increasing evidence of inequalities in experiences of food crisis between male and female members of households, failure to account for these differential vulnerabilities in food security programming and practise may lead to underestimations of the extent of food crisis, as demonstrated in the findings of chapter 3.

A key constraint for analysis that link intra-household dynamics to individual-level nutritional well-being remains the lack of nationally representative data that accounts for variation in consumption of individuals within the same households. Disaggregated data according to different gender-age cohort groups, is important in enabling governments and development practitioners to build on in developing well targeted nutrition enhancing interventions. Food related data at national level is rarely disaggregated by gender, and where it is, it only considers heads of households, i.e., women-headed households and men-headed households, mostly with the assumption that women-headed households are worse off. Literature however indicates the shortcomings of this approach as it renders women who reside in male-headed households invisible (Doss, 2013). Other studies further highlight that woman in male headed households are just as vulnerable, if not worse, as was observed in some parts of South Africa (Jacobs et al., 2011).

Furthermore, the need to disentangle the impacts of gender-based power asymmetries and household economic status on nutritional outcomes, has got implications for the kind of data needed to enable such analysis. Not only is individual-level data on economic parameters of empowerment important in this regard- also important is mostly qualitative data that determine the gender specific socio-cultural and institutional factors that either constrain or enhance access to and control of resources for men and women. Recent developments in the acquisition of data are quite promising in this regard, for example the Gender Asset Gap project (GAAP), established in 2009, not only collected gender-disaggregated data on ownership of assets, but the initiative also collected data that enables an analysis of the socio-economic and legal institutional factors that shape the gendered pattern of resource ownership (Doss et.al., 2014). The Women's Empowerment in Agriculture Index (WEAI) survey programme, implemented in several African and Asian countries, also provides data that link different aspects of women empowerment (5 domains) to individual level nutrition measures. The WEAI database is more compelling for our study, as demonstrated in Chapter 4 of the dissertation. The data enables an analysis that distinguishes women empowerment measures that enhances women's agency as mothers and/or wives versus those that enhances women's ability to make claims regarding well-being outcomes that are of benefit to them.

Similarly, analytical approaches must take into cognisance the fact that intra-household dynamics do not occur in isolation (Agarwal, 1997). The socio-cultural and institutional environment within which household decision-making processes are imbedded play a role in mediating the impact of empowerment parameters in our outcomes of interest. As illustration, consider, for example, a woman located within a Muslim community in West Africa, who is constrained by social norms to exercise agency over their own earnings or their mobility, as opposed to a woman located in a more egalitarian society- say in Southern Africa. Household economy models would classify both women as empowered based on the level of their income; when in fact they possess unequal capacity to convert the earnings as a resource into ability to make strategic life choices, which is central to the notion of empowerment.

A source of critique for household economy models has been its failure to integrate these socio-cultural factors within the realm of economic analysis specifications. In response to this critique, some have drawn from anthropological literature in an attempt to strengthen the empirical analysis of intra-household allocations. Through the work of Elizabeth Katz (1997) and others, for example Gittelsohn and Mookherji (1997), we are introduced to a theoretical and empirical convergence of the two fields of Anthropology and Economics in the study of

intra-household allocations. Consequently, efforts of developing empowerment indicators that integrate the socio-cultural factors, also referred to as the institutional features of households (Katz, 1997); are intensifying. The Relative Autonomy Index (RAI) used for analysis in Chapter 5 in relation to children's nutritional outcomes; is one such indicator invoked in an attempt to measure the extent to which decision-making processes are shaped by prevailing norms and belief systems, than they are out of people's personal convictions.

1.3 Summary of Dissertation

Essay 1; Access to food for rural women in South Africa; a Right or a Privilege?

Given the recognition of right to access adequate food in the South African constitution, the study, which is a desk top review, reflects on rural women's ability to access food, through the lens of a rights- based approach. The study addresses an important question on the right to food for rural women: as to whether these claims that have been legitimized by social structures and norms are realizable. The study argues that the rights language as adopted by the South African government, is inadequate as it does not enable an understanding of intra-household dynamics that drive women's capabilities in relation to their ability to access food. The article concludes that rural women's claims have indeed been reduced to privileges, where sustained food security is concerned and this is attributed largely to: (i) a food policy and legislative environment, including the land reform process; (ii) their vulnerability context; and (iii) the nature of their access to a social protection system that does not enable long-term movement out of poverty. The article further engages with the conceptualization of food security, by drawing from the literature that critiques it for its failure to address the participation and empowerment of small-scale farmers, whose livelihoods are greatly dependent on the country's food system.

Essay 2; Is Women's Undernutrition synonymous with Household food Insufficiency?

In examining the performance of nutritional outcomes at household level as a proxy for women's nutritional outcomes, the study attempts to determine whether individual household members experience food deprivation the same way, given a certain level of budgetary constraints. The study makes use of different economic analysis tools, the results of which demonstrate that treating households as if they are "black boxes" can be misleading for development practice.

The study adopts concentration curves and indices, as well as joint and conditional probabilities to establish a pattern of distribution on malnourished women across different levels of household food (in)security. Our results show that though a larger proportion of malnourished women are located within food insecure households; there is still considerable evidence of a wide dispersion of incidences of women undernutrition, where an average of 30% of malnourished women were located outside of 40% of the households whose food insecurity status was most severe. Finally, conditional probabilities acquired through a Probit regression analysis show more or less equal chances of women being malnourished irrespective of food security level of households within which they are located. The findings here, the conclusions of which are drawn within the constraints of limited data; suggest that there is a variation between the food intake of female members and other household members within households facing a crisis. These findings therefore signal inequalities in intra-household food distribution within respondent households, and corroborates the literature that highlights relatively higher volatility of women's nutritional attainment compared to other household members. Such inequalities if not addressed are misleading for food security monitoring, particularly in the context of achieving *zero hunger* as per the requirements of the SDG2.

Essay 3: The Relative Deprivation of Women; what Role for Empowerment

In the next research report, that makes the third essay, we shift our analytical focus towards determining the factors that drive women's nutritional deprivation versus those that determine overall households' food sufficiency. The study, informed by the findings of Chapter 2 as indicated above, adopts an analytical approach that disentangles the impact of household resources, different preferences, and inequalities in power in determining the nutritional status of women versus that of the households within which they are embedded. The study contributes to the emerging discourse that argue for the pursuit of women empowerment as an *end* to itself and not as a *means* to the achievement other development outcomes, by focusing on outcome measures that are beneficial to them. The outcomes of interest further have an implication for the empowerment parameters that drive them; in that empowerment parameters that drive households' and children' nutritional well-being may not necessarily be the same as those that drive women's own nutrition outcomes, in this case women's dietary intake.

We adopt Ordinary Least Square regression analysis to empirically investigate the role of three different but interconnected aspects of women empowerment as a means of improving their

intra-household bargaining power in their own food intake and general nutritional wellbeing in the home; (a) Women's satisfaction of their leisure, (b) Control over Income and (c) Share of women owned assets. Results show that out of the three empowerment measures adopted in our analysis, women's share of assets is strongly associated with women's dietary intake. This result suggests that a high share of assets placed on the hands of women not only enables them to bargain from a stronger position for outcomes that they value, it also enhances their *transformative* agency, in relation to their own dietary intake. The interaction term between the share of women owned assets and Income quantile is negative and significant for WDDS. This suggests that a greater share of women held assets can mitigate the negative impact of household low-income levels on women's dietary intake.

The impact of empowerment measured through *Women's satisfaction of their leisure* on the other hand has a more favorable impact on the dietary intake of women within households with higher income level. Results further show that this empowerment parameter buffers or mitigates the impact of gender inequitable norms on the dietary intake of women. Thus, the *transformative* potential of women empowerment measured through women's satisfaction with their leisure time, is mediated by gender equitable norms and household income. Lastly the extent to which women participate in decisions concerning the use of income within households, has no impact on their dietary intake, but is relevant for household nutritional well-being, suggesting a more instrumentalist role as opposed to a transformative one.

Essay 4: Bargaining for Children's Nutritional Outcomes; is it the "who" or the "why" that matters most?

Finally, we broaden the bargaining framework to determine the impact of two aspects of women's decision-making powers or agency on children's nutritional outcomes (ages 1 to 60 months) With concerns about the prevalent malnutrition as well as gender-specific asymmetries in the nutritional attainment of children in the same households; earlier scientists have pointed to women's weak decision-making as a key determining factor. We argue for the motivational autonomy of women as a more meaningful measure of their household bargaining power in relation to the nutritional outcomes of children. Overall, our findings suggest that women's involvement in intra-household decision-making processes is more influential in determining children's short-term nutritional status, while weakly associated with long term -nutritional outcomes.

Meanwhile the results show the girl dummy performing well in all three models in terms of gains in height-for-age (HAZ). Overall, the girls of ages below 60 months are less likely to be stunted than their male counterparts. The coefficient of the girl-interaction term with the measure of women's motivational autonomy (RAI), on the other hand show significant, albeit negative correlation with WHZ and WAZ; which suggest that women's autonomy may be important in offsetting the poor nutritional intake of boys. This appears to be the case, given the overall good performance of the girl dummy in long term nutritional outcomes. Thus, consistent with findings of earlier studies on gendered nutritional well-being of pre-schoolers within the context of sub-Saharan Africa, women's autonomy may be beneficial for boys' dietary intake.

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Chapter 2: Access to Food for Rural Women in South Africa: A Right or a Privilege?[1]

Boipelo Freude

Abstract

The right to access adequate food is recognised in the South African Constitution, and the government commits to developing programmes that ensure food security for all its citizens. This article addresses an important question on the right to food for rural women: as to whether these claims that have indeed been legitimised by social structures and norms are realisable. The article concludes that rural women's claims have indeed been reduced to privileges, where sustained food security is concerned and this is attributed largely to: (i) a food policy and legislative environment, including the land reform process; (ii) their vulnerability context; and (iii) the nature of their access to a social protection system that does not enable long-term movement out of poverty. The rights language is also under scrutiny for its inadequacy in enabling understanding of intra-household relations. The article further engages with the conceptualisation of food security, by drawing from the literature that critiques it for its failure to address the participation and empowerment of small-scale farmers, whose livelihoods are greatly dependent on the country's food system.

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2.1 Introduction

Reducing poverty and improving the living standards of millions of South Africans, both in rural and urban areas, is arguably the biggest challenge that is facing post-apartheid South Africa. The inability of people to access sufficient food to enable an active and healthy life is a key dimension of the phenomenon of poverty and achieving household food security remains a key component to achieving the goal of poverty reduction. Gender concerns are at the heart of food security challenges, as there is increasing evidence that rural women in particular are disproportionately burdened by food insecurity. On the other hand, there is agreement among a wide range of stakeholders that women's socio-economic empowerment and gender equitable access to productive resources, particularly land resources, is key to the achievement of food security.

The provisions of Section 27 of the Constitutional Rights in South Africa affirm the government's commitment towards ensuring people's access to sufficient food as they clearly speak to the right of every citizen to have access to sufficient food, and water. The constitutional right is in line with the provisions of the International Covenant on Economic, Social and Cultural Rights (ICESCR), which the South African government has ratified. According to Article 11 of the ICESCR:

> The right to adequate food is realised when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement. The right to adequate food shall … not be interpreted in a narrow or restrictive sense which equates it with a minimum package of calories, proteins and other specific nutrients (FAO 2007).

Evidently, the principles of equity and non-discrimination are central to the concept of the right to food, and as such gender equality is guaranteed. Furthermore, the-right-to-food approach, also known as the rights-based approach (RBA), in food security programming and practice places great emphasis on prioritising the needs of the most vulnerable people, rural women included. This has however not eased the anxieties of feminists in the global South who have cast their doubts on the achievability of these principles and whether or not adopting them in programming and practice will yield better results in women's socio-economic rights, the right to food included. The rights discourse has been heavily criticized for its inadequacy in

addressing human rights abuses against women taking place in the private sphere around sexuality, marriage, reproduction, inheritance, and the custody of children.

It is also not surprising that another cohort of feminists have expressed their enthusiasm for this approach, and its emphasis on vulnerable people. ActionAid (2011), through their *Farming as Equals* programme, has touted the rights-based approach for its usefulness in helping to address the root causes of poverty and food insecurity by enabling an assessment of power distribution, which essentially involves a process of investigating the institutions and processes that determine people's livelihoods, as well as the capacity of the vulnerable to claim their rights. Rights language, through its emphasis on institutional and legislation frameworks, further aids the convergence of women's human rights research and advocacy on the one hand and gender and development on the other hand, two strands of feminism that are mutually reinforcing and have the potential to yield better outcomes where women's right to food is concerned (Keer 2001 cited in Tsikata 2004).

The immediate question is: does the recognition of the right to food in law translate into sustained food security for rural women in South Africa or not, and why? Secondly, in view of the importance of land as a key resource in the progressive realization of the right to food, does the rights-based approach offer an understanding of the link between women's ability to access land and their right to access adequate food? A discussion of this nature has implications for more successful implementation of food and agricultural policies, including land reform processes that take into account rural women's needs, as well as the context in which they find themselves.

In recognition of the need to foster programmes that address the food insecurity challenge among rural women in South Africa, this article takes the view that the right to food for rural women is a privilege that is enjoyed by few, and this is attributed to the prevailing socio-economic circumstances that they find themselves in. Firstly, the conditions of extreme economic liberalisation do not necessarily serve the livelihoods of smallholder farmers, most of whom are women. Policies that promote free trade and private property can only marginalise rural women, whose socio-economic status does not enable them to compete. With a food system that is dominated by corporate farming, as is the case in South Africa today, poor farming households are pushed into the role of net purchasers, rendering them more vulnerable to the impacts of food price increases and low wages. Rural women in most communities bear the brunt of food security shortfalls. Secondly, the design of the social protection mechanisms

that is non-holistic by nature does not necessarily permit movement out of poverty, and neither does it conform to the principles of the right to food: mainly the participation and empowerment of beneficiaries.

The discussion in this article is organised as follows: the first section attempts to articulate the rationale behind addressing the right to food for rural women in particular, which looks at vulnerabilities, the roles of women, as well as the evolving policy environment within which women's food rights can be realised. The second section summarises the processes around the implementation of the right to food in general and in South Africa in particular. The historical context within which the process of land reform takes place in South Africa is summarised in the last section, the importance of which is to shed light on the socio-economic and political position of women in relation to accessing land.

2.2 Making a case for the right to food for rural women

From a food security perspective, rural women in South Africa, as is the case elsewhere in the global South, present both a vulnerable and a powerful force. Their vulnerability stems from the fact that food security and the right thereto has become a highly politicised arena and is also under threat by other socio-economic forces that are beyond their control (van Esterik 1998). Looking at the dimensions of food security, namely availability, access, stability and utilisation, women are empowered through their role in all four. Both women's productive and reproductive roles are critical in ensuring household food security. Not only are women engaged in food production, they also are primary care-givers who have the responsibility for safe-guarding their families' health and nutrition. Women also engage in non-farm activities such as petty trading and handicrafts as a way of diversifying livelihood strategies to enable households to cope with food shortages and, hence, ensure the stability of food availability and access over time.

Addressing rural women's right to food is urgent, in view of recent developments in the food policy arena, namely: (i) the impacts of the 2008/09 financial and food crisis; as well as (ii) the changing legal and institutional environment in South Africa. Figures show that the 2008/09 financial and food crisis led to an increase in global food insecurity, with over 1.2 billion people reportedly undernourished worldwide in 2009 (FAO 2010). The FAO further notes that the 2009 global food insecurity estimates were reported as being the highest since the 1970s. The impacts of the economic and food price crisis, for example, the job-shedding, decreasing wage

income and remittances as a result of the crisis, have put more pressure on households' ability to access adequate food. Furthermore, the high food prices that are not matched by an increase in the incomes of poor households has led to a decrease in the food basket, with diets becoming less balanced (Von Braun 2009). Years of research and experience in gender and intra-household resource allocation indicate that the crisis has been experienced differently by men and women, with women bearing the brunt (Quisumbing et al. 2008).

The food price crisis has led to further discussions on the need to build resilient food systems that have the ability to withstand shocks emanating from the high dependency on global markets for food commodities. Elsewhere in the developing world, the important role of subsistence agriculture, which has been the domain of women, in mitigating food shortages has thus far received an impetus. In South Africa, however, the potential of subsistence agriculture or one's own production in reducing hunger and undernutrition has been a neglected policy priority, with attention being more focused on social transfers (Fukuda-Parr 2012). Nevertheless, rural women remain strong participants in subsistence agriculture, where their production is mainly focused on staples such as maize and pulses, as well as smallstock, e.g. chickens, goats and sheep (Aliber and Baiphethi 2009).

The ongoing debate on land reform in South Africa (discussed in more detail in the next sections) presents an excellent opportunity to foster discussions centred around the right to food for rural women. Limitations of agrarian-based livelihoods in enhancing the realisation of the right to food for rural women emanate from the flawed process of implementing land reform in South Africa. In line with its obligation to fulfil the right to food of its citizens, the state has instituted a redistributive land reform process; but with its overall aim of deracialising land ownership, feminist critiques have pointed to the lack of political will in gender equality as being a major obstacle in rural women's equitable access to land (Walker 2010). According to Dzodzi Tsikata (2004), this debate can be extended to ask whether there are gender inequalities in access and control of land, or whether constraints such as limited access to technology, capital and labour– factors that mediate access to land resources, so to speak – render women incapable of taking advantage of the land on offer.

2.3 The right to food defined: South Africa's position

The right to food or a human rights approach to food policy has been defined as 'a human right, inherent in all people, to have regular, permanent and unrestricted access to quantitatively and qualitatively adequate and sufficient food' (FAO 2007). The rights-based approach therefore complements the food security concept, by adding human rights principles to the conceptualisation and programming of food policy instruments. Food security is regarded as a technical concept that addresses the physical and economic access at all times to adequate food, based on the needs of its target group who are then referred to as 'beneficiaries' (FAO 2007). By integrating the principles of participation, accountability, transparency, non-discrimination, equality and empowerment into the programming of food security, the emphasis on food has evolved from one that was primarily viewed as a basic need to one that is a human right where the 'beneficiary' becomes an empowered partner who participates at all stages of an intervention.

This article focuses primarily on the right to food for rural women, and as such it is not just a question of economics, it is also a question of justice. Many agree that a successful implementation of the right to food is rooted in a distributive analysis of food issues from a gender perspective, as men and women experience food insecurity differently (Quisumbing et al. 2008). The challenge is to ensure that the opportunities emanating from the transforming food systems benefit both men and women equally, and that food security interventions do not perpetuate the existing inequalities in gender, class or race. Owing to their socio-economic conditions in any society, rural women need to be given special attention, which is in accordance with the non-discrimination and equality principles of the rights-based approach. The provisions in the South African Constitution are aligned to the analytical framework as highlighted in the ICESCR, and they stipulate that the state is obliged, through legislative instruments and other measures, to ensure a progressive realization of the right to adequate food. Lately, the food policy and legislative environment of the country has been placed under scrutiny, and there is a call for radical reforms within the food system to allow for more participation and recognition of the rights of small-holder farmers. Also compounding this challenge is that South Africa is yet to develop a framework law on the right to food, which gives precise definition and content of this human right to allow for more effective

implementation, monitoring and recourse in cases of violation. Recognition in law, without specific policies and programmes targeted at rural women, however, will not guarantee their right to access sufficient food.

In an attempt to translate political will into impact on the ground, a number of interventions have been put in place, which include, the Integrated Nutrition Programme, and the Integrated Food Security Strategy (IFSS) of 2002. The IFSS calls for a cross-departmental, cross-sectoral approach to ensuring food security in the country. The Integrated Nutrition Programme (INP) of 2008 on the other hand offers a holistic approach towards addressing the underlying causes of malnutrition through direct and indirect nutrition interventions" (Department of Health, 2008). It goes without saying that a policy-making process that is based on human rights principles is central to the achievement of the right to food, and that the failure to establish cross-sectoral coordinating mechanisms that also provide a platform of participation for all stakeholders renders it ineffective in meeting the right to food targets. Furthermore, to align with the principles of the right to food for individuals, monitoring systems should enable an analysis of intra-household relations – which include decision-making processes and distribution of food related resources, all of which remain the key determinants of household members' rights to access adequate food.

For food security practice and programs to effectively target interventions toward those in need; monitoring systems should enable a process of identifying those in need. Thus, effective targeting hinges on the answers to the following questions, who are the food insecure, where are they located, what is the nature of their food insecurity problem, for example, are these individuals facing a diet quality and/or quantity challenge? The framework for monitoring food security, in South Africa, as is the case in most developing countries, is based on data collected through periodic household expenditure surveys (StatsSA, 2012). Note that, these estimates though, based on data collected directly from households, do not address the quantities of food consumed within households, rather, they focus on quantities of foods available at household level, neither does it allow for assessment of access of food at individual levels- in other words, who, within the household consumed what, and how much of it. However, in order to uphold principles of the right to food for women- food security programming should further allow for an analysis that examine the intra-household dynamics in relation to decision-making process on the allocation of food related resources among individual members of households. Tsikata (2004) critiques the Right -based approach in general and asks whether the rights discourse will enable an understanding of the challenges of marriage, and intra-household relations. Within

the context of food security programming, inequalities that stem from decision-making processes in relation to distribution of resources greatly determine household members' rights to access adequate food – and gender is a basis of inequality in well-being among members.

Rural economies in South Africa are by and large agrarian-based, and this despite the small contribution of agriculture to the growth of the economy measured in GDP (2.3 per cent). Studies have shown an increase in the number of black people practicing agriculture at some scale from 3.5 to 4.5 million over the past decade; the majority of whom are women (Aliber, Baiphethi and Jacobs 2009). Most engage in agriculture for subsistence purposes and as a supplementary source of food, and a smaller number (around 200,000) mainly in order to generate income (Aliber 2003). This observation is attributed to a number of factors, for example, jobless industrialisation and economic growth, declining wage income, and the resultant increasing labour insecurity. Clearly, a conducive policy environment, including marketing that is specifically suited to small-scale farmers, is central to the fulfilment of the right to food for rural women. Post-1994 policies of the then Department of Agriculture have however been focused more on liberalisation and deregulation, with the aim of promoting 'efficiency', optimising export earnings and enhancing the viability of agriculture. Ossome (2012: 65) draws attention to the fact that there is a tendency to 'prioritise a functioning market economy over the provision of secure livelihoods, the consequences of which is increasing gender inequalities in the participation and benefits that accrue from agriculture growth due to rural women's socio-economic constraints.

In light of the above-mentioned concerns, discussions around the strong connection between the right to food and food sovereignty (as opposed to food security) in South Africa are intensifying. This is mainly supported by the notion that through the food sovereignty movement, food and agricultural policies are largely shaped by the priorities that each country, through its citizens, sets for itself as opposed to the demands of international trade. La Via Campesina defines food sovereignty as: 'the right of people to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. According to La Via Campesina, the approach places emphasis on the protection of local markets, ecological farming, with the use of locally available farm inputs, and the participation as well as the empowerment of food producers, particularly rural farming households. Indeed, the democratisation of food systems has been identified as a prerequisite for the realisation of the right to food among rural women, who represent the majority of small-scale producers.

While some may view the movement as counter to trade liberalisation, the campaign in South Africa, led largely by small-scale farmers groups, has made use of the food sovereignty trajectory as a way of addressing the deep inequalities that characterise the South African food system. A good example is the campaign against the 2013 Plant Breeders Rights Bill and the Plant Improvement Bill. By awarding strong intellectual property rights to breeders and also restricting the sale and exchange of planting material to corporate certified seeds only, the two bills supposedly serve the purpose of enhancing innovation and competitiveness of the agriculture sector, and thereby enhancing food security at the national level. Small-scale farmers, through the food sovereignty campaign, have however argued that the two bills can only exacerbate the already existing inequalities within the food system, as they incentivise and reward large-scale global food chains, at the expense of small-scale producers. They further lament the threat to agro- biodiversity and erosion of the plant genetic resource base as a result of monoculture and its associated use of chemical fertilisers and herbicides. Rural women, who are resource poor, and also in their role as custodians of traditional knowledge are at a disadvantage under such a legislative environment that criminalises the use and exchange of traditional planting material at the local level. Furthermore, an analysis of food problems that is restricted to the achievement of ‘‘food security’’, as opposed to food sovereignty, will not assist in addressing the structural constraints to the right to food for rural women.

Contrary to the widely held view that access to land is not a contributory factor to the prevailing food insecurity situation in rural South Africa, land remains an important livelihood asset through which rural women can strengthen their livelihood base and reclaim their right to adequate food (Fukuda-Parr 2012; Walker 2003). It is therefore critical to engage with the land reform process as it enables an understanding of what structural (including social, political, cultural) constraints and opportunities exist in South Africa, in relation to enhancing women’s access to land, and also the causative factors that determine women’s claims to land.

2.3.1 Context of land reform and agrarian change in South Africa: implications for rural women’s right to food

The post-apartheid land reform process was a key feature in the African National Congress’s (ANC) 1994 election manifesto, which recognised its significance as a way of redressing socio-economic injustices and also contributing to rural development (ANC 1994). Poverty reduction was the central theme of the Reconstruction and Development Programme (RDP) policy framework which served the purpose of outlining the ANC’s vision of how the country would

be transformed henceforth. The White Paper on South African Land Policy also points to the equality in security of tenure for all; as one of the objectives of the land reform process (Department of Land Affairs, 1997). The White Paper further outlines that the land reform process is being implemented in three components, namely: redistribution, aiming at fast-tracking access and ownership of land among mainly black aspirant commercial farmers; restitution, through which victims of racially motivated land dispossessions could lay claims of compensation or restoration of land; and lastly, tenure reform, targeting farm dwellers and people living in communal areas, with the aim of improving tenure security.

The land reform process, as highlighted above, is greatly shaped by the history of colonial dispossession that spans over a 350-year time period. This period was characterised by a number of events, the consequences of which have continued to shape the livelihoods of ordinary South Africans to-date. Firstly, there was a spate of land dispossessions from the local communities by European colonisers from the 1700s during which time black communities were forced either to retreat to other areas, or to become sharecroppers or farm labourers (Aliber 2003). Yet another development shaping land reform was in the form of the rising demand for black labour and hence an establishment of the migrant labour system, following the discovery of mineral resources in the 1900s. As a way of facilitating the required labour, the Natives Land Act was passed in 1913, the aim of which was to formalise the distinction between African reserves, later to be termed homelands, and white farming areas, while prohibiting black people from acquiring and owning land (Aliber 2003). With limited economic options, black people had no other choice but to offer their labour to the mining industry.

The introduction of the 'apartheid' system in 1948 onwards was what Walker (2010) has termed a 'consolidation of white political and economic power' (Walker 2010: 10). By the end of the era, landownership was highly skewed, with only 13 per cent of the land area of the country occupied and reserved for use by the black majority of the country; the consequences of which were large-scale rural-urban migration and the polarisation of agrarian production. Furthermore, the apartheid system formalised the division of the population into four racial groups: namely White, Indian, Coloured and Black. Landlessness, due to high population densities in the homelands, has also been reported with people having no land at all, or at most 5 hectares for agriculture usage (Delius and Schirmer 2000 cited in Aliber 2003). Further compounding the socio-economic challenges faced by black people in the homelands was the low human resource base, due to limited education and health services.

A key feature of the dispossession was the pattern of migration, of more men than women, which essentially means that men are structurally missing from rural communities, in that they cannot partake in any social, political, cultural and economic decision-making processes. Some have argued that in the rise of incidences of de facto female headed households, women find autonomy in decision making processes that have an effect on their right to food. Whether this autonomy is desired or undesired, however, in view of the overall livelihood trajectory, the absence of one other adult within the household renders women vulnerable to other livelihood trends, mainly through marginalised subsistence production, which also takes place within a culturally defined sexual division of labour; and also, the erosion of extended kingship networks, which women can draw upon for support.

The gendered impacts of South Africa's history of dispossession, forced migration, political and economic oppression are such that there are changing social relations between men and women, which means that the domestic sphere – around issues of sexual relations, marriage and childcare is continually being reshaped (Walker 2010). It is further noted by Walker (2010) that the increasing incidence of female headship is a sign of a complex set of changes within family household and gender relations. The dynamic nature of the private or domestic sphere, through a distributive analysis based on intra-household level indicators, is to be taken into consideration, for the land reform process to fully and effectively address women's claims to and benefits from land resources.

It has been argued that the land reform process, with its aim of healing past injustices, has not yielded the same results where gender equality is concerned (Walker 2010). With 40 per cent of South Africans in rural areas, living in what may be referred to as a communal context, and women accounting for 60 per cent, the process of tenure reform is critical for rural women, and there is a need for more in-depth engagement in how women's rights are interpreted in this framework and how this can impact on their right to food. Some scholars have claimed that only two components of the land reform process, namely restitution and redistribution, have received more attention from the political elite (Hall and Cliffe 2009: Walker 2010). This is probably because of the focus on large scale commercial farming, which is perceived to be important for the sector's competitiveness and profitability. As such, less focus has been on tenure reform, which by nature of its targeting, can impact directly on rural women's claims to land and their consequent fulfilment or non-fulfilment of their right to food. The discussions around tenure reform and its intended and non-intended impacts on rural women are presently underway.

Rudman (2012) highlights gender implications of the tenure reform, which is being implemented through a legislative framework that would allow land to be transferred to the community or tribe occupying it. She argues that the re-formulation of land rights through the Communal Land Rights Act (CLARA) of 2004 may entail detrimental results for women in rural and communal contexts. Under the ambits of CLARA, the administration of land falls under Land Committees that are supposedly representative of the communities that occupy the land; and secondly, the 'old order rights' which are already existing rights are to be converted into 'new order rights', which would eventually be converted into freehold ownership. While the principles of gender equality are implicit within the CLARA, there are concerns about the many gender inequities that may already be embedded in the local power structures (in line with Tsikata 2009), i.e., the Land Administration Committee, in this regard. Strategies of integrating gender concerns within the land reform process have been to set a quota of 30 per cent women's representation on community land reform committees. We all are aware of the unrealistic expectations on women representatives in governance structures at different levels to effectively represent women's issues, mainly when operating under patriarchal structures. A good example is the ANC Women's League, whose leadership has bluntly pointed out its lack of support for the feminist ideology, a position obviously informed by its male dominance and patronage- ridden politics (Hassim 2006 cited by Ossome 2012).

The relationship between the law, rights, policies and the domestic sphere is yet again put under scrutiny, particularly in the way in which tenure reform through CLARA attempts to remedy the discrimination of women in the 'old order rights' which have been held by men through patriarchal structures that effectively characterise land as the property of the male head of household. CLARA remedies this discrimination by stipulating that an old order right that is being held by a married person should then be converted into new order rights that are held jointly with their spouse. The ramifications of this claim are such that women who do not fall within the nuclear family structure – for example, widowed mothers, single women, migrants and spouses of migrants – are excluded from accessing land, thereby further exacerbating their sense of vulnerability.

Research elsewhere in the developing world has shown that women's land ownership and property rights correlate positively to a range of outcomes relevant to the well-being of women and their families. Doss (2005) demonstrates that women's share of farmland affects household expenditure, as this ownership greatly strengthens their intra-household bargaining power. This is a clear demonstration that women's access and ownership of land and other assets greatly

determines their success in negotiating their rights both within their households and in their communities. With increasing concerns about people's resilience capacity following the 2008/09 food price crisis, access to land has become critical in enabling a more long- term pathway out of poverty as compared to interventions that aim at increasing income (Behrman et.al. 2012).

2.3.2 Institutional framework for the right to food

Evidence suggests that the formal institutionalisation of the right to food in South Africa has not translated into impact on the ground, and this is much more pronounced among rural communities who rely largely on subsistence farming, low wage income and petty trade for their livelihood (Statistics South Africa 2013). Many have pointed out that the key constraint in the development and implementation of food security policies, strategies and programmes is the lack of a common understanding of the concept, and obviously, a clear vision for its attainment (Altman et al. 2009). While there is formal commitment on the part of government for ensuring the right to food for all, there are data gaps at the national level that inhibit the development of appropriate interventions and mechanisms to monitor their progress.

An important component of the implementation of the right to food is the identification and characterisation of the food-insecure, which consists of identifying and describing the food-insecure, and also outlining the factors that contribute to their status. Food related data at the national level is rarely disaggregated by gender, and where it is, only considers heads of households, i.e. women-headed households and men-headed households. The literature however indicates the shortcomings of this approach as it renders women who reside in male-headed households invisible. The challenge is that food-related data at the national level is mainly collected through household surveys, which by nature of their design often fail to address intra-household relations as regards ownership, use and control of productive resources (Doss 2013). Other studies further highlight that women in male-headed households are just as vulnerable, if not more so, as was observed in some parts of South Africa (Jacobs et al. 2011).

In addition to the inadequate data, the food security analysis based on household food expenditure has limitations in its inability to address intra- household food distribution, failing to account for women's right to food violations that occur within the private sphere. Likewise, legal instruments do not necessarily recognise the fact that the realisation of these rights occurs within households, often through the efforts of women themselves (van Esterick 1998). The

distributive analysis, with its reliance on household level data, is not only subject to errors of exclusion and inclusion, it is also not in line with the concept of food security as defined by the 1996 World Food Forum that emphasises that food security should be achieved at all levels. In this regard, there are significant gaps in our knowledge about the incidence and nature of food insecurity among men and women, making it even more difficult for state and non-state actors to develop programmes that are specifically targeted at both groups. It further makes the process of monitoring and enforcement of guaranteed food rights a difficult, if not an impossible, task.

The guidelines in implementing the right to food further highlight the state's responsibility in establishing independent and autonomous mechanisms to monitor the progressive realisation of the right to adequate food, and the Constitution has charged the South African Human Rights Commission (SAHRC) with the monitoring, and enforcement, of the right to food. It is true that the main concern should not be only about what rights rural women are entitled to, but also whether and how these can be claimed. Despite numerous efforts toward fostering literacy programmes targeted at women, the vast majority of rural women in South Africa still have little contact with state institutions, markets or civil society organisations, and remain the wards of their communities and households. They are totally disenfranchised, to the extent that they have little recourse to formal institutions and the justice system. This mechanism of recourse continues to inhabit a technocratic space that is almost entirely divorced from the social realities of rural women in South Africa. Indeed, the inability to access recourse mechanisms for the right to food violation renders access to food more of a privilege that is enjoyed by a few, than a right that should benefit all.

The application of human rights principles is integral to a rights- based approach to development, and in this regard Tsikata (2004) poses a very important question on whether these aims, such as accountability, participation, and empowerment that have been championed and fought for in development discourse are now realisable through the adoption of the RBA. If these principles are not realisable, then why assign the claims to food a 'right', when it could well be just a privilege? The rights-based approach in food security programming is rooted in the accountability of duty-bearers to rights-holders, as well as the active participation of all stakeholders – in particular the rights-holders – in policy development and implementation. A strong civil society movement at grassroots level is critical for awareness raising and empowerment of vulnerable groups, rural women being the constituency of concern.

Accountability is a two-way process, with the citizens or constituency of interest – in this case rural women – demanding that their needs are met, in other words, holding duty bearers accountable; and with duty bearers adhering to the principles of transparency and participation. Women's limited capacity to hold duty bearers accountable for food rights violations is therefore related to their constrained participation. In line with the principles of transparency and participation, duty bearers have an obligation to ensure access to information, to enhance effective participation among citizens. Some scholars have however lamented the seemingly limited capacity of government officials in understanding their own roles in implementing the right to food, and their obligation to ensure access to information by members (Walker 2010; Fukuda-Parr 2012). There are also unrealistic expectations on the part of the SAHRC in terms of its capacity in all areas of socio-economic violations; and the low social response to violations of the right to food in South Africa is a clear indicator of the lack of information or awareness about the government's commitments to the right to food. Regarding the right to food for rural women, SAHRC documents on the right to food are unambiguous on the needs and role of rural women, more so that it is common knowledge that the final realisation of the right to food occurs within households, most often through women's own efforts.

Still, on the accountability principle of the RBA approach, the actions of multinational corporations and big agribusinesses are rarely, if ever, scrutinised. The focus of the RBA approach on the actions of governments and citizens alone does not permit a process of demanding accountability from the corporate sector, which basically dominates food systems. Using Armatya Sen's (1981) Entitlement Theory as a point of departure, it becomes clear that rural women's right to food cannot be achieved through their own production due to landlessness and lack of resources, nor buying or working (a trade-based entitlement) due to lack of skills and unemployment. The transfer entitlement route (not without controversy) is the only available avenue; but the question remains: is it in conformity with the rights-based approach?

2.3.3 Rural women as passive recipients rather than active partners in their development

Rural women are exposed to a plethora of publicly funded social safety net measures, consisting of cash transfers, in-kind transfers, school feeding and public works programmes that include both cash for work and food for work programmes. Almost 40 per cent of South Africans receive one or two types of social grants, and three provinces – KwaZulu-Natal, Eastern Cape and Limpopo – are said to account for 60 per cent of all social grant beneficiaries (Jacobs et al.

2011). The three provinces are largely rural and agrarian by nature. The use of safety net interventions has greatly evolved over the past 20 years, and following the 2008/09 food and financial crisis, there has been a surge in the use of public works programme as a response to job shedding. There is also increasing evidence of the positive impact of social safety net interventions, particularly cash transfers, on poor people's consumption, as well as children's schooling. Devereux (2010) notes that one factor explaining this finding might be that recipients of cash transfers are almost always women, as the income elasticity of nutrition is generally higher for women's income than men's.

Most importantly, safety nets do serve the purpose of enhancing poor households' capacity to mitigate risk by cushioning them against livelihood shocks (Jacobs et al. 2011). A serious shortcoming of the social protection system in South Africa is that it has no linkages to other socio-economic policy instruments, for example, access to education and health, that enable people to move out of poverty. The dependency on cash transfers, where social grants account for more than 60 per cent of household income (as is the case in Limpopo for example), is a further indication of impoverishment, firstly because of the limited amount of the cash transfers (well below the minimum amount required to meet the standard food security requirement), and secondly, because sustainable livelihoods cannot be achieved through dependency on cash transfers, without an appreciation of poor people's access to productive resources. Even worse, the phenomenon of high dependency on cash transfers paints a bleak picture for rural women's sustainable livelihoods, and hence, their right to food.

The government's approach to social assistance, particularly the unconditional cash transfer, is clearly not in accordance with its obligation and commitment towards fulfilling people's right to food. Poor communities are being viewed as passive recipients of government grants and not as agents for their own development. The social protection system is increasingly being perceived by critics as one that is focused on giving 'favours' to poor communities, rather than providing 'opportunities`. Moreover, the lack of comprehensiveness in implementing social protection measures, in particular their specific features which are at the discretion of the government, leaves the state with significant leeway, which means cash transfers are subject to misuse as political patronage.

2.4 Conclusion

South Africa's commitment to the right to food, through the country's 'transformative constitution' has been hailed as a progressive move. Lately however, scholars have lamented the seemingly increasing gap between the government's commitment and the results on the ground. Clearly, the recognition of access to adequate food in law has not translated into reality for rural communities who constitute a high percentage of the food-insecure in the country. Through the RBA, and hence the application of principles of equality and non-discrimination, rural women's food rights are supposed to be guaranteed, but in South Africa, this has not been the case. The legal aspects of the right to food empower individuals and make them agents of change in a way that enables them to hold the state accountable for its obligations and seek redress for violation of their human rights.

For rural women in South Africa, empowerment remains an unrealistic dream because firstly, the majority are not even aware of the government's commitment towards their right to food, and also in the absence of a framework law that defines 'adequacy' within the South African context, the right to food will remain a topic for the technocratic space and political debates rooted in its failure to address the realities of people that need it most. As such, in defining rights as claims that have been legitimised by social structures and norms (Farrington 2001: 3), we can comfortably conclude that rural women's claims have indeed been reduced to privileges, where sustained access to food is concerned. This is despite the fact that there are enough resources available to maintain food security programmes that can be extended to women in the rural areas to enhance their access to food and enjoyment of their right to food.

The study goes on to elaborate the complexities of the conceptualisation of the rights-based approach in food security programming. The violation of rural women's (and girls') food rights may occur within the private sphere, with 'cultural practices' dictating who should be fed what, and when; making it difficult to define these rights when such cultural specificities override wider rights. Secondly, while there is general agreement that the right to food for rural women is intertwined with the right to access productive resources, in particular land, in South Africa there still are doubts that land is a critical resource that rural women can harness to sustain their livelihoods, and hence their food security. While acknowledging that this link is not a clear and

unmediated one, questions remain as to whether the rights-based approach, as an analytical tool and also as a process, is adequate in articulating this link.

The policies that the government is pursuing are such that rural communities are still being dispossessed and denied the right to human dignity, a fundamental right that enables them to access adequate food in a dignified manner. Post-1994 economic liberalisation processes have accelerated the development of markets in land, and have therefore facilitated high levels of private land ownership, further deepening landlessness and socio-economic inequality, with the sector's marginalisation of small-scale agriculture. Increasingly, food and agriculture programmes mainly favour domestic and global market expansion rather than a social welfare agenda, which allows for the encroachment of transnational corporations in the agricultural sector. The dominance of commercial capitalist agriculture and agri-business geared towards export and non-food agricultural production is contradictory to the state's formal commitment to the right to food for all, as access to food is only possible for those with purchasing power – a privilege indeed!

There is little hope that the right to food for rural women will be realised until they are included in policy discussions about food as a human right and until food issues are analysed from a gender perspective. Discussions around food sovereignty as a condition for the achievement of the right to food are gaining momentum. The food sovereignty trajectory allowing for the much needed democratisation of the food system will ensure equal participation, ownership and empowerment of the people who are most dependent on it for their survival – the rural women. More importantly, the corporate domination and control, which is supported by the political elite, can be challenged and held accountable to open up space for rural woman to realise their right to food in a dignified manner.

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Chapter 3: Is Women Undernutrition Synonymous with Household Food Insufficiency? Evidence from Northern Ghana[2]

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Abstract

Policy making in Sub-Saharan Africa commonly assume that food and nutrition security programmes that target food insecure households would most likely impact on malnourished individuals. This is despite the compelling evidence from elsewhere in the developing world that show a food distribution pattern that is discriminatory to women and girls. We attempt to examine the extent of the association between measures of women nutritional attainment and household food (in)sufficiency, where we determine whether distributional analysis of people's nutrition can reliably predict women's individual nutritional well-being from measures of household level food access. Secondly, we ask whether all undernourished women, or at least a large bulk of them are located within food insecure households, such that they can be reliably targeted through household level food security interventions. We adopt the use of concentration curves and Indices, as well as joint, conditional, and marginal probabilities to establish a pattern of distribution on malnourished women across different levels of household food (in)sufficiency. Our results show that though a larger proportion of malnourished women are located within food insecure households; there is still considerable evidence of a wide dispersion of incidences of women undernutrition. The findings of our analysis show a variation between the food intake of female members and other household members within households facing a crisis, which signals inequalities in intra-household food distribution.

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3.1 Introduction

Based on assumptions that the household food insecurity status represents the experience of individuals within the household; the standard approach of monitoring food security in most developing countries hinges on the use of household-level food security indicators. Studies, primarily from South Asia, however, have shown intra-household patterns of inequality that reflect discrimination against the women and girls (Haddad et.al.,1994; Messer, 1997). While this subject matter has gained momentum within the South Asian context, in the case of sub-Saharan countries on the other hand, evidence of intra-household inequality in nutritional attainment is scanty and inconsistent.

Notwithstanding the few and inconsistent results as mentioned above, largely there is a neglect of intra-household processes that determine individual household members' nutritional well-being. This trajectory creates a challenge for food security programming to address nutritional needs of vulnerable members of households. Common among policy makers in Sub-Saharan Africa, is the assumption that food security programmes that target food insecure households would most likely impact on undernourished individuals. This is despite the compelling evidence from elsewhere in the developing world that has cast doubt on this assumption, most of which draws heavily from the critique of the Unitary model of intrahousehold analysis "joint welfare maximisation" assumption. Critics of Becker's (1981) Unitary model have pointed out that holding on to this assumption implies that people within households, experience hunger or malnutrition the same way, given a certain level of household income. The question is do we possess enough evidence to support or reject the notion of a joint welfare among sub-Saharan households, particularly in regards nutritional attainment of women? Effective targeting and monitoring of food and nutritional interventions hinges on the response to the question as posited above.

Using cross-sectional data from the Northern part of Ghana, and within the limits of available data, we attempt to shed light on how household level measures of food sufficiency and hunger perform as a proxy of nutritional status of women of child-bearing age. We hypothesize that women experience food crisis the same way as other household members, as per the claims of joint welfare notion, such that their nutritional status can be reliably predicted from measures

of household food insufficiency. We further analyse the underlying socio-economic factors that perpetuate the risk of women being undernourished. Presumed to be a vulnerable age-gender cohort among rural households in developing countries; the nutritional status of women of ages 15-49 years has caught the attention of researchers and policy makers whose goal is to not only achieve food security for all but to bridge the gendered gap in nutritional attainment as well. In this regard, both the prevalence and the distribution of incidences women's low nutritional attainment is critical for the achievement of the goal.

Research objectives and questions are outlined in detail in the next section of the paper, which is then followed by a review that will provide insights into empirical and theoretical evidence and arguments from the available literature on the subject. The rest of the paper is structured as follows; Section 3 outlines a description of the data used in the analysis as well as a definition of key variables of interest of women nutritional attainment and food (in)security. Results and a discussion of the findings are presented section 4, followed by Concluding remarks on section 5.

3.1.1 Research Objectives and Questions

An important point that is yet to receive adequate policy attention is that individual members of households may not experience food crisis the same way; some members are more vulnerable than others due to several reasons. Here we employ several economic analysis tools to examine whether women of childbearing age (15-49) experience food (in)security the same way as other age-group cohorts within the same households, such that distributional analysis of people's nutrition can reliably predict women's individual nutritional well-being from measures of household level food access. A lack of association between measures of household food insufficiency and women undernutrition is an indication of a variation between the food intake of female members and other household members within households facing a crisis, which signals inequalities in intra-household food distribution.

Concerning the distribution of incidences of women's undernutrition, we ask whether all undernourished women, or at least a large bulk of them are located within food insecure households, such that they can be reliably targeted through household level food security interventions. We rely on the use of concentration curves and concentration indices (Wagstaff

et.al, 1991) to provide an understanding of whether incidences of women undernutrition are concentrated among the food insecure households or there is in-fact a wide dispersion of incidences of women undernutrition across consumption groups. We also explore the use of techniques of quantifying the probability women undernutrition namely joint, conditional, and marginal probability. Joint probabilities measure the likelihood of the two events of women undernutrition and household food insufficiency occurring together at the same time- which essentially signals the likelihood of women experiencing food crisis the same way as other members of the household. Conditional probabilities on the other hand, essentially measure the likelihood of a woman being undernourished given the food (in)sufficiency status of the households within which they are embedded. We further ask whether we can conclude that women stand equal chances of being undernourished irrespective of the nutritional well-being of their households, such that measures of household food sufficiency would not be reliable predictors of women's nutritional well-being, and for that we rely on marginal probability techniques The Probit regression techniques, used to estimate conditional and marginal probabilities are also helpful in determining the risk factors, outside of the food insufficiency status of households; that further perpetuate the likelihood of women being undernourished.

3.2 Insights into Literature

We place more emphasis on the few studies conducted in Sub-Saharan Africa (SSA), as it seems conclusions of studies done elsewhere in the developing world are contextual by nature and cannot be readily drawn to other regions. The concern among one cohort of scholars would be that household -level consumption measures do not allow for a proper diagnosis of inequalities within households, as there is mounting evidence of certain undernourished individuals not being located within households that are considered consumption poor (Brown et al. 2018). The results of Brown et al. (2018) study using Demographic and Health Surveys (DHS) and the Living Standards Measurement Study (LSMS) data from several countries in sub-Saharan Africa show that roughly half of undernourished women and children were located outside of the poorest 40 percent of households in the sample population. Prior to Brown et.al. (2018) claims, earlier scholars had pointed out that the severity of consumption poverty would differ depending on whether individual or household level data were used. For example, Haddad and Kanbur (1990) study using data from the Philippines found significant variations in energy

intake among members within the same households, and they concluded that overlooking these differences, may lead to an underestimation of undernourishment by 20 -40 %. Haddad and Kanbur's (1990) claim of an underestimation of undernourishment has since been used by some scholars in arguing for the importance of individual level data of nutritional well-being (see for example De Vreyer and Lambert, 2020; for Senegal).

Another cohort of scholars would probe how the discrimination in nutrient allocation against one group relative to the other, occurs. Here the commonly held assumption (informed by literature drawn from South Asia), is that women and girls are consistently discriminated against, and the fundamental question remains; what constitutes discrimination? Behrman and Deolalikar (1990) outline ways in which gender discrimination occurs. This can be in the form of variation in levels of nutrient intake between female and male members of the households, with female members, bearing the brunt, on one hand, or it may occur in the form of relatively higher volatility of female members nutrient intake vis-a-vie that of other household members in response to income and/price shocks.

In light of the conceptualisation of discrimination as highlighted above, Villa et al (2011), study using panel data covering pastoralist communities in Kenya and Ethiopia concludes that there is very little to no evidence that supports the commonly held assumption of an allocation of nutrients that disadvantage women. Firstly, no disparities of nutrient intake between male heads of households and their spouses were detected. However, male heads dietary intake was observed to be more income elastic, which implies that a decrease in household income would result in a decrease in the household head's dietary intake. Though not fully confirmed due to data availability constraints according to Villa e.al (2011), this pattern of distribution can be referred to as "head-as-buffer" which is contrary to "maternal buffering" explanation, widely cited in the intra-household food distribution discourse (See for example Maxwell, 1996). Secondly, contrary to what is commonly presumed, sons as opposed to daughters; were systematically worse off than other household members in terms of dietary diversity, a pattern of allocation that they attributed to the occupation of livestock herding that kept boys away, as opposed to girls on one hand, and on the other hand the custom of bride-price, that attaches 'value' to the girlchild, common among these communities.

Lastly very few studies, par Coates et.al. (2018) and a few others, for example Blaney et.al. (2009) and Berti (2012) have sought to quantify inequalities in nutrients intake between male and female members of households. Firstly, why is it important to quantify intra-household inequalities in food distribution? Here we refer to Berti (2012) study, which reviewed 28 studies, and only 4 of which were in conducted in sub-Saharan countries. Central to Berti's (2012) analysis is the concern over whether different age gender groups would benefit equally (according to their specific needs) from food security interventions, given the prevailing intra-household food distribution patterns in terms of who is "favoured" and who is disadvantaged. An understanding of Intrahousehold inequalities in access to food related resources may be useful in understanding why an increase in household income for example, may not translate in reduced malnutrition for certain individuals. Indeed, inequalities within households, particularly those that are gender based may results in certain economic events, disproportionally benefiting one group and not the other.

Berti (2012) review of the 28 studies concludes that none of the age gender groups in the analysis were consistently favoured nor disadvantaged; in fact, according to Berti (2012) the common assumption of an intra-household food distribution pattern that favours boys over girls was not consistently held in more than half of the studies. Thus, household-level food consumption measures could be used roughly to target vulnerable individuals within households, though for evaluation purposes individual level measures could be used to assess impact of food security interventions (Berti, 2012). Nonetheless, individual level measures are important in selecting specific food and nutrition security measures tailored for specific needs of individuals. Meanwhile Blaney et.al. (2009) study findings on individual household members nutrient adequacy by gender and age, slightly differ from Berti (2012), as they show that adolescent males scored better than their female counterparts.

Coates et.al. (2018) study in Ethiopia on the other hand, draws our attention to the notion of equity, which they define as "consumption adequacy of one group of household members relative to another." (Coates et.al., 2018: 83). Central to the definition of adequacy here is the distinction between whether one's nutrient intake can be considered nutrient adequate on one hand and whether it meets their nutrition specific needs in relation to their specific physiological needs, on the other. The latter is the adapted definition of adequacy in nutrition equity studies, for example, Haddad and Kanbur (1990). Coates et.al. (2018) study findings show detrimental

inequities in the intake of invisible micronutrients, with adult women, children, more disadvantaged. Interestingly though, the results do not show any inequities against these presumed disadvantaged groups, in the intake of calories and protein.

Lastly, though beyond the scope of this analysis, it is worth probing what factors are responsible for women 's relative deprivation in relation to the other household members, as these have been helpful in shaping our research hypotheses towards searching for the evidence of intrahousehold inequalities in nutritional attainment that are unfavourable to women. Key to understanding these factors lies on the analysis of intrahousehold processes in allocation of food related resources. Empirical and theoretical work on the subject matter, mainly from South Asia, have shown how households would allocate resources according to their concerns for Efficiency on one hand (Rosenzweig and Schultz, 1982) and equity on the other (Pitt, Rosenzweig and Hassan, 1990). Rosenzweig and Schultz (1982) attribute the disparity of female and male nutrient allocation to household's rational response to the gender discrimination in the labour market, where male children face better employment prospects than their female counterparts; a pure investment strategy, according to Behrman (1988). On the other hand, results of Pitt et.al. (1990) 's study in Bangladesh show that the gender differences in calorie consumption between male and female members of households is associated with greater participation of men in energy intensive activities. Thus, the relatively higher consumption of calories by men compensates for their higher energy expenditure in the labour market; essentially showing a food allocation behavior that exhibits inequality aversion, according to Villa et.al. (2011).

The Feminist critique of the paradigm of thinking as outlined above has been quite profound and has questioned the justification of what they term "discriminatory allocational outcomes" on the grounds of economic rationality. Unequal power relations within the households are at the core of their arguments; Folbre (1984) for example, argues that the observed gender-based inequalities in nutrition could be looked at through the bargaining lens, as they reflect the father's preference, whose bargaining power within the household is higher than that of the mother. Within the bargaining framework, bargaining power is defined according to one's fallback position (Agarwal, 1997), which in turn is determined by a number of factors both quantitative (such as income) and qualitative, for example, access to social capital. Agarwal (1997) further points out that inequalities in access to such resources and the prevailing cultural

norms that may influence gender-based biases in distribution of food related resources are the main drivers of the relative deprivation of women vis-vis that of men.

The findings of Coates et.al. (2018) and others point to a grave danger of making assumptions about inequalities (or the lack of) inherent in food distribution patterns in different contexts, as this has implications for the design and implementation of interventions as well as their well-being impacts. Furthermore, the inconsistencies in findings do raise key analytical and policy questions of factors particularly socio-cultural, that are context specific being critical in determining food distribution patterns that may predict a relative deprivation of one age-gender specific group compared to others within the same households. Indeed, targeting poor households without any consideration of the above-mentioned factors may overlook undernourished individuals. In this regard, an understanding of intra-household food distribution patterns that are discriminatory against female members is important for policy making and distributional analysis. Here the understanding is that a food distribution pattern that disadvantages women and girls of childbearing age, would most likely result in low nutritional adequacy levels, relative to their physiological needs, with consequences for their own well-being, and that of their children (Haddad et.al, 1994).

3.3 Data and Definition of Variables

The study makes use of the Feed the Future (FtF) Ghana Baseline Survey data. The population-based survey covers four northernmost regions of Ghana and was conducted through a collaboration of 6 institutions: namely the USAID-Ghana Monitoring Evaluation and Technical Support Services (METSS), Kansas State University (KSU), University of Cape Coast (UCC), the Institute of Statistical, Social and Economic Research (ISSER) of the University of Ghana, and the Ghana Statistical Service (GSS). The survey was done over a period of 3 months from June 2012 to August 2012, with the US Department of Agriculture (USDA) and USAID providing technical support (METSS-Ghana, 2012).

The survey adopted a two-stage probability sampling approach, first stage of which is the selection of 230 enumeration areas, done with the help of the sampling frame used in 2010 Ghana census. The enumeration areas were selected by use of Probability Proportional to Size (PPS). In the second stage, the systematic sampling approach was used to select households

from each of the sampled enumeration areas. With effective sample size estimated at 4600 households, 20 households were selected from each enumeration area. Having accounted for non-response, the final sample size was determined at 4410 households, and the ultimate sample of 4,513 women of ages 15-49. Women who report being pregnant during the survey period are excluded from the sample, and having further accounted for outliers, we end up with a sample size of 3,129 women.

The survey adapts two questionnaires as data collection tools, covering a total of nine modules. Modules relevant for this analysis are covered in the first questionnaire, which is administered at household level. The first module addresses household demographics by listing household members, with their age and sex, as well as their literacy levels and educational attainment. The module further asks questions that assist in identifying the male and female decision-makers within the household. Of interest also to this analysis, is the module on household consumption, which essentially addresses both food and non-food consumption. The module adapts a 7-day recall approach to collect information on food items consumed in the household, the quantity, and unit price, as well as the source (produced, purchased or gift). The information on non-food consumption is collected by use of a 30-day recall approach, where items purchased are listed with quantities and unit-price, to enable a computation of the monthly per-capita expenditure, which is used as a proxy for household income.

Also included is the module that captures households' experience of hunger, as well as individual women's Dietary intake and Anthropometry. The module collects information that is key to constructing the Women's Dietary Diversity Score and Body Mass Index (BMI) of every woman between the ages of 15 and 49 years; specifically, food items consumed individually as well as their weight and height to allow for the calculation of the BMI.

We employ an indicator of women's undernutrition that is set equal to one if a woman's Body Mass Index is lower than 18.5kg/m^2 and zero if it falls within the range >18.5kg/m^2 <26kg/m^2 (considered to be normal). BMI, a measure of people's weight and height is an anthropometric measure of adults' chronic energy deficiency (Shetty and James, 1994), and it reflects not only the current energy expenditure, but it is also a function of people's health status as well as their access to sanitation and health services. Furthermore, women's BMI is affected by their pregnant and lactating status, nutritional requirements of which impose further demands on

women with chronic energy deficiency (Shetty and James, 1994). Research in developing countries has also shown that low maternal BMI is associated with low birthweight of children poor lactation performance, which poses a risk for infant growth (Giay and Khoi, 1994). Given that our analysis is focused on women who are either malnourished or fall within the normal range (not malnourished), our sample is therefore limited to women whose BMI falls below 26kg/m^2.

3.3.2 Household Food Sufficiency

For purposes of comparison and validation of results, we make use of two measures of household level nutritional well-being; (i) a consumption (quantity) based measure and (ii) an access or expenditure-based measure. The food indicator of per capita calorie consumption is a quantitative indicator often used as benchmark as it presents a more accurate and direct measure of household food sufficiency (Maxwell, Coates and Vaitla, 2014). We then use the indicator of share of food expenditure in total household expenditure, also known as Engel's ratio (Smith and Subandoro (2007), in our analysis. The share of food expenditure has proven to be a useful proxy for wider purchasing power, which is a critical component of both the present and future prospects of capacity to access adequate food (UN-WFP, 2009).

(i) Household Per Capita Calorie Consumption

We first construct the consumption-based approach measure- the daily Per Capita Calorie Consumption, which essentially measures a household energy availability. We adapt two indicators of the consumption-based measure, the first being a continuous variable (cal/capita/day) and the second a dichotomous variable of household food insufficiency set at one (1) for households whose daily calorie consumption per capita falls below the threshold 2300 cal/capita/Per day; and zero (0) for households who consume above the threshold.

The indicator of Calories/Capita/Day is constructed by converting quantities of food consumed into corresponding energy units. Using the 7-day recall methodology, food consumption data

covering approximately 300 food items consumed during that period, was collected at the household level.

The data captured quantities consumed from market purchases, home production, and from other sources outside the house, e.g., relatives, government/nongovernment aid, or food received in exchange for labour. For more accuracy in reporting, quantities of food were reported in local units of measure for example 'bowl of rice', '2 tubers of yam' etc. Also captured in the data is the expenditure for each food item, and based on the monetary value as reported by the respondent household, the per kilogram price was used to make an estimate of quantities consumed in metric units (kg). The information pertaining to per kilogram price was acquired from the weekly market prices of Food as published by the Ghana Ministry of Food and Agriculture (MoFA) website (MoFA, 2012).

The total amount food consumed in kilograms is converted into dietary energy (kcals), where individual food items are matched with food Composition Tables which consider the percentage of portion of food item that is consumable. FAO International Network of Food Data Systems (INFOODS) provides the food composition tables that cover food items from specific regions. The amount of energy acquired (kcal/day) was expressed in per capita units, dividing the total calories acquired by the number of food consumption recording days (seven) and then by the total number of household members.

(ii) Household Food Expenditure Share (FoodShare)

The share of household expenditure on food is widely accepted as a measure of household food security and vulnerability. It is widely documented that the poor and vulnerable households spend a larger share of household income on food, an observation that is known as Engel's law. Engel law demonstrates that as incomes rise, expenditure on food increases while expenditure on other things increases even more, so that the share of total income spent on food declines. The indicator is constructed from household expenditure data that covers the monetary value of both purchased and non-purchased items that includes consumption from own production and in-kind payments and transfers. The monetary value of food given as gifts or transfers is imputed from available price information. Furthermore, lately there is an interest on the impact of food consumed away from home; particularly when addressing issues of obesity or

overnutrition, thus, the indicator of FoodShare has been expanded to encompass food items consumed outside the households.

There are currently no internationally established thresholds for this indicator, however in line with the recommendation of Smith and Subandoro (2007); households that spends over 65 % of its income on food are said to be 'living on the edge' and highly vulnerable to food price fluctuations. Thus, for purposes of our analysis (conditional probabilities in section 3.4.1.1 of this paper), we use the indicator as a binary variable for household food insufficiency set at (1) for households whose share of food expenditure is 65% and above; and (0) for households spending below the 65% threshold.

3.4 Main Analysis

3.4.1 Distribution of Incidence of Women Undernutrition

The fundamental question remains whether all undernourished women, or at least a large bulk of them, located in food insecure households, such that they can be reliably targeted through household level food security. In the "Equality" language, we may well ask whether inequalities in the burden of women undernutrition is disproportionally borne by the consumption poor. Firstly, we acknowledge the fact that household food security may not be directly translated into women's nutritional well-being (as has been proven elsewhere) does not mean that its enhancement is not critical for people's individual nutritional status. Rather, there are specific challenges inherent in women's individual nutritional well-being that needs to be taken into consideration in policymaking. We rely on the use of Concentration curves and Indices as well as joint, conditional and marginal probabilities to establish the distribution of malnourished women across different consumption groups.

Concentration curves, Indices and Joint Probability

Concentration Curves are commonly used to measure socio-economic inequality in relation to a measure of individual well-being, such as health or nutritional outcomes. Introduced into the Equity/Equality discourse by Wagstaff et.al; (1991), concentration curves and indices, have since been popularised by the World Bank in assessing and making cross-country comparisons

of poor- nonpoor inequalities in health outcomes (Wagstaff et.al (1991). Wagstaff and Watanabe's (2000) cross-country study extended the use of concentration curves to the Nutrition literature by examining inequality in nutrition outcomes. With some scholars questioning how concentration curves differ with Lorenz curves; Wagstaff and Watanabe (2000) differentiates them from the Lorenz curve by stating that in plotting concentration curves the ranking is done by living standard variable, and not the well-being variable, whose distribution is of interest, as is the case with Lorenz curves.

For the plotting of a concentration curve, two variables are of importance; namely an individual level well-being outcome measure, the distribution of which is the subject of interest and (ii) the variable that captures people's living standard, which will then be used to assess the distribution of the individual level variable. Our analysis focuses on the extent to which the incidence of women undernourishment is concentrated among consumption poor households or vise versa. Our analysis makes use of the Body Mass Index (BMI) as the individual level variable that measures women's undernutrition. The measure of women's undernutrition is set equal to one if a woman's Body Mass Index is lower than 18.5kg/m^2 and zero if it falls within the range >18.5kg/m^2 <26kg/m^2 (considered to be normal). The living- standard measure against which we assess the distribution of women undernourishment is that of household food consumption measured by the daily per capita caloric intake. Households are then ranked in percentiles according to their food (in)sufficiency levels, as indicated above.

The concentration curve in figure 3.1 below plots the cumulative percentage of malnourished women on the y-axis against the cumulative household consumption, ranked by percentiles of household calorie consumption beginning with the lowest, ending with the highest (x-axis).

Given that concentration curves are often used for cross-country comparisons of the extent of poor-non-poor inequalities in well-being outcomes, their interpretation is based on the extent to which Lc is close or further away from the equality line (concavity), as well as their position in reference to the line of equality- whether above or below (Wagstaff and Watanabe, 2000). With Lc above the line of equality we can deduce that the incidence of women undernourishment is greater among poor consumption households; in contrast a line that is below the diagonal would reflect a pattern of women undernourishment that disadvantages the non-poor consumption households.

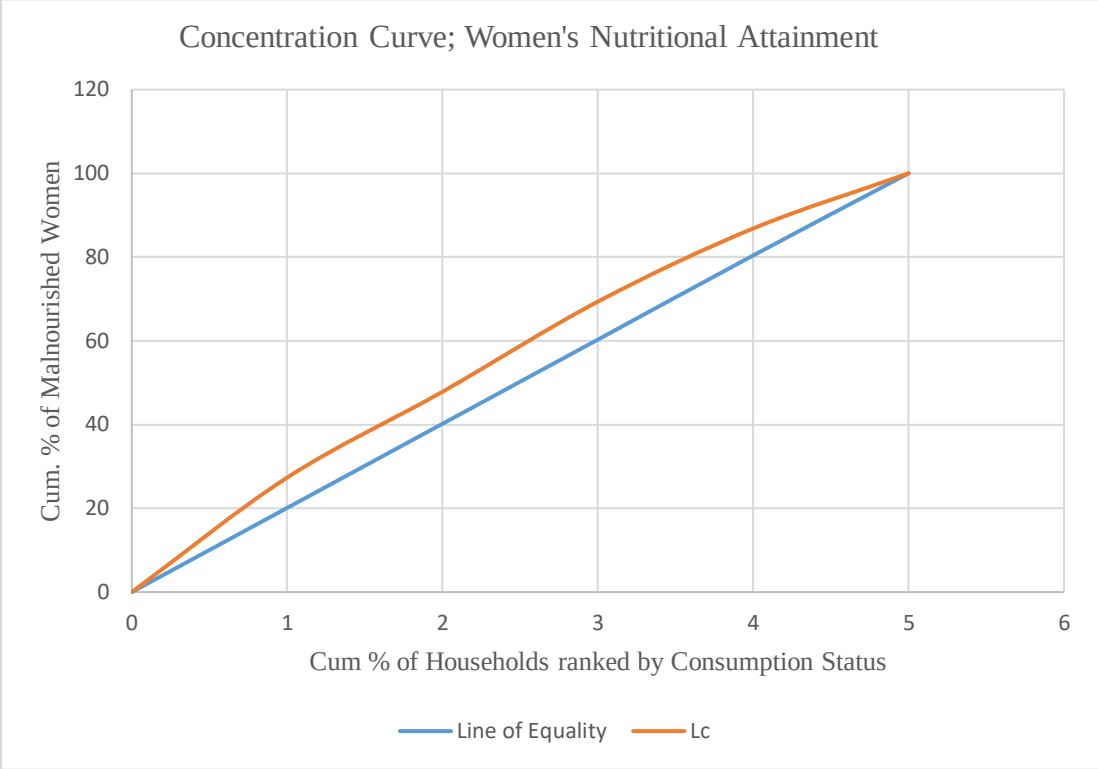

Figure 3.1: Women's Nutritional Attainment ranked by Household food Insufficiency

The concavity of our Lc on the other hand, helps in assessing the level of inequality in the distribution of the incidence of women undernourishment. For our analysis, there is no opportunity for pairwise comparisons due to data limitations, nonetheless with Lc this close to the diagonal we can deduce that the poor – non-poor gap in the incidence of women undernourishment is small. This implies that in our sample area women of childbearing age have equal chances of being undernourished, irrespective of whether households they live in are considered food secure or not.

Our findings seem to contradict those of similar studies done elsewhere in developing countries that show that the poor disproportionally bear the burden of malnutrition than the non-poor. For example, Wagstaff and Watanabe (2000), and Bredenkamp et.al. (2014) conclusions were such that incidences of child stunting and wasting in developing countries are skewed towards wealth poor households. Holding on to the assumptions of these findings, it is no wonder that policy making aiming to reach malnourished individuals continues to target households. On the other hand, Brown et.al.'s (2018) cross-country study of the distribution of underweight women

ranked according to household income levels show curves that are fairly close to the equality line. Results of this study done in 30 African countries imply low levels of poor-nonpoor inequalities in the incidences of women undernutrition – suggesting a wide dispersion of undernutrition across income strata.

To validate this finding however, we rely on another measure, the concentration Index (CI), which is a numerical measure of inequality of distribution of well-being outcome. The CI is defined in relation to Lc, as it reflects twice the area between the concentration curve and the line of equality). Table 3.1 below presents the proportion of undernourished women who fall within each percentile of household food consumption. The table further presents cumulative values of both the sample households and share of undernourished women, that form ordinates of the concentration curve Lc presented in Figure 3.1. The cumulative values (Pi) and (Li) as indicated are further used to compute the Concentration Index (CI) as shown in the right most column.

Following Wagstaff and Watanabe (2000), the concentration index for i=1…,T groups is computed using excel spreadsheets and it follows the formula as indicated below:

$$CI = (p_1L_2 - p_2L_1) + (p_2L_3 - p_3L_2) + ... + (p_T\text{-}1L_T - p_TL_{T-1})$$

Because there is not really a reference point that we can use to assess how big the inequality is, we refer to literature on the subject matter (see for example Wagstaff and Watanabe, 2000 and Brown et.al.,2018). The computations on Table 3.1 show a CI of value -0.14, which not only indicate a concentration of incidences of undernutrition among the consumption poor, because of the negative value; but because it is not more negative than -0.15, it also suggests that there is a wide dispersion of women undernutrition across consumption groups. At this point we can comfortably make a claim that there is a considerable percentage of undernourished women outside of food insecure households. To further support this claim, we make use of (Pi) and (Li) in Table 3.1 to generate scores of joint probabilities of being undernourished and being located in a food insecure household at the same time. Interesting is the proportion of undernourished women that are located outside the most food insecure households that make 40% of the sample population. The cumulative share of undernourished women (Li) corresponding to the cumulative share of total population (Pi) of 0.6 is a value of 0.69, which

suggest that on average, 30% of undernourished women are located outside the 40% severely food insecure household.

Table 3.1 Women Undernutrition ranked By Household Consumption Percentiles

Consumption Group Daily Cal/capita	Freq. Share Population	Cum. Share Pop	Freq. Share Undernourished Women	Cum. Share Undernourished Women	Conc. Index
		Pi		Li	CI
1	0.101	0.101	0.14	0.14	0
2	0.101	0.202	0.14	0.28	-0.00404
3	0.101	0.303	0.12	0.4	-0.01564
4	0.0997	0.4027	0.08	0.48	0.000756
5	0.0991	0.5018	0.12	0.6	-0.01388
6	0.0984	0.6002	0.09	0.69	-0.00898
7	0.1	0.7002	0.1	0.79	-0.02298
8	0.1	0.8002	0.08	0.87	-0.03046
9	0.0994	0.8996	0.07	0.94	-0.0404
10	0.1004	1	0.06	1	
Total	0.1		1.0		-0.13563

Source; Own Calculations

With joint probability results showing 31% percent of undernourished women being located outside of the 40% severely undernourished households, it would be interesting to examine whether this pattern holds when using an augmented regression to estimate conditional probability of women being undernourished given the food (in)sufficiency status of their households, while controlling for individual and household level characteristics.

3.4.1.1 Conditional Probability

The measure of conditional probability estimates the likelihood of a woman being undernourished (*w_nut=1*) given the food sufficiency status (*h_fs*) of their households. Following Brown et.al, (2018), we adapt a simplified framework to investigate whether the probability of being undernourished varies between two distinct groups of women (i) those located in consumption poor or food insecure households (*h_fs*= 1) and (ii) those located within food secure households (*h_fs*= 0). We ask whether women have equal chances of being undernourished irrespective of the food security status of the households within which they are located, given certain values of individual and household characteristics. The framework for analysis is demonstrated below:

$$Pr(w_{nut} = 1|\mathrm{h_{fs}} = 1, \mathrm{I}, \mathrm{H}) \quad (1)$$

$$\Pr(\mathrm{w_{nut}} = 1|\mathrm{h_{fs}} = 0, \mathrm{I}, \mathrm{H}) \quad (2)$$

We further examine the marginal probability effect of the binary variable indicator of household food (in)sufficiency represented by (*h_fs*), which is the computed as the difference between equations 1 and 2 above. The general formulation of the null and alternative Hypotheses is as follows:

$\mathrm{H_0}$: $(w_{nut} = 1|\mathrm{h_{fs}} = 1 \ldots) = \Pr(\mathrm{w_{nut}} = 1|\mathrm{h_{fs}} = 0 \ldots)$

$\mathrm{H_1}$: $\Pr(\mathrm{w_{nut}} = 1|\mathrm{h_{fs}} = 1 \ldots) \neq \Pr(\mathrm{w_{nut}} = 1|\mathrm{h_{fs}} = 0 \ldots)$

The framework for analysis of the marginal probability is thus follows:

$$Pr(\mathrm{w}_{nut} = 1|\mathrm{h_{fs}} = 1, I, H) - Pr(w_{nut} = 1|h_{fs} = 0, I, H) \quad (3)$$

Values of (w_nut) and (h_fs); representing women's nutritional well-being; and households' food (in)sufficiency respectively, are normalised by nutritional thresholds as stipulated by international standards of the World Health Organisation and FAO. For our study, a woman is undernourished if they fall below the threshold of 18.5kg/m^2 (and only if) shown as (*w_nut=1*). A household is food insecure if (i) their per capita calorie consumption falls below 2300 kcal/ day and (ii) their share of expenditure on food is greater than 0.65, expressed as (*h_fs*=1).

Econometric Specification

We make use of the Probit regression analysis to determine the conditional probability of being undernourished. The standard probit model makes assumptions that the latent continuous variable Y_i*is generated from the linear regression model as follows;

$$Y_i^* = \beta_0 + \beta_1 \mathrm{x}_1 + \beta_2 \mathrm{x}_2 + \ldots\ldots + \beta_k x_{ki} + u_i \quad (4)$$

$$\begin{cases} Y_i = 1 \; if \; Y_i^* > 0 \\ Y_i = 0 \; otherwise \end{cases} \quad (5)$$

Where $x_1, x_2, \ldots\ldots x_n$ are representative of random variables and u_i is a random disturbance term for observation i. Y_i is the binary indicator variable that is representative of the observable outcomes of the binary choice variable and its relation with the unobserved dependent variable Y_i^* takes the expression as indicated in equation number 5, above.

The probit function for estimating conditional probability of $Y_i=1$ given values of household food sufficiency, women's individual characteristics and household characteristics takes the following expression;

$$\Pr(Y_i = 1|f, I, H) = \Pr(\beta_0 + \beta_1 I + \beta_2 H + \delta f + u_i > 0) \quad (6)$$

Where f is a binary predictor variable that reflects food sufficiency /adequacy status (h_fs) of household (1 =food insecure and 0 =food secure), I is a vector of the individual characteristics of woman, such as age, and educational attainment. H is representative of household characteristics of that include the age of the household head (age, household food production, income level and other socio-economic status variables such as number of rooms, as well as number of cattle, and small stock owned by household. $\beta_0, \beta_1, \beta_2$ and δ are vectors of coefficients to be estimated. Note that all the explanatory variables apart from household food sufficiency (f) are continuous variables.

Rearranging the terms in equation (5) results in the following:

$$(\Pr(Y_i = 1|f, I, H) = \Pr(\varepsilon > -(\beta_0 + \beta_1 I + \beta_2 H + \delta f)) \quad (7)$$

$$= 1 - \Phi(-(\beta_0 + \beta_1 I + \beta_2 H + \delta f)) \quad (8)$$

Where Φ represents the cumulative normal distribution function, with the assumption of the normal distribution of the error term, results into:

$$\Pr(Y_i = 1) = 1 - \Phi(-(\beta_0 + \beta_1 I + \beta_2 H + \delta f)) \quad (9)$$

$$Pr(Y_i = 1) = \Phi(\beta_0 + \beta_1 I + \beta_2 H + \delta f) \quad (10)$$

To further explore the relationship between household food insufficiency and women's undernutrition, we introduce two cutoff points and dummy variables that define severe household food insufficiency, D_1, on one hand and moderate household food insufficiency, on

the other hand; D_2. D_1 is defined by whether households consume below 1500 calories per capita per day (1 if yes and 0 if otherwise), while D_2 reflects household food insufficiency that lies between 1500 and 2500 calories per capita per day.

We include the Dummy variables as indicated in the equation below, which is being estimated as model 3;

$$Pr\ (Y_i = 1) = \ \Phi\ (\beta_0\ + \beta_1 I + \beta_2 H + \beta_3\ D_1 + \ \beta_4 (f * D_2) \qquad (11)$$

Here our coefficients of interest are β_3 and β_4, which estimate (i) the direct effect of severe household food insufficiency and (ii) the interaction effect of moderate food insufficiency and the household daily per capita calorie consumption on women undernutrition respectively. Firstly, because household food sufficiency has a monotonic relationship with individual members' food intake, we expect a positive and significant coefficient of impact of severe food insufficiency (β_3), which would be an indication of a lack of inequalities in nutritional attainment within the household. Regarding the interaction effect with moderate household food insufficiency (β_4), we expect a coefficient that is not significant, which signifies the notion of shared experiences of food shortages for women of child-bearing age with other household members; in other words, if so, we can thus conclude within the limitations of available data that household food insufficiency is indeed synonymous with women's undernutrition.

Secondly, we not only pay particular attention to whether the coefficient is significant or not, we also pay attention to the sign, i.e. whether positive or negative. For example, a positive significant coefficient for β_3 , signifies a positive association between women's undernutrition and severe household's food insufficiency, essentially corroborating the "joint welfare" notion. A significant coefficient for β_4, on the other hand reflects a differential impact of household food insufficiency on women undernutrition for women within moderate food insufficient household.

Maximum likelihood techniques are then used to compute coefficient estimates ($\beta_n\ and\ \delta$), and their standard errors. Equation number 10 is used for models 1 and 2 estimations, while equation 11 is used to estimate model 3.

Lastly, we are interested in knowing whether women face the same likelihood of being undernourished whether they are in food secure households or households that are food

insecure. Thus, we make estimations of the marginal probability of the binary variable representing household food sufficiency, following the standard probit analysis. The Marginal probability effect of (f) is derived from the difference between (i) conditional probability that *w_nut= 1* for women in households that are food insecure (f=1) and (ii) conditional probability that *w_nut =1* for women in households that are food secure (f=0)

$$Pr\ (Y_i = 1|f = 1) - Pr\ (Y_i = 1|f = 0) \qquad (12)$$

$$\Phi\ (\beta_0 + \beta_1 1 + \beta_2 I + \beta_3 H) - \Phi\ (\beta_0 + \beta_1 0 + \beta_2 I + \beta_3 H) \qquad (13)$$

Given the comparison between the two probabilities, $\beta_1 = 0$ thus becomes the coefficient restriction sufficient to make the two probabilities equal for any values of *I* and *H*.

Table 3.2 below presents the summary statistics for our variables of interest. Of the 3129 women that make our sample, 13 percent of them are malnourished with BMI value falling below 18.5kg/m^2. Other individual level variables included are indicators of human capital; being, women's educational attainment in years of schooling, the mean of which is 8,5; women's age in years (mean=28.4), as well as the age squared. The square of women's age accounts for the diminishing and eventually reversing role of age as a human capital ta enhances women's ability to access food related livelihood resources. Variables of household composition are included in the analysis to account for the different age-gender requirements of dietary intake.

Household income and wealth, expected to reduce the risk of women being malnourished, are proxied by household per Capita expenditure, number of cattle and small stock owned as well as the number of houserooms. Secondly, sanitation and safe and clean drinking water are factors that influence people's nutritional status outside of economic factors. Proper sanitation is measured by a score that is generated according to whether households have access to a private latrine (mean of 3.3). A score of access to safe and clean drinking water on the other hand is generated based on whether households accessed their water from a private or public tap; as well as a closed or protected source, such as boreholes. Lastly, our data descriptives show high levels of household food insufficiency at 65% and 24%, when measured as consumption below 2300 cal/capita/ day and as share of food expenditure above 0.65, respectively.

Table 3.2 Descriptions of Variables for Probit Regression

Variable	**Mean (n=3,129)**	**Min**	**Max**
Women Individual Characteristics			
Women's Undernutrion	0.126	0	1
Age of Woman in years	28.40	15	49
Square of age of woman	89.20	225	2401
Women'sYears of schooling	8.6	1	16
Household Characteristics			
Household Size	7.9	2	35
No. Of hh memb underage 6	1.5	0	8
No. male hh members of ages 6-16	2.01	0	12
No. female hh members of ages 6-16	1.90	0	16
No. of hh members of ages 15-44	3.3	0	12
No. of hh members of ages 45-65	0.710	0	4
No.of houserooms	5.73	1	40
Score of access to clean and safe water	7.94	1	11
Score of access to sanitation	3.79	1	7
Quantity of poultry owned	8.32	0	35
Quantity of cattle owned	1.69	0	35
Quantity of smallstock owned	5.24	0	35
Household percaptotalexp (Ghc/year)	1.32	0	3701
Household Food Insufficiency			
Household consumption (1 if <2300cal/capita/day	0.65	0	1
Household food vulnerability (1 if foodshare>65%)	0 .24	0	1

Source; Own Calculations

Results and Discussion

Table 3.3 below presents estimates of coefficients of the Probit regression analysis for women undernutrition, starting with our binary predictor variables that represent household food insufficiency. Model 1 estimates show the amount of increase in the incidence of women undernutrition that would be predicted by one unit increase in household hunger measured by consumption per capita (cal/capita/day), while model 2 factor variable is household food sufficiency measured by the share of household expenditure on food (foodshare). Model 1 coefficients show that the incidence of women undernutrition increases by 0.65 for each unit increase in household hunger. A similar pattern is observed in Model 2, albeit smaller.

Estimates show a positive and significant coefficient for household food insufficiency suggesting that for every unit of change in households food insufficiency the odds of women being malnourished increases by 0.22.

As to be expected, at the aggregate level, women's undernutrition has a significant association with the severe food insufficiency dummy (D_2), suggesting that the level of women's nutritional attainment decreases with increasing levels of household food insufficiency (shown in column 3 for model 3). The less the household per Capita consumption, the higher the likelihood of women being undernourished, for these households. The observation seems to corroborate the assumptions of the unified household economy approach as highlighted in previous sections, that state that individual household members enjoy the same level of food security, and/or experience hunger and malnutrition the same way, given a certain level of household combined income. Consequently, based on this observation, food security assessments that inform policymaking are routinely conducted at household level. However, the argument here can be that among severely malnourished households (those that consume below 1500 cal/Capita/day), there is obviously little room for negotiating or disagreements over who goes hungry and who doesn't. In that regard, the coefficient of interaction between moderate household food insufficiency dummy (D2) and household food insufficiency provides a good opportunity to examine if indeed women do not experience food crisis the same way as the rest of the household.

Table 3.3 Probit Regression Estimates; Impact of household Food Sufficiency on Women Undernutrition

	Model 1	Model 2	Model 3
VARIABLES	Women's Undernutrition	Women's Undernutrition	Women's undernutrition
Women Individual Characteristics (β_1)			
Age of woman in years	-0.402***	-0.423***	-0.384***
	(0.0410)	(0.0411)	(0.0407)
Square of age of woman	0.00633***	0.00661***	0.00604***
	(0.000680)	(0.000681)	(0.000676)
Woman's education (years of schooling	-0.0296	-0.0101	-0.0356*
	(0.0211)	(0.0220)	(0.0206)
Household Characteristics (β_2)			
Size of household	0.0450	0.0348	0.0353
	(0.0687)	(0.0688)	(0.0691)
No. of hh members of age below 6yrs	0.105*	0.0936	0.112*
	(0.0604)	(0.0604)	(0.0607)
No. male hh members of ages 6-16	-0.108	-0.0898	-0.113
	(0.0727)	(0.0726)	(0.0736)
No. female hh members of ages 6-16	-0.260***	-0.247***	-0.251***
	(0.0779)	(0.0775)	(0.0785)
No. of hh members of ages 15-44	0.113	0.120	0.113
	(0.0746)	(0.0749)	(0.0750)
No. of hh members of ages 45-65	-0.386***	-0.358***	-0.411***
	(0.0946)	(0.0941)	(0.0960)
No.of houserooms	0.0143	0.0159	0.0103
	(0.0120)	(0.0119)	(0.0123)
Score of access to clean and safe water	-0.0489***	-0.0613***	-0.0474***
	(0.0165)	(0.0166)	(0.0165)
Score of access to sanitation	0.0846**	0.0761*	0.0944**

	(0.0408)	(0.0396)	(0.0413)
Quantity of poultry owned	0.0191***	0.0172***	0.0209***
	(0.00506)	(0.00505)	(0.00509)
Quantity of cattle owned	0.00858	0.0168	0.0109
	(0.0131)	(0.0115)	(0.0126)
Quantity of smallstock owned	-0.0174*	-0.0140	-0.0139
	(0.00889)	(0.00880)	(0.00870)
Household percaptotalexp (Ghc/year)	-0.0257***	-0.0353***	-0.0224***
	(0.00678)	(0.00654)	(0.00693)
Household Food Insufficiency (δ)			
1.Household cons (1 if <2300cal/capita/day)	0.648***		
	(0.137)		
1.Household food vulnerability (1 if foodshare>65%)		0.196*	
		(0.109)	
Household Food Insufficiency Categories			
D_2 Dummy (1 if daily calorie/capita <1500) (β_3)			0.805***
			(0.152)
D1(1 if daily cal/capita>1500<2500)*Per Capita Calorie Cons (β_4)			0.000170**
			(8.49e-05)
Constant	4.013***	4.802***	3.767***
	(0.630)	(0.628)	(0.635)
Observations	2,250	2,250	2,250

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

The positive and significant coefficient of interaction ($\beta_{4.}$), shown in Table 3.3, model 3 suggests that the household food insufficiency has a differential impact on women within households considered to be moderately food insufficient (those that consume between 1500 and 2500 cal/capita/day), as opposed to women in other food (in)sufficiency groups. For this group of women, an increase in daily per capita calorie at household level leads to a worsening nutritional status for the women within this group. This finding signals a food insecurity pattern that disadvantages women more than other members of households. Clearly, distributional analysis of people's nutrition cannot reliably predict women's individual nutritional well-being from measures of household level food access- in other words, there is more to women's nutritional status than just availability of calories at household level.

These findings suggest a variation between the food intake of female members and other household members within households facing a crisis, which signals inequalities in intra-household food distribution. However, without data on the food intake of their male members of households, nor that of other age-gender groups within households, there is no sufficient evidence of food distribution pattern that favors one group over another, at this point. There is nonetheless, enough evidence at this stage to support the claim of a gendered pattern of coping that is characteristic of households that are facing food crises. Agarwal (1990) and others such as Gill (1989) and Kynch (1997) citing experiences with past famines in India, point out that women often bear the brunt of food crises, either through limiting their own food intake in favor of other household members or through a household asset disposal pattern that is unfavorable to women in relation to men.

Despite the differences in experiences of food crises, however, food security interventions are mainly focused on reducing households' vulnerability and relying on household level measures for targeting. Here South Asia's experience with famine and food crises monitoring presents a learning opportunity for Sub-Saharan Africa countries, particularly within the context of what some perceive to be a "gender-just" food and nutrition security (Rao et.al., 2017; Freude, 2018). As early as the 1980s there were calls among South Asian scholars, for a gender-sensitive monitoring of food crises that would enable a more effective response that addresses the needs of vulnerable gender-age groups within households (see for example Gill, 1989).

Other factors that perpetuate the risk of women being acutely malnourished include women's age in years; with younger women more likely to be malnourished than older women (maximum

age 49 in our case). Contrary to our expectations, women's educational attainment measured in years of schooling, presumed to be a critical human resource that enables one's access to other livelihood options, is not associated with women's undernutrition and neither is access to sanitation. A score of access to clean and safe drinking water, on the other hand show a negative and significant coefficient, signaling the importance of clean water in people's nutritional attainment through the food security dimension of utilization.

Further household characteristics showing an effect on women's nutrition are household composition parameters: an increase in the number of female household members of ages below 6 years increases the risk of women undernutrition, an increase in the number of household female members of ages 6-16 and 45-65, on the other hand is associated with a decrease in women undernutrition. This finding may be attributed to the importance of agricultural labor for household food production, as this is a domain of women and girls in most traditional communities in Sub-Saharan Africa. Consistent with other studies on the determinants of food security, household wealth indicators namely household Income (proxied by per Capita expenditure), and quantity of small stock owned show negative and significant coefficients, implying a positive effect on women's nutrition. The result should however be interpreted with caution, as it may lead to assumptions that household level wealth indicators can serve as reliable predictors of people's individual nutritional attainment– an assumption that has been proven to be false by past scholars such as Haddad and Kanbur (1990) and more recently Brown et.al, (2018).

Marginal Probability Effects

We then make use of the margins command on Stata to estimate the conditional probability of women undernutrition at level of household food (in)sufficiency; proxied by (i) household per Capita calorie consumption and (ii) share of household expenditure on food, and the results are presented in Table 3.4 below. The conditional probabilities indicated in Table 3.4 are computed while holding all the predictor continuous variables at their mean values. Model 1 results show conditional probability of woman undernutrition for households consuming less than 2300 cal/capita/day: *h_fs=1* at 12.7 %. The conditional probability of woman undernutrition for households consuming more than 2300 cal/capita/day i: *h_fs=0*, on the other hand is 8.5 %. Results for model 2 show conditional probability of woman undernutrition for households

spending more than 65 % of their income at 11.5 % while that of households spending below the threshold stands at stands at 11.1 %.

Table 3.4 Predicted Probabilities for Women Undernutrition

	VARIABLES	Predicted prob.	Marginal Probability Effect
Model 1	0.Household cons >=2300 kcal/capita/day	0.0852***	0.0422***
		(0.0103)	(0.0145)
	1.Household cons <2300 kcal/capita/day	0.127***	
		(0.00925)	
Model 2	0.Household food Vulnerability (foodshare <0.65)	0.111***	0.00409
		(0.00753)	(0.0155)
	1.Household food Vulnerability (foodshare =>0.65)	0.115***	
		(0.0137)	

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

The implications of our findings are such that given the socio-demographical factors as described in Table 3.4, women in households that are not hungry and/or whose food sufficiency is satisfactory do have a likelihood, albeit small of being malnourished. Thus, we ask whether we can conclude that women stand equal chances of being undernourished irrespective of the nutritional well-being of their households, such that measures of household food sufficiency would not be reliable predictors of women's nutritional well-being. Here we rely on estimations of marginal probability effects of the binary variable representing household food sufficiency, which are computed by calculating the differences in conditional probability for women undernutrition under (i) *h_fs=1,* and (ii) *h_fs=0,* and their significance.

Results of marginal probability effects (MPE)are presented in the third column of Table 3.3. Of interest for our analysis is not only the existence of the marginal probability effect, but also the direction of the sign (whether positive or negative), as well as the magnitude. Results show a significant MPE of 4.2 % for model 1. The positive sign shows an increase in probability of women undernutrition (w_nut =1) with change in household food sufficiency from food secure (h_fs=0) to food insecure (h_fs=1), albeit small, given that it is below 10%. Model 2 results, on the other hand, show MPE for binary variable (h_fs) that is not significant. We therefore fail to reject the null hypothesis that the conditional probability of women undernutrition (w_nut=1) within food insecure households is equal to the conditional probability of women undernutrition within households that a food secure. Thus, our results suggest that largely there seems to be an

equal chance of women being undernourished irrespective of the food sufficiency level of households they are located in.

The findings of a dispersion of malnourished women across different levels of household consumption; though unexpected are consistent with those of Brown et.al (2018), whose study covered a total of 30 countries in Sub-Saharan Africa. The scholars attribute the finding to a high overall rate of undernutrition among those countries whose distribution exhibit the phenomenon. Rightfully so, overall, food insecurity is prevalent in the northern parts of Ghana, the figure of which according to reports are four times that of national average (METTS-Ghana, 2012). This, according to the report, is due the low population density and vast land mass, as well as relatively poor road infrastructure that also create a sense of isolation and hence vulnerability among people in the area.

3.5 Concluding Remarks.

In the Introduction section of this paper, we pose a fundamental question on whether there is enough evidence to support or reject Becker's (1981) notion of a joint welfare among sub-Saharan (SSA) households. From the review of the existing literature, the results of the few studies conducted within the context of SSA on the subject show inconsistent findings. Our study attempts to bridge this gap, as it has proven to be a constraint for policy making and programming to reach the most vulnerable people. Our primary focus is the nutritional attainment of women of child-bearing age, who are presumed to be vulnerable; due to their physiological needs on one hand and on the other hand, other socio-cultural factors that place them at a lower status than other household members. We conduct an analysis that allow a comparison between women's nutritional attainment and household level food (in)sufficiency. Data availability limits our ability to fully explain our findings, nonetheless, there is consistency with claims of previous scholars that monitoring frameworks that rely on household level are likely to lead to an underestimation of the prevalence of food deprivation. In that aspect, individual level measures of nutritional attainment alongside those at household level are critical in giving a more realistic picture of food deprivation in different contexts.

We adopt the use of concentration curves and Indices, as well as joint and conditional probabilities to establish a pattern of distribution on malnourished women across different

levels of household food (in)sufficiency. Our results show that though a larger proportion of malnourished women are located within food insecure households; there is still considerable evidence of a wide dispersion of incidences of women undernutrition, where an average of 30% of malnourished women were located outside of 40% of the households whose food insecurity status was most severe. Furthermore, conditional probabilities show equal chances of women being malnourished irrespective of food security level of households within which they are located. The findings provide evidence that food and nutrition security interventions that target households, may not reach a considerable number of women who are most in need, and that household level measures of nutritional well-being cannot serve as reliable proxies for women undernutrition.

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Chapter 4: The Relative Deprivation of Women; what Role for Empowerment?

Boipelo Freude and Christian Henning

4.1 Introduction

The relative deprivation of women of childbearing age, in terms of nutritional attainment has been documented in developing countries elsewhere (see for example Sraboni and Quisumbing, 2018 for Bangladesh and Harriss-White, 1997 for India). In the context of sub-Saharan Africa, however, evidence supporting intrahousehold gender inequalities is inconsistent and non-conclusive. While some studies suggest that there is no significant difference between the nutritional attainment of males and females in some west African countries; there is no doubt that gender inequalities can manifest in other forms. For example, Schaffer (1998) and others that followed him pointed to heavier workloads for women, with implications for their nutritional well-being. More recent findings show evidence of non-pooling of food related livelihood risks, where women's nutritional status show more volatility than that of their male counterparts. Moreover, as highlighted in the second chapter of this Dissertation, a considerable number of malnourished women (average of 30%) are located outside of 40% of the households whose food insecurity status was most severe. These findings point to a range of factors; both quantitative and qualitative that determine women's nutritional well-being, which may not necessarily be relevant for household level food (in)sufficiency and vise -versa. The important question is whether the extent to which women are empowered through different dimensions, play a role in reproducing and sustaining the gender-based relative deprivation.

Scholars have argued for the pursuit of the empowerment of women not only based on its importance for the achievement of key development outcomes, but also as a matter for the achievement of social justice. Firstly, there is considerable evidence that attest to the linkages between women empowerment and women's decision making power and key developmental outcomes, notably households' nutritional well-being and children's nutrition. Evidence generated from past research shows a positive correlation of women's control of resources- a critical element of their empowerment with well-being outcomes, particularly the nutritional and health status of children. The assertion with women empowerment and its relation to children's welfare is however not without controversy, as feminist critics have raised concerns of women being put in a position of "service" to the poverty reduction agenda. Moulynex (2006) and Kabeer (2010) caution against the tendency to exploit motherhood as pathway to promoting children's well-being, and that the support of bargaining power as key aspect of women empowerment; should be pursued as an end goal in itself.

Few studies, par Malapit et.al (2015), Sraboni and Quisumbing (2018) and others explore the linkages between empowerment and individual nutritional outcomes, particularly women's own dietary quality. Most if not all took advantage of emerging datasets that not only collect nutritional data at individual level, such as anthropometric indicators and individual specific dietary intake, but also link them to gender differentiated data on empowerment variables, for example the feed the future WEAI dataset (METSS-Ghana, 2012). Thus, an absence of data that is relevant for individual specific well-being outcomes as well the challenge in identifying and monitoring empowerment within different socio-cultural contexts make it more difficult to draw evidence on whether gains from women's economic progress, accrue to women and further translate into their own nutritional well-being. More importantly, in as much as there is no question on the positive effect of measures of women autonomy and/or empowerment on households' welfare, it would be interesting to know if the same measures of empowerment might have different implications for households and for women themselves.

This research paper attempts to bridge the analytical gap as indicated above by examining the role of three empowerment variables in determining women's own nutritional status versus that of their households. Thus, in Naila Kabeer's (1999) empowerment language we explore the distinctions between the instrumentalist properties of empowerment versus the transformative potential of the three empowerment parameters. We adopt an 'end' perspective as opposed to a means perspective in determining the factors, including the empowerment parameters, that are relevant in determining women's nutritional attainment, measured through the quality of their dietary intake. Understanding women's nutritional attainment from an ends perspective is important in guiding food-related policy in addressing not only the material constraints of food access, but also the structural constraints that are associated with women's ability to make strategic choices in relation to their own sustenance. Though inconclusive, due to data limitations, we further probe through our analysis, whether is there slight evidence of the phenomenon of low perceived contribution, need and interest on the part of women decision-makers in relation to their nutritional well-being. We then determine the extent to which gendered norms mediate the ability of women to translate their empowerment into effective bargaining and ultimately into well-being outcomes that are of benefit to them. Finally, we determine the extent to which household income, proxied by per Capita expenditure mediate the ability of women to translate their empowerment into effective bargaining and ultimately into well-being outcomes that are of benefit to them. Does the impact of empowerment

parameters on women's nutrition vary according to household income level?

4.2 A Review of Literature; Defining and Conceptualizing Empowerment

Empowerment has been defined in various ways by numerous scholars depending on the context, and outcome of interest. Ibrahim and Alkire (2007) give a comprehensive review of over twenty studies and their definitions of empowerment, where they highlight commonalities and divergences in the definitions. Within the food and nutrition security context, the most widely cited definition is that of Kabeer (1999), which describes empowerment as a process of expanding people's ability to make strategic choices, particularly where the ability had been denied before. The process of empowerment thus entails three dimensions: resources, agency, and achievements, which are essentially interrelated and indivisible. The component of resources here reflects the access and rights to material, human, and social resources, which enhance one's ability to exercise choice, while agency serves as the 'voice' behind translating the resources into the ability to act in decision-making that would ultimately result in desired achievements or outcome.

Similar to Kabeer (1999) is the definition as proposed by Alsop (2006), which conceptualizes empowerment as a constituent of two components of (a) the expansion of agency and (b) the institutional environment that either support or constrain the expansion of agency. Here, it is worth mentioning that the concept of 'bargaining' as used in household economy analysis is linked to empowerment through the agency dimension; where bargaining is considered a pathway through which empowerment is exercised. The two definitions of empowerment as indicated here are nonetheless more compelling as they draw attention to other factors, mostly qualitative; outside of the realm of economic analysis, which are nonetheless critical in strengthening the linkages between empowerment variables and our well-being outcomes of interest- in this case household food sufficiency and women's dietary intake.

While there may not be a universal way of defining empowerment and there are challenges related to its multiple dimensions that are context specific; to economists however, this does not pose any challenge empirically, as they all describe the same phenomenon (Malhotra,et.al., 2002; Imai et.al., 2014). For feminist scholars, for example Basu and Koolwal (2005) and Kabeer (1999); the concern is the tendency to oversimplify or assume homogeneity among the 'so called' empowered women, which according to Kabeer (1999) overlooks the importance of the outcome of interest in defining the phenomenon of empowerment. A distinction between

outcomes or achievements that testify to the transformative potential of women empowerment, and those that attest to the effectiveness of women empowerment within their prescribed gender roles; as mothers, daughters-in-law and so on; is important from the policy perspective. Looking at achievements through the 'ends' versus the 'means' perspective carries implications for measures of empowerment that are relevant for enhancing women's ability to make strategic choices in relation to their own nutritional well-being versus those that are associated with the nutritional well-being of households.

4.2.1 Effective / Instrumental versus Transformative Forms of Empowerment

Women bore the primary responsibility for children's well-being and other nurturing obligations- a role that is prescribed for by the prevailing social norms. It is on this premise that most studies hypothesize that their empowerment be associated with positive achievements in the nutritional attainment and health of their children (for example Imai. et.al. 2014, and Lepine & Strobl, 2012- to mention a few). The same goes for households' nutrition, which falls within women's pre-assigned sphere of jurisdiction (Ruel and Alderman, 2013, Sraboni and Quisumbing, 2018). The approach of pursuing women empowerment from the "means" as opposed to the "ends" perspective, is popular among researchers and it is supposedly in synergy with broader development goals. Central to Smith et.al (2003) framework of causes of malnutrition, for example, is women's nutrition and other forms of enhancement of women's well-being, which are regarded as being essential for children's nutrition at both utero and early stages. This instrumentalism of empowerment as referred to by Kabeer (2001), poses a challenge for the achievement of social justice, as it relegates women empowerment as an end in itself; to the second place.

By suggesting that women empowerment is important for children's nutritional well-being, but not women's own nutritional well-being, Fafchamps et.al. (2009) study in Ethiopia, echoes literature elsewhere in the developing world. Fafchamps et.al (2009) study relied on assets brought to marriage, control over resources during marriage and disposition of assets upon divorce as measures of empowerment; and they attribute their finding to the extreme poverty that does not provide room for bargaining among spouses. What is missing in this argument, though, is the distinction between empowerment measures as those that enhance women's instrumental strengths, versus those that have transformative potential- in terms of achievement of outcomes that are otherwise 'contested'. In the 'Empowerment' language (Kabeer, 1999), empowered women through their ability to make choices (the notion of choice being central to

empowerment), are presumably rendered capable of sustaining their own well-being. Kabeer (1999) goes on to highlight that however, where these choices are shaped by the prevailing norms, and perceptions that serve to reinforce women's subordination and men's dominance; the link between power and choice becomes more indistinct.

Here, we may view women's own nutrition as a form of achievement that would require decision-making processes that go against the grain of established norms, customs, and practices, and more importantly, the prevailing social perceptions about deservedness and the legitimacy of their claims. For this reason, instrumentalist, or effective forms of empowerment, may not necessarily be relevant for outcomes that are of women's own benefit.

4.2.2 The role of Social Perceptions in Women's Deprivation

The conception of perceived interests and perceived contribution is key to understanding how intra-household inequalities are constructed and maintained (Sen, 1990; Agarwal, 1997). Often women's perception of their interest differs from an objective notion of their respective well-being, resulting in the outcome of their agency being less favourable to them. Naila Kabeer (1999) makes an interesting point here, and she highlights that these perceptions aren't necessarily "false" in that sense, rather they stem from the everyday realities and lived experiences of what is and not possible within the socio-economic contexts within which women are imbedded. Women in rural communities mostly under value their own well-being compared to that of other household members, most notably that of men and children (Agarwal, 1997). In-fact women's needs and interests, as opposed to that of men are mostly compounded with households needs. The social expectation of the notion of "putting family first" is much more common among rural women than men in most Sub-Saharan communities, which further reinforces gender related deprivations. This observation is stark among households facing food crisis, and mechanisms that households adopt to cope with seasonal variations in food access would mostly reflect such perceptions, through for example, the practise of maternal buffering where women, and not men would withhold their own consumption in favour of children.

Similarly, how women perceive their own contribution to household well-being is mostly different from their actual contribution. Sen (1990) highlights the notion of perceived legitimacy in regards deservedness of claims by women among rural communities. In concurrence with Sen's claims, Agarwal (1997) further notes that this under-valuing of women's contribution is not only by women themselves but by other members of the household, and at community, market, and state arenas. Within the household, women's care and nurturing

work may be seen to be less visible than men's waged work, for example. In this regard, despite their immense contribution in helping households to cope with food crisis, by over-stretching their reproductive role, female members of households would still get less, since their contribution is less visible or is undervalued.

4.2.3 Social Norms and Bargaining; Mediating Impact

Still on the issue of qualifying choices, within the framework of empowerment, Kabeer (2001) goes on to highlight the importance of distinguishing between strategic choices that have the potential to transform or transcend structural constraints and those that merely reproduce or reinforce existing inequalities. Say for example, women's tendency to adhere to traditional norms and practices that disadvantage them such as son preference, and intrahousehold feeding order that is unfavourable to women and adolescent girls; such behaviours are also referred to as cases of "choosing not to choose" (Kabeer, 2001: 440), and have implications for the well-being of women. Here, an understanding of what constitutes social norms is important in understanding their role in reinforcing gender related deprivations, where nutritional well-being is concerned. Social norms are defined as informal rules that govern behaviour among groups and societies, and a common feature that distinguish norms from other traditional practises, customs, or belief systems, is the social sanctioning or ostracization that accompany one's failure to conform (Bicchieri, 2006). It is worth noting here that the social sanctioning from the very communities that rural women draw social capital from, further exacerbates their sense of vulnerability- given the importance of social capital in determining not only their well-being, but their intrahousehold bargaining power as well.

The framework of empowerment enables an understanding of how social norms impinge on both the resource and agency dimensions, and in the process shaping the well-being outcomes or achievements; given the indivisibility of the three. Agarwal (1997) and Kabeer (1999) talk of how social norms, in prescribing people's behaviour can define the parameters within which women and men are able to exercise their agency, with one group benefiting more than the other. Furthermore, in assigning roles and responsibilities to men and women, social norms dictate that childcare and other nurturing obligations be the responsibility of women. In parts of South Africa, a man seen to be performing "women duties" is shunned by his community and may be deemed to be incapable of partaking in decision-making processes within the community. The over-stretched reproductive role is a limitation in women's wage-earning

possibilities, and according to Agarwal (1997: 16), "… ideologically constructs them as dependents and men as breadwinners".

4.2.4 Reflecting on Measures of Empowerment

Our analysis draws a distinction between women empowerment parameters that are instrumental in achieving outcomes that are beneficial to women themselves; versus those that influence the outcome that is of benefit to households within which they are imbedded, our outcomes of interest in this case being women's dietary intake and household food sufficiency respectively. Table 4.1 below provides a summary of empowerment indicators drawn from literature on the subject. To guide our discussion and analysis, we draw heavily from the framework of empowerment as proposed by Kabeer (1999) which conceptualises empowerment as one's ability to make strategic choices through three interconnected dimensions of (i) access to resources, (ii) agency and (iii) achievements.

Table 4.1 Summary of Empowerment Indicators by Dimension

Dimensions of Empowerment	**Indicators**
Access to resources	• Women 's Education. • Women 's level of education relative to men 's. • Share of income earned by women. • Participation in labour force • Potential to earn income • Unearned income • Land Ownership
Agency	• Women's involvement in household decision-making. • Permission required to visit family and friends • Permission required to go to the Market. • Whether or not respondent makes decisions on obtaining own healthcare • Gap in age between spouses • Women's perception of appropriate social norms
Achievements	• Workloads in agricultural work, productive and reproductive work. • Leisure time

Source; Own Compilation

Empowerment Measured through Access to Resources

Asset ownership and income wages are often seen as indicators of economic independence on the part of women; which supposedly enhances their level of autonomy; with the assumption that it influences resource allocation towards the achievement of outcomes that they value. However, whether women control the money that they earn, is an issue for their transformative agency. Furthermore, research also shows that when the income earned is used for households' welfare, it serves an instrumental role rather than a transformative one.

Ownership of and control over assets has also been used by numerous scholars as a proxy for empowerment. Asset based proxies of bargaining power range from tangible, such as land ownership, and property to intangible assets such as access to social networks, or kinship support (Friedemann-Sánchez,2006). The most commonly used indicators in this case are (a) assets owned (Doss 1996); (b) assets brought into marriage (Quisumbing and de la Briere, 2000) and (c) wife's perception concerning her share of assets over her spouse's (Frankenberg and Thomas, 2001). With land being the most important asset in among rural agrarian communities, it is no wonder that ownership of land is commonly used as a proxy for bargaining power. However, to be meaningful within the context of empowerment; Kabeer (1999) notes that ownership of a resource or asset as an indicator should also reflect some of the norms and rules that govern its distribution and exchange. Research has also shown that the transformative significance of asset ownership among traditional communities is mediated by other socio-cultural factors, such as kinship, the conjugal contract, as well as norms and practices that govern inheritance (Kabeer, 1999). Access to resources as an empowerment parameter, is nonetheless appealing to feminist scholars, who have argued that assets offer more transformative potential for women, than say income, in relation to contestations of social inequalities at different arenas.

Agency Dimension

Decision-making in relation to economic decisions related to finances, expenditures, and resource allocation; matters related to women's and children well-being – such as decisions about schooling, health, and nutrition, has been considered by numerous scholars as a proxy for empowerment dimension of agency. It has also been argued that whether the measure serves a transformative or an instrumentalist role, is dependent on whether the decision-making process is done in relation to pre-existing gendered division of roles and responsibilities; or whether

women have the power to partake in decisions regarding strategic choices, particularly where this power had been denied before (Kabeer, 1999; Basu and Koolwal, 2005). For example, whether women have the freedom to visit friends and relatives without permission, has been used as a proxy for empowerment, within the context of South Asia, where women's mobility is curtailed by gendered institutions that control the behaviour of women relative to their male counterparts. Women's ability to visit friends and relatives, or seek medical care for themselves, without permission; has since been confirmed to be reflective of women's transformative agency, as opposed to for example, women 's freedom to go to the market. Here we may begin to recognise that freedom to go the market enhances women's capacity to make choices in relation to their pre-assigned roles as mother, daughter -in-laws, and so on, and thus, not contested.

As parameters that reflect marital advantage and hence intra-household bargaining power; the difference in age, as well as disparities in educational attainment between spouses, shown in Table 4.1, have also been considered as proxies for women's transformative agency. For example, a small age difference between spouses among respondent households in India was reported to be associated with a higher quality diet intake of women (Basu and Kolwaal, 2005). Basu and Koolwal (2005), refer to this indicator as "Empowerment as Self-indulgence", as it enables women to pursue goals that are of benefit to them. Another example of empowerment as self-indulgence that fall within the Agency domain is that of women's perception of appropriate social norms, such as their attitude towards domestic violence and/or Female Genital Mutilation (Mabsout and Van Staveren, 2010). Women who do not tolerate spousal violence may be regarded as more autonomous as they show an ability to challenge or contest harmful norms within their communities that undermine their own well-being. For example, Basu and Kolwaal, 2005) findings in India showed that women with a zero-tolerance policy for wife beating were more likely to consume a better-quality diet than women who felt that domestic violence was justified.

Empowerment as Achievement

The Achievement dimension of empowerment has been used by a number of studies as an outcome of the other two dimensions of resources and agency; mainly in demonstrating inequalities in well-being outcomes as a result of inequitable access to resources or denial of power for one to make strategic decisions, which constitutes their agency. For example, Kishor (1997) study examined the impact of women empowerment, measured through several

resources and agency indicators, in determining infant mortality and immunization, both of which are regarded as "functioning achievements" in Sen's (1985) Capability language. Nonetheless, measures of empowerment based on the achievement dimension such as time constraints faced by women, are increasingly being used to determine impact of empowerment on nutritional well-being outcomes, which also serve as functioning outcomes. Komatsu et.al (2018) highlights that the limitation in using these indicators however, lies on the fact that the link between time constraints and nutritional well-being is not a clear and unmediated one, and it is also context specific.

Leisure, another side of the time constraints phenomenon, though not a clearly defined concept particularly among traditional communities, also serves as a proxy for empowerment. The results of Basu and Kolwaal (2005), who classify leisure as a proxy for "empowerment measured through self- indulgence", showed a positive association with women's consumption of milk and eggs. Leisure as an empowerment parameter is thus regarded as a form of transformative agency that enables women to lay claims for well-being outcomes that are of benefit to them.

4.3 Analytical Approach

We examine, the role of three empowerment variables in determining women's own nutritional status vis-a vis that of households within which they are located. We model two nutritional outcomes: The Hunger Household Score (HHS) and the Women Dietary Diversity Score (WDDS) as dependents and three empowerment variables as predictor variables. We adopt the use of Ordinary Least Square (OLS) econometric techniques, and this is despite concerns about endogeneity of empowerment variables, which according to numerous scholars, are influenced by the same factors that determine nutritional outcomes (Basu, 2006; Malapit and Quisumbing, 2015). For example, ownership of assets and household food security may be driven by similar observed and unobserved characteristics, such as prevailing gender norms, household income, as well as individual members' human resources (Quisumbing and dela Breie, 2000). While some have corrected for the endogeneity by use of instrumental variables (for example Sraboni et.al.,2014) in our case however, data availability limits our use of instrumental variables technique to correct for endogeneity. Following Malapit et.al (2015), we instead make use of regional dummies to control for region-specific heterogeneities: mainly unobservable and

observable characteristics that may have an impact on nutritional well-being of individuals and that of households, such as infrastructure, social norms and agroclimatic conditions.

Also presented are Interaction effects of empowerment parameters and gendered norms, proxied by ethnicity to capture the extent to which the association between women's bargaining power measured through economic parameters and well-being outcomes is mediated by more equitable gendered norms at the community level. Empowerment variables are further interacted with income quantiles, aim of which is to determine whether the impact of empowerment on nutritional outcomes vary by income level.

4.3.1 Data Needs

For the analysis we rely on the data collected through Ghana's Feed the Future (FtF) Baseline survey. Conducted during the months of June to August 2012 in the Northern part of Ghana, the survey covers four regions: namely, Brong Ahafo, Upper West, Upper East, and Northern Regions. The baseline survey aims at providing data to enable the monitoring the impact of FtF-supported activities (METSS-Ghana, 2012). The dataset has a total sample size of 4,410 households, and in addition to relevant modules on household demography and socio-economic characteristics, the survey further collected data that allows for the computation of the Women Empowerment in Agriculture Index. Thus, through the module on the WEAI, the survey collected individual level data on 5 critical domains of empowerment pertaining to the primary male and female decision makers within each household; (i) access to productive capital, (ii) influence over agricultural production decisions, (iii) decision-making roles over the uses of earnings generated from various livelihood activities, (iv) membership in economic and social groups, and (v) time allocation, which includes satisfaction with one's leisure time.

The research paper focuses on the dietary intake of female primary decision makers within dual headed households as well as the nutritional well-being of households within which they are imbedded. The analysis is also restricted to women within agrarian based-livelihoods households, and therefore eliminates households in urban areas. Thus, only the households with both a male and female decision-makers, whose WEAI data has been completed, are included in the final analysis. With these restrictions and accounting for outliers, the sample size is reduced to 1,572 women within 1,572 households.

4.3.2 Econometric Framework

The model for determining association of women empowerment and food security outcomes is mathematically determined as follows:

$$Y = \beta o + \beta_1 \Theta + \beta_2 I + \beta_3 h + \beta_4 C + \mathcal{E} \qquad (1)$$

Where Y denotes the Food Security Outcome of interest; Θ the empowerment variable; I and h are individual and household characteristics respectively; and c denotes community level variables. βo, β_1 and β_3 and β_4 are coefficients to be estimated, and Ɛ is the Error term. Our coefficient of interest in equation (1) is β_1 which determines the impact of women empowerment on food security and nutritional outcomes. Within the bargaining framework, individual members with greater intra-household decision-making powers receive a larger share of benefits from household resources; we therefore hypothesize that women empowerment variables will positively impact on their nutritional outcomes. Similarly, in line with the literature that underscores the importance of women held assets and decision-making powers in determining household nutritional well-being, our hypothesis is that of a significant and negative association of women empowerment variables with household food insufficiency.

By using equation 1 however, we assume that the strength of bargaining gained from empowerment variable Θ in determining outcome Y is the same across different gendered norms that characterize the different ethnic groups. There is compelling theoretical and empirical evidence that points to role of social norms, particularly unequal gender norms that are biased against women, in weakening the ability of women to bargain more effectively for well-being outcomes that are favorable to them. Given that these social norms are context specific and vary from one ethnic group to another, we further analyze how the impact of women empowerment on food security varies by gendered norms associated with people's ethnicity.

We therefore interact the empowerment variable Θ with the ethnicity dummy (e =1 if Akan, being the dominant matrilineal ethnic group). The ethnicity dummy variable is informed by anthropological accounts of how gender norms within matrilineal societies would appear to be equal as opposed to patrilineal kinship systems, where women would supposedly have lower status. For example, Belt et.al. (2016) highlights that women from matrilineal societies were better able to implement their preferences than women in patrilineal societies, whose husbands were thought of as being more authoritative. This then implies that the bargaining power gained

from ownership of resources may be overruled by the prevailing gender norms. We therefore examine how the impact of empowerment variables on nutritional outcomes are mediated by the prevailing gender norms associated with matrilineal or patrilineal ethnic groups. Similarly, we examine how the link between women empowerment and nutritional outcomes varies by household income level q, and we interact the empowerment variable with income quantiles; (q=1-4 with 1 being the lowest income level, and 4 the highest).

We make estimations of the interaction effect of the two variables e, and q, using the augmented equations as indicated below:

$$Y = \beta o + \beta_1 \Theta + \beta_2 I + \beta_3 h + \beta_4 C + \beta_5 (\Theta * e) + \beta_6 (\Theta * q) + \nu \qquad (2)$$

Where β_5 reflects the interaction effect of empowerment and gendered norms, proxied by ethnicity; while β_6 represents interaction effect with income level and ν denotes the error term. Following Malapit et.al. (2015), we not only pay attention to whether coefficients β_5 and β_6 are significant or not; we also focus on the sign of the coefficient. For gender equitable norms for example, if β_5 is positive and significant, then the impact of empowerment on nutrition is more favorable for households of matrilineal lineage and if negative, it implies that women empowerment buffers or mitigates the impact of non-equitable gender norms on nutrition and dietary intake. Likewise, a positive and significant β_6 will reflect an impact of empowerment on nutrition that is favorable for women within relatively high-income households; while a negative and significant coefficient indicates an impact of empowerment that is more beneficial for women in low-income households.

4.3.2.1 Outcome Variables

Our choice of outcome measures has different implications for the empowerment parameters that we consider for the analysis. The Hunger Household Scale (HHS), which is an experiential-based method of estimating household food insufficiency is presumably achieved through the instrumentalist strengths of women empowerment, or empowerment as mothers and as wives, for example.

Women Dietary Diversity Score (WDDS) on the other hand reflects women's micronutrient adequacy and considering that it is "self-Serving" (Basu & Koloolwal, 2005); its achievement thus reflects the transformative nature of empowerment.

Household Hunger Scale (HHS)

The Household Hunger Scale (HHS) is constructed using three questions that capture people's experiences of food deprivation over a 30-day time period and three frequency responses. In the first instance the respondent, who is a household member that is responsible for food preparation is asked if a given condition of food shortage was experienced, the answer of which is yes, or no. If yes, then the follow up question is about the frequency of the occurrence of the food shortage and/or crisis, and the answer to that is categorized into three- rarely, sometimes, or often. Each response category is given a value; (0 for no, 1 for rarely and sometimes, and 2 for often). The HHS Score is the sum of all the values for response categories, the resulting score of which ranges from zero to six (0-6). In this regard the household food deprivation scale is based on the premise that people's experience of household food deprivation triggers predictable reactions that can be captured in a survey and summarized into a scale (Ballard et.al, 2011). The HHS indicator used as a measure of household food (in)sufficiency is a continuous variable that ranges from 0 for food secure households to 6 for the severely food insecure household.

Women's Dietary diversity Score (WDDS)

WDDS reflects women's micronutrient adequacy, which is a critical aspect of diet quality. Furthermore, the score serves as a gender relations indicator, in the sense that in resource poor environments where diet quality is poor, women of reproductive age remain more vulnerable than their male counterparts, due to the physiological demands of pregnancy and lactation (WHO/FAO, 2004). The gaps between intake and micronutrient requirements poses not only a threat to the nutritional status of women themselves, but to their unborn, or lactating infants as well a long- term vulnerability context that perpetuates a cycle of poor growth, food insecurity and poverty.

The Women's Dietary Diversity Score (WDDS) is designed to capture the nutritional quality and nutrient adequacy of women's diet in the household. The score is estimated using a count of nine food groups consumed over the preceding 24 hours. The score is based on the following food groups: (1) starchy staples, (2) green leafy vegetables, (3) other vitamin-A-rich fruits and vegetables, (4) other fruits and vegetables, (5) organ meat, (6) meat and fish, (7) eggs, (8)

legumes and nuts, and (9) milk and milk products (Chagomoka et.al., 2016). Thus, the WDDS is used in the analysis as a continuous variable that ranges from 1 for least diverse food intake to 8, for the most diverse and hence high-quality dietary intake.

4.3.2.2 Main Independent Variables

For the main analysis, we use the three empowerment measures as explanatory variables, with the aim of examining how their impact varies for women's dietary intake, on one hand and household food insufficiency on the other. Therefore, for each of the two outcomes, we make estimations based on three alternative models as indicated below: Also included within each model are estimations of coefficients of interaction of the empowerment measures with ethnicity (1 if Akan) and income level.

Model 1—Women' Satisfaction with their leisure time, which a measure of empowerment that is representative of the achievement dimension of the concept of empowerment.

Model 2—The average number of income use decisions into which the primary female respondent has some input, which signifies their level of agency.

Model 3- The share of household assets owned by women is representative of the resource dimension of the concept of empowerment.

(i) Access to and control of Assets

To better understand the gender dimensions of asset ownership and control gender disaggregated data is acquired at individual level, where detailed information on men's and women's ownership and control of different assets is recorded. Separate composite scores (ψw and ψm) for access to and control of assets is based on the responses to questions on two aspects of ownership and control; (a) whether the respondent could claim sole ownership or co-ownership of an asset; and (b) whether they had a role in the decision-making processes regarding the use and the disposal of the asset. The assets range from large tangible resources like land and livestock and large consumer durables such as fridge, a television set or other forms of household furniture; to small consumer durables such as radio, cell phone. The responses to these questions are broadly categorized as (i) self (ii) Self and other people; whether household members (e.g. spouse and children) or other people outside of household,

and (iii) Self and partner/spouse jointly with other outside people. A woman or man is considered to have ownership to an asset if he or she claims sole ownership (self) or joint ownership, scoring 1 and 0.5 respectively. Composite scores (ψw and ψm) are constructed with eight raw indicators for women and men separately, reflecting the strength of their intra-household decision-making power. The scale for both scores ranges from 0 to 8, and the summary statistics are appended to the bottom of Table 4.1. Women's relative decision-making power (θw) is constructed using the share of the women's decision making (θw=ψw / (ψw+ψm).

(ii) Control over use of income; Proxy for Agency

The sole or joint decision making over the use of income and/or earnings from agriculture and non-farm activities reflects one's 'agency'. For the development of this indicator, the male and female primary decision-makers are asked questions on how much input they have had in decisions concerning the use of earnings from 6 different activities. The livelihood activities included in this module are food crop farming (crops that are grown primary for household food consumption) and cash crop farming (crops that are cultivated largely for sale in the market). The response of which ranges from No input, Input into very few decisions, Input into some decisions, Input into most decisions, to Input into all decisions. The woman is considered to have control over use of income if they claim to have had some input in the decision-making process of the use of the income. Values are assigned for each decision made and the score is a continuous variable made up by the sum of the values of each decision made.

(iii) Women's satisfaction with their Leisure time

The indicator of women's satisfaction with their leisure time is a subjective measure of their level of satisfaction with the time available for leisure activities. Activities covered include visiting neighbours, watching TV, listening to the radio, seeing movies, and doing sports; with responses ranging from 1, for not satisfied to 10 for very satisfied. We use the indicator "leisure time" as is in the WEAI, which considers the respondent adequate if her level of satisfaction equal to or higher than 5, (thus scoring 1 if satisfied and 0 if not). Given the subjective nature of one's satisfaction with their leisure time, the indicator may reflect both an achievement, from the empowerment point of view on one hand and on the other hand one's frame of references (Alkire, et.al., 2012). Experience and research can attest to the gendered differences in reference

standards. WEAI reports in Bangladesh, for example, showed that more men than women reported a dissatisfaction with their leisure, and this is despite the longer working hours that were reported by women. This trend could also reflect the prevalence of gendered norms that assigns roles and responsibilities, and in that way curtailing women's agency and rendering them incapable of making claims of own leisure time and time use.

4.3.2.3 Control Variables

At individual level, we control for age and education of women as well as that of the heads of households for the impact on nutritional outcomes. Women's age and their literacy are expected to influence women's dietary intake positively, while household age and their level of literacy is expected to impact negatively on household food insufficiency. The analysis is restricted to a sample of women aged 18 to 49 years, who self-identify as secondary decision makers, the mean age of which is 33. The minimum and maximum age, as well as the mean age of households' heads is also presented in Table 4.2. Literacy is measured by whether one can read can read and write. The education module of the survey collected information on whether respondents can read and write (a) the local language, (b) English and (c) Arabic; and a "yes" for any three is scored "1". As indicated in Table 4.2 below, approximately 8 percent of the women in the sample are considered literate, while 11 percent of households' heads are literate.

At household-level, we control for the size of household and composition; based on the number of individuals living together and sharing food related resources, during the time of the survey. The average household size as indicated in Table 4.2 is 8. The variable used in the estimations is the Log of household size. The survey further collects information on the household composition based on the following categories that are consistent with the nutritional requirement of different sex-age cohorts; ages 0 to 5; 6 to 14; 15 to 55 and over 55 for both male and female members respectively. The minimum, maximum and mean values of the shares of the different sex-age cohorts are presented in Table 4.2 below.

Household income, proxied by monthly per capita expenditure (Ghc/capita), is also controlled for. For regression analysis we use income quantiles as predictors, to control for differential impact on different income level groups. Households having higher income are obviously less likely to be food insecure, as compared to households with low income. We also include household agriculture production variables as predictors of both nutritional outcomes, namely

the log of hectarage under maize production diversity in food crop production, which is measured by the total number of food crops produced by the household. Presuming that households consume most of the food that they produce, then a more diverse crop production is expected to increase dietary diversity contribute to a more diverse diet for women. A change in total number of food crops produced may also alter food sufficiency of producer households through explicit or implicit changes in household income.

Still under household food production, the analysis also includes binary variables indicating whether households report ownership of livestock, smallstock and a piece of land for agriculture production. As indicated in the Summary statistics table above, landownership is common in our sample with an average of 94 percent reporting landownership. An average of 28 percent of the households reported ownership of livestock, while ownership of smallstock is at an average of 70 percent. Land ownership and ownership of livestock and small-stock is expected to impact on both household and dietary intake of women- through an increase in income and also through the consumption of animal products.

Lastly, community level variables that are controlled for include the ethnicity of respondent households, as well as the distance in kilometers from the nearest town with population of at least 250 000 people. Statistical descriptive of Ethnicity (1 if Akan and 0 if not), are presented in Table 4.2, and they show 4 percentage of households, being Akan. We also include dummy variables for the four regions in our regression to control for location specific effects, which is important in reducing omitted variable bias.

Table 4.2 Data Description; OLS Estimates

Variable	**Mean n=1,572)**	**Std. Dev**	**Min**	**Max**
Nutritional Outcomes				
WDDS	3.74	1.412	0	9
HHS	3.12	1.235	0	6
Empowerment Variables				
Share of Assets owned by women	0.14	0.162	0	1
Number of income use decisions	1.43	1.213	0	5
Satisfaction with leisure time (1 if yes)	0.88	0.330	0	1
Individual Characteristics				
Age of female	32.73	7.924	18	49
Women literacy (1 if can read and wrote, 0 if not)	0.075	0.255	0	1
Age of Household Head	41.81	1.274	25	90
Household head Literacy (1 if can read and write)	0.11	0.315	0	1
Household Agriculture Production				
Household Owns livestock (1 if yes)	0.28	0.452	0	1
Household owns small stock (1 if yes)	0.70	0.457	0	1
Household owns land (1 if yes)	0.94	0.231	0	1
Maize Production (ha)	1.44	1.903	0	36.42
Crop diversity	1.53	0.835	0	3
Household Characteristics				
Household Per capita total expenditure (Ghc)	11. 12	1.130	0	173.01
Household Size	8.02	4.360	2	35
Ratio of female members of age 0- 5 years	0.11	0.125	0	0.67
Ratio of male members of age 0- 5 years	0.11	0.120	0	0.6
Ratio of female members of age 6- 14 years	0.11	0.112	0	0.5
Ratio of male members of age 6- 14 years	0.14	0.126	0	0.6
Ratio of female members of age 15- 55years	0.27	0.108	0.071	0.75
Ratio of male members aged 15-55 years	0.23	0.120	0	0.75
Ratio of male members of age over 55 years	0.02	0.053	0	0.5
Ratio of female members of age over 55 years	0.013	0.041	0	0.33
Access to clean and safe drinking water (1 if yes)	0.64	0.481	0	1
Community level Characteristics				
Distance to City with pop of >=250000	215.28	125.187	21	771
Ethnicity (1 if Akan, 0 if any other)	0.04	.0.195	0	1

4.4 Results and Discussions

Table 4.2 above presents a summary of our coefficients of interest from models 1 to 3 that estimate the influence of women empowerment variables on women's dietary intake and

household food security. The Ordinary Least Square results for the determinants of household food security women's Dietary intake are presented fully in Tables 4.4 and 4.5 in the Annexes.

(i) Impact of Women's Satisfaction with Leisure Time

Women's satisfaction with their leisure time is not significant for WDDS, indicating the irrelevance of this empowerment measure for the dietary intake of women. This finding is inconsistent with the results of studies that regard women's leisure as a form of 'self - indulgence' measure of women's autonomy, in relation to the enhancement of their own well-being. However, it could be that there are still ambiguities in conceptualizing leisure, as an empowerment parameter within the context of rural communities in most developing countries. For example, Basu and Koolwal (2005) highlight that woman in a survey in India reported activities such as doing laundry and cleaning house when asked of their leisure time. Thus, this indicator is subject to a low perception of contribution, on the part of rural women.

However, when interacted with household income level, the coefficient estimate is positive and significant, which suggests that women's satisfaction with their leisure time has a more favorable impact on the dietary intake of women within households with higher income level. The direct effect of the ethnicity dummy, however, is positive and significant for WDDS, indicating that women within the Akan, a matrilineal ethnicity group, are more likely to consume diverse diets than women in patrilineal groups. The interaction term between women's satisfaction with their leisure time and the ethnicity dummy, on the other hand is significant and negative. Here we pay particular attention to the negative sign of the coefficient, which implies that women empowerment buffers or mitigates the impact of gender inequitable norms on their dietary intake. Thus, the transformative potential of women empowerment measured through women's satisfaction with their leisure time, is mediated by gender equitable norms and household income.

Table 4.3 Coefficients Estimates for Empowerment Parameters

	WDDS	**HHS**
Model 1		
Women's Satisfaction with leisure time (1 if yes)	0.130 (0.214)	-0.381*(0.216)
Leisuretime * Ethnicity Dummy	-1.375***(0.596)	-0.266*(0.136)
Leisuretime * Income Quantile	0.145* (0.0761)	0.181**(0.0821)
Ethnicity Dummy (1 if Akan)	1.224**(0.581)	-0.424 (0.624)
Per Capita expenditure Quantiles (Ghc)	0.0413 (0.0785)	0.0540 (0.0640)
Observations	1,461	1,482
R2	0.160	0.269
Model 2		
No. of decisions made on income use	-0.0659 (0.0606)	-0.142***(0.0548)
No. of decisions made on income use*Ethnicity Dummy	-0.135 (0.121)	0.140 (0.0934)
No. of decisions made on income use * Income Quantile	0.0203 (0.0224)	0.0236 (0.0185)
Ethnicity Dummy (1 if Akan)	0.0161 (0.254)	-0.424 (0.624)
Per Capita expenditure Quantiles (Ghc)	0.136***(0.0448)	-0.139 (0.0926)
Observations	1,467	1,482
R2	0.144	0.272
Model 3		
Share of Women Owned Assets	2.072***(0.429)	0.595 (0.383)
Share of assets*Ethnicity Dummy	-0.0112(0.164)	0.0644 (0.725)
Share of Assets *Income Quantile	-0.774***(0.153)	-0.184 (0.151)
Ethnicity Dummy (1 if Akan)	-0.214 (0.235)	-0.260 (0.228)
Per Capita expenditure Quantiles (Ghc)	0.260***(0.0391)	0.0417 (0.0696)
Observations	1,467	1,482
R2	0.155	0.267

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The OLS estimates for women's satisfaction with time available for leisure shown in Table 4.3 above show a significant and negative correlation with the household hunger scale (HHS), indicating a positive association with household food sufficiency. When interacted with household income level, however, the coefficient is positive and significant. This finding suggests that women empowerment measured through 'satisfaction with leisure time offsets the negative impacts of households' low income on household food sufficiency. This finding implies that women empowerment measured by their satisfaction with their leisure time is more beneficial for households with low income. Thus, the effective potential of this empowerment

parameter is mediated by income level. The interaction term between empowerment and ethnicity dummy on the other hand is not significant for HHS; and we therefore fail to reject the null hypothesis that states that empowerment has no differential impacts for households of matrilineal lineage and those of patrilineal lineage.

(ii) Control Over use of Income

The number of decisions made over use of income from different sources is used here as a proxy measure of agency. Question is as a measure of women's decision-making power, does this measure serve an instrumentalist /effective or a transformative purpose, in relation to households' food insufficiency and women's dietary intake respectively? The OLS coefficient estimates presented in Table 4.3 above show a significant and negative association between the number of self/joint decisions over the use of income from the different livelihood activities made by women and household food insufficiency. The findings imply that women's average number of income use decisions is necessary for the nutritional well-being of their households, which is consistent with past findings elsewhere in the developing world that suggest that when women have more control over the use of household income, more resources are diverted into the nutritional well-being of households. For example, Hoddinott and Haddad (1995) study in Cote d'Ivoire shows that an increase in women's control over income is associated with an increase in household budgetary allocation for food items. Duflo and Udry (2004) drawing heavily from the anthropological evidence of non-pooling of income among households in traditional economies goes further to highlight that this impact is driven more by the source of income and the household member in control of that income. However, as feminist scholars would assert "the origin of the income is itself a distribution factor" (Folbre, 1997), and in that regard studies draw a distinction between income from the so called "men crop", mostly cash crops and income from "women crops", which are in most instances food crops; and their respective uses.

The coefficient for Women's Dietary Diversity Score, on the other hand, is not significant, which shows that women's decision-making power on the use of income does not translate into better nutritional outcomes for themselves. This finding may be attributed to lower status of women that is attached to the phenomenon of their perceived interest response and perceived sense of lesser contribution, as suggested by Amartya Sen (1990), and others like Bina Agarwal (1997). These Feminist scholars have brought to our attention the phenomenon that suggests

that women would for example question or doubt their legitimacy in claiming a larger share of the gains of co-operation given their perception and others on their contribution to the well-being of the households. The coefficient for interaction with income quantile is also not significant, thus, we fail to reject the hypothesis that impact of the empowerment variable measured through the number of expenditure decisions on women's dietary intake varies by income level. The direct effect of household income (proxied by per capita expenditure quantile) is positive and significant, which is to be expected. This finding underscores the importance of household income for dietary intake of women.

The interaction term between number of expenditure decisions made by women and the Ethnicity dummy variable, however, is negative and significant for WDDS. This finding suggests a mediating effect of gendered norms, albeit negative, which implies that an increase in the number of expenditure decisions made by women can mitigate the impact of unequal gender norms on dietary intake among women located within patrilineal households, where gendered norms are presumed to be unequal.

(iii) Share of Assets owned by Women.

Assets owned by individuals have multiple benefits; not only do they strengthen one's intra-household bargaining strength, but they also serve as 'stock' that can be drawn on to buffer against food related livelihood risks. Thus, the distribution of assets among individuals within a household, has a bearing on well-being outcomes, and here we take note of literature that show that not only does incidence of ownership of assets disadvantages women; women tend to use the ones they have differently (Quisumbing, 2003; Smith, 2003). Figure 4.1 shows large gaps in gendered ownership of assets, where men are at a disproportionate advantage in the ownership and control of assets. Take for example land, which remains an important asset among agrarian based communities; just over 100 women as opposed to 2000 men report ownership. The smallest gap in gendered ownership of assets is with consumables and durables, which is to be expected. Despite the large disparities in ownership of assets by men and women; however, a higher share of assets owned by women is presumed to be beneficial in yielding favorable nutritional outcomes.

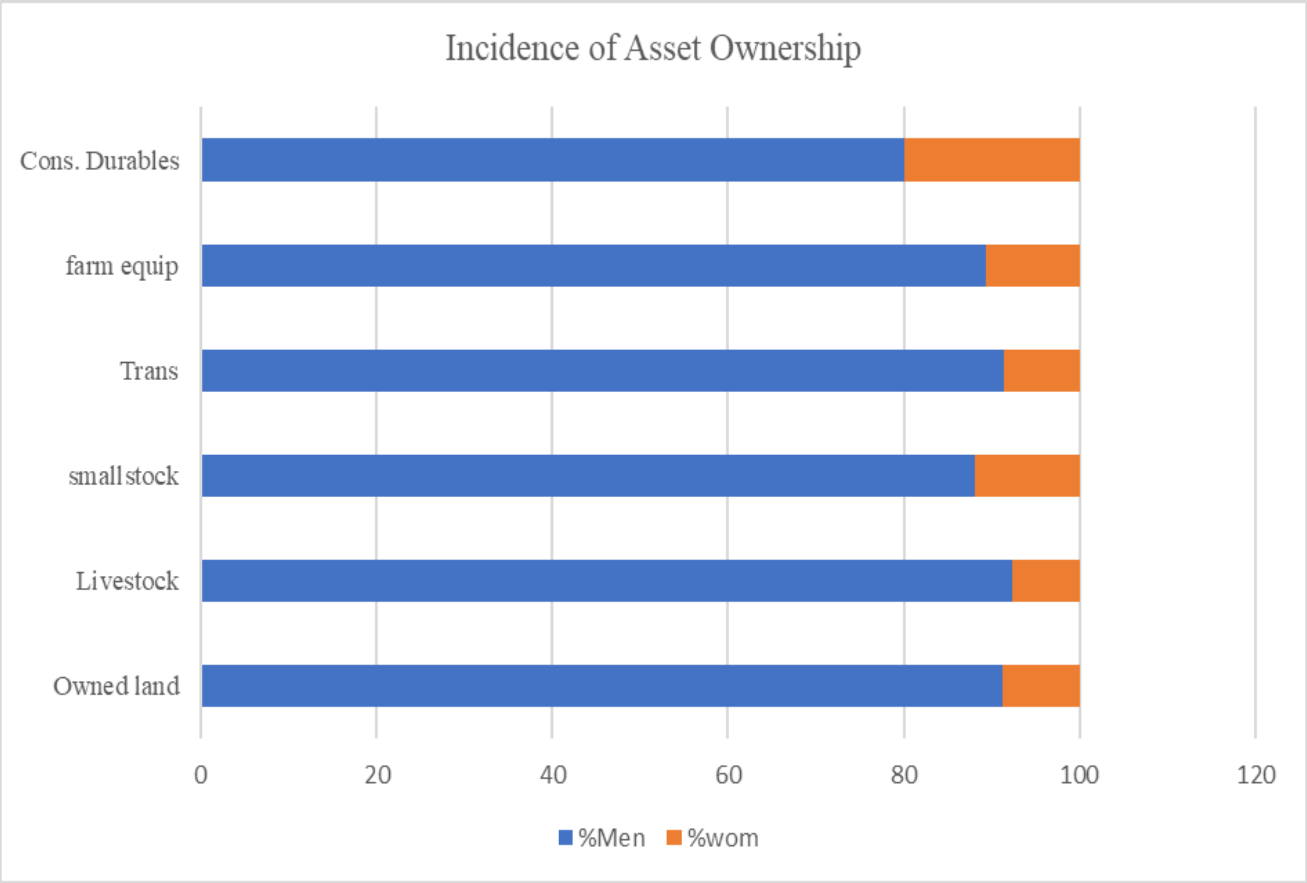

Figure 4.1 Incidence of asset Ownership by gender

The OLS coefficient for the share of women held assets, as indicated in Table 4.3 is significant for WDDS, indicating a strong relationship with women's dietary intake. This finding suggest that a high share of assets placed on the hands of women not only enables them to bargain from a stronger position for outcomes that they value, but it also enhances their transformative agency, in relation to their own dietary intake. The interaction term between the share of women owned assets and Income quantile is negative and significant for WDDS. This suggests that a greater share of women held assets help mitigate the negative impact of household low-income levels on women's dietary intake. The positive and significant coefficient of the interaction term between Women's share of assets and the ethnicity dummy, on the other hand, indicates that the impact of empowerment measured through the share of household assets owned by women has more favorable impact on the dietary intake of women within households of matrilineal lineage. This finding suggests that the impact of a higher share of assets owned by women on their own dietary intake is mediated by more equitable gender norms.

The OLS coefficient estimate for women empowerment measured in their share of owned assets is not significant for HHS, which means that women held assets are not relevant for household nutritional well-being. Results of the impact of women's share of owned assets on household food security contradicts findings of previous scholars for example, Quisumbing (1994), Panda and Agarwal (2005) as well as Sraboni and Quisumbing (2018). Most have concluded that more resources, particularly land resources; in the hands of women leads to an improvement in women's intra-household bargaining positions, which in turn, strengthens their influence in household decisions, enabling them to reallocate household resources towards their preferences and contribute to an improvement in household's well-being. However, from the point of view of the bargaining framework, this conclusion hinges on the assumption that women and not men; prefer to invest more resources on households' basic needs, such food items and children's education. Thomas (1990) refers to this approach as an 'inferential approach', since we do not possess any direct information on what well-being outcomes would be prioritized by women if they had more bargaining power.

Looking more closely at the literature based in our area of study however, the lack of association between women held assets and household food sufficiency, seem to corroborate the ethnographic findings on social norms governing food provisioning in West Africa. In Ghana, particularly, scholars have highlighted the prevalence of the culture of "chop money", loosely translated into; money male members of households (usually the head) pass on to their spouses or the female primary decision maker for households' provisions. This claim should however be made with caution, as another cohort of scholars, particularly Southern feminists have highlighted that the male head of household has an obligation to offer only a "statutory contribution" to his wife for meal preparations, but once the obligation has been met, the traditional norm allows for the male to act in his own accord (see Ekejeuba, 1995: Goldstein, 2000). In Ghana for example according to Goldstein (2000), a woman would a receive a regular, but fixed amount from her husband to provide meals for the household; however, it is ultimately her responsibility, irrespective of the amount given by the husband, to feed everyone. Goldstein further highlights that even though male heads of households contribute to food purchases, they are never solely responsible for the total expenditure of the household's upkeep. Nonetheless, our results show that women-held assets in the sample area enhances their transformative forms of agency as opposed to an instrumentalist form.

4.4.1 Impact of Individual and Household Characteristics on Women's Dietary Intake

Table 4.4 presents OLS estimates that show the association of control variables with women's dietary intake measured through Women Dietary Diversity Score (WDDS). Starting with the individual characteristics; as expected, women's age in years and their level of literacy measured by whether they can read or write are significant and positive for WDDS. The finding is consistent with the literature that recognizes education as a key aspect of empowerment that opens opportunities for other livelihood enhancing activities outside the household thereby strengthening their fallback position and hence their intra-household bargaining strength (Kabeer, 1999). Women's age on the other hand, is a human resource that reflects maturity of an individual, as well as experience and authority, which are critical for sustaining one's nutritional needs as well as the nutritional needs of their households. (Hofferth, 2005; Allendorf, 2007).

Secondly, as expected, the coefficient for income quantiles is positive and significant for WDDS, confirming the important role of household income on dietary intake of individual members. We also control for household food production and include food production variables, namely the hectarage under maize production, ownership of livestock, and lastly, crop diversity, measured by the number of food crops grown. While the hectarage under maize production is negatively associated with women's dietary intake, the coefficient of crop diversity on the other hand, is positive and significant for WDDS, suggesting the importance of a more diverse crop production on the quality of dietary intake. Also important for the diet quality of women, is the ownership of small-stock, presumably due to the gendered ownership (and control) patterns of assets, where women own small-stock and men own the bulkier livestock like cattle for example. Household wealth variables, such as the ownership of land, accessibility to electricity are also associated with an improved dietary intake of women.

4.4.2 Individual and Household Characteristics Associated with Household Food Sufficiency.

Table 4.5 shows that the age of the Household head and literacy level has a negative and significant relationship with HHS, highlighting the importance of these human capital parameters for nutritional well-being. The positive and significant coefficient of square of Household head age show diminishing effect of age as human capital on ability of one to sustain themselves.

Household food production measured in area in hectares under maize production, has a negative and significant correlation with the HHS, essentially highlighting the importance of food production, particularly staple food in household food sufficiency. Other factors that determine household food sufficiency are household income, proxied by per-capita expenditure and proximity to a town with a population of 250 000 people and more. As to be expected, households with higher income are more likely to secure sufficient food, and so are households that are nearer to big towns. The significant association of household income resources and proximity to the city underscore the important role of income poverty as well as the accessibility of basic services in determining people's nutritional well-being. Literature points to availability of health care centres, as well as social protection measures that include safety nets and transfer programs, as important key interventions in ensuring food and nutrition security. In most developing countries places far away from big cities, often referred to as remote areas are cut away from such services. Moreover, the limited livelihood opportunities that are associated with rural areas farther away from cities, further expose people to food related shocks and stresses due to the dependency on rain-fed agriculture.

4.5 Concluding Remarks.

While there is a growing recognition of the role of the empowerment of women as a means of achieving nutritional well-being outcomes; not much attention has been directed towards determining the empowerment parameters that are critical in determining their own nutritional well-being outcomes versus those of their households. This is attributed to several factors, most notably, the ambiguities in defining the concept of empowerment, and secondly, data limitations, particularly datasets that enable a comparison of women's individual nutritional outcomes and the multiple dimensions of empowerment, within different contexts. In this study we attempt to bridge this analytical gap by adapting an "ends", as opposed to a "means" perspective to examine the impact of women empowerment on the dietary intake of women who self-identify as primary decision- makers. We make a distinction between empowerment parameters that serve a transformative purpose in determining nutritional outcomes that are beneficial to women themselves, versus those that serve as an instrumentalist form of agency in determining well-being outcomes within their socially constructed role, as mothers, wives, daughters-in-law, and so on.

Our finding therefore suggests that the impact of the empowerment of women measured through their satisfaction to leisure on their dietary intake is more beneficial for women located within high income households. Furthermore, this empowerment parameter, which essentially reflects the achievement dimension of empowerment (Kabeer, 1999) has more impact on the dietary intake of women located within patrilineal households, that are supposedly less egalitarian. Thus, the transformative potential of the empowerment parameter is mediated by household income as well, as ethnicity.

Empowerment measured by the extent to which women participate in intrahousehold decisions concerning income serves a more instrumentalist or effective role in determining household nutritional well-being. There is therefore evidence that corroborate feminist claims of the phenomenon of low perception of one's contribution and/or need characterizing women in most rural communities. However, the negative and significant coefficient of interaction between women's control of income and the Ethnicity dummy, on the hand, show a higher and beneficial impact on the dietary intake of women located within the supposedly less egalitarian patrilineal households.

Lastly, empowerment measured by the share of household assets in the hands of women has a positive relationship with women's dietary intake, and not households' nutritional well-being, suggesting a less instrumentalist role. Thus, a high share of assets placed on the hands of women not only enables them to bargain from a stronger position for outcomes that they value, it also enhances their transformative agency, in relation to their own dietary intake. This finding suggests policies aiming at improving women's nutritional well-being may focus more on the enhancement of women's ownership assets as a pathway to achieving their goals. When interacted with household income, findings show that the resource dimension of empowerment, mitigates the negative impact of household low-income levels on women's dietary intake. Our results further show that transformative potential of ownership and control of household resources by women on their dietary intake is mediated by more equitable gender norms.

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APPENDICES

Table 4.4: OLS Estimates for the Determinants of Women Dietary intake

	Model 1	**Model 2**	**Model 3**
VARIABLES	WDDS	WDDS	WDDS
Women's Satisfaction with leisure time (1 if yes)	0.130		
	(0.214)		
Leisuretime*Ethnicity Dummy	-1.375**		
	(0.596)		
Leisuretime* Income Quantile	0.145*		
	(0.0837)		
No. of decisions made on income use		-0.0659	
		(0.0606)	
No. of decisions made on income use*Ethnicity Dummy		-0.135	
		(0.121)	
No. of decisions made on income use * Income Quantile		0.0203	
		(0.0224)	
Share of Women Owned Assets			2.072***
			(0.429)
Share of assets*Ethnicity Dummy			0.0112
			(0.875)
Share of Assets *Income Quantile (β_4)			-0.774***
			(0.167)
Age of female (years)	0.0280	0.0175	-0.0112
	(0.0339)	(0.0347)	(0.0344)
The square of Age of female	-0.000313	-0.000170	0.000229
	(0.000510)	(0.000521)	(0.000516)
Women's literacy (1 if can read and write)	0.200	0.191	0.141
	(0.126)	(0.126)	(0.128)

Literacy of Household head (1 if can read and write)	-0.000514	0.0170	-0.00788
	(0.101)	(0.102)	(0.102)
Log of Hectarage under Maize Production	-0.152**	-0.113	-0.127*
	(0.0754)	(0.0764)	(0.0761)
Prop of female members age 0 to5 years	0.637	0.765	0.993
	(0.657)	(0.665)	(0.664)
Prop of male members age 0 to5 years	-0.281	0.0963	0.243
	(0.664)	(0.671)	(0.669)
Prop of female members age 6 to 14 years	1.235*	1.349*	1.610**
	(0.689)	(0.696)	(0.696)
Prop of male members age 6 to 14 years	-0.0606	0.550	0.726
	(0.677)	(0.685)	(0.685)
Prop of female members age 15 to 55 years	0.414	0.789	0.792
	(0.705)	(0.713)	(0.713)
Prop of male members age 15 to 55 years	0.291	0.614	0.812
	(0.606)	(0.611)	(0.610)
Prop of female members age over 55 years	1.586	1.764*	2.144**
	(0.977)	(0.990)	(0.985)
Log of household size	-0.0113	0.0349	0.0630
	(0.0804)	(0.0816)	(0.0812)
Crop diversity (no. of crops grown)	0.0695*	0.0427	0.0379
	(0.0412)	(0.0418)	(0.0417)
Religion (1 if Islam)	-0.0286	-0.0479	-0.0126
	(0.0634)	(0.0641)	(0.0635)
Log of Distance from the nearest town with pop of >=250000 (km)	-1.782**	-1.377*	-1.417*
	(0.754)	(0.769)	(0.761)
Per Capita expenditure Quantiles (Ghc)	0.0413	0.136***	0.260***
	(0.0785)	(0.0448)	(0.0391)
Household Owns livestock (1 if yes)	0.0821	0.0406	0.0497
	(0.0698)	(0.0710)	(0.0705)
Household Owns smallstock (1 if yes)	0.308***	0.320***	0.292***
	(0.0688)	(0.0696)	(0.0689)
Household owns land (1 if yes)	0.888***	0.998***	1.151***

	(0.138)	(0.141)	(0.146)
Household has access to electricity (1 if yes)	0.169*	0.197**	0.206**
	(0.0891)	(0.0895)	(0.0894)
Ethnicity Dummy (1 if Akan)	1.224**	0.0161	-0.214
	(0.581)	(0.254)	(0.235)
2.Northern Region	0.306**	0.162	0.173
	(0.139)	(0.138)	(0.143)
3.Upper East	-0.0406	-0.241	-0.257
	(0.166)	(0.166)	(0.168)
4.Upper West	0.253	0.105	0.110
	(0.163)	(0.161)	(0.164)
Constant	6.509***	5.366**	5.256**
	(2.499)	(2.547)	(2.523)
Observations	1,461	1,467	1,460
R-squared	0.160	0.144	0.155
Robust standard errors in parentheses			
***** p<0.01, ** p<0.05, * p<0.1**			

Table 4.5 Determinants of Household Food (in)Sufficiency

	Model 1	**Model 2**	**Model 3**
VARIABLES	HHS	HHS	HHS
Women's Satisfaction with leisure time (1 if yes)	-0.381*		
	(0.216)		
Leisuretime*Ethnicity Dummy	0.656		
	(0.636)		
Leisuretime* Income Quantile	0.181**		
	(0.0821)		
No. of decisions made on income use		-0.142***	
		(0.0548)	
No. of decisions made on income use*Ethnicity Dummy		0.0236	
		(0.0185)	
No. of decisions made on income use * Income Quantile		0.140	
		(0.0934)	
Share of Women Owned Assets			0.595
			(0.383)
Share of assets*Ethnicity Dummy			-0.184
			(0.151)
Share of Assets *Income Quantile (β_4)			0.0644
			(0.725)
Age of household head (years)	-0.0571***	-0.0577***	-0.0586***
	(0.0138)	(0.0136)	(0.0149)
Square of Age of household head	0.000704***	0.000723***	0.000723***
	(0.000157)	(0.000155)	(0.000169)
Household head Literacy (1 if can read and write)	-0.368***	-0.346***	-0.367***
	(0.0806)	(0.0797)	(0.0902)
Per Capita Expenditure Quantile (Ghc)	0.0540	-0.139	0.0417
	(0.0640)	(0.0926)	(0.0696)
Log of Hectarage under Maize Production	-0.405***	-0.373***	-0.391***
	(0.0557)	(0.0558)	(0.0608)
Log of household size	0.261***	0.242***	0.257***
	(0.0691)	(0.0684)	(0.0752)

Prop of female members age 0 to 5 years	0.188	0.257	0.235
	(0.716)	(0.707)	(0.811)
Prop of male members age 0 to 5 years	0.737	0.863	0.772
	(0.732)	(0.726)	(0.819)
Prop of female members age 6 to 14 years	0.670	0.832	0.699
	(0.764)	(0.759)	(0.844)
Prop of male members age 6 to 14years	0.818	0.955	0.865
	(0.763)	(0.754)	(0.836)
Prop of female members age 15 to 55 years	0.430	0.546	0.468
	(0.762)	(0.752)	(0.840)
Prop of male members age 15 to 55years	0.465	0.581	0.492
	(0.671)	(0.662)	(0.760)
Prop of female members ageover55	0.253	0.137	0.305
	(0.975)	(0.968)	(1.098)
Dist. (km) to nearest town with Pop>=250000	4.602***	4.656***	4.522***
	(0.670)	(0.662)	(0.696)
Ethnicity Dummy (1 if Akan)	-0.424	-0.490**	-0.260
	(0.624)	(0.223)	(0.228)
Northern Region	0.147	0.158	0.151
	(0.147)	(0.151)	(0.147)
Upper East Region	1.215***	1.203***	1.241***
	(0.165)	(0.167)	(0.165)
Upper West Region	1.034***	1.036***	1.035***
	(0.168)	(0.170)	(0.168)
Constant	-12.95***	-13.41***	-13.11***
	(2.187)	(2.143)	(2.297)
Observations	1,482	1,482	1,482
R-squared	0.269	0.272	0.267
Robust standard errors in parentheses			
***** p<0.01, ** p<0.05, * p<0.1**			

Chapter 5: Bargaining for children's nutritional outcomes in rural Ghana; Is it the "who" or "why" that matters most?[3]

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Abstract

We examine the role of three empowerment parameters based on the "who" and the "why" of intrahousehold decision making, in determining children's nutrition. We construct two indicators based on the identity of person making expenditure decisions within the household: (i) the actual number of decisions made by the female decision-maker; and (ii) a measure of their perceived decision-making power. We adopt the relative Autonomy Index, a measurement tool reflecting the extent to which decision-making processes are shaped by prevailing norms and belief systems; where higher scores indicate greater autonomy and lower score reflect actions that are extrinsically motivated. We determine the differential impact of empowerment on infant girls relative to boys while controlling for household income. Results show infant girls being less likely to be stunted than their male counterparts. Findings suggest that the measure based on the identity of person making income use decisions is not relevant for children's nutritional outcomes, while perceived decision-making is negatively associated with short-term nutritional short-term nutritional status. The coefficient for RAI, on the other hand shows no significant relationship with all children's nutritional outcomes; but when interacted with the girl dummy, results show significant, albeit negative correlation with short to medium term nutritional outcomes; suggesting that women's motivational autonomy may be important in offsetting the poor nutritional intake of boys. The findings point to a need for distributional analysis and policymaking to look beyond empowerment measures that rely on the identity of person participating more in intra-household decisions and consider the influence of socio-cultural beliefs and practices on decision-making in relation to children's nutritional outcomes.

5.1 Introduction

If not addressed fully and comprehensively, children's low nutritional status has serious social and economic cost implications for national governments. Low nutritional outcomes of young children not only increase governments health care expenditure, but they also impact negatively on countries' production capacity. The irreversible damage to children's cognitive development as a result of malnutrition within the first 1000 days of their lives further jeopardises countries 'future productive capacity (Hoddinott et.al.,2013). The prevalence of child malnutrition, particularly where there is satisfactory food availability at household level; is arguably a big challenge for development practice. Reports show that despite the decline in malnutrition worldwide, Sub-Saharan Africa remains the only region where malnutrition has been increasing, since 2000 (UNICEF, 2018). UNICEF report released in October 2019 shows an increase of malnutrition by 6.5 million in West and Central Africa. Smith et.al (2003) attributes this so called "enigma" to a low status woman within households, rather than overall household deprivation. Intrahousehold dynamics thus remain an important analytical focus for children's nutritional attainment.

The key factor driving children's malnutrition among traditional households is the intra-household power imbalances that render women relatively incapable of asserting their preferences. The relative ability to assert one's preference is what we call bargaining power. Women's intra-household relative power has become a policy focus in developing countries, the pursuit of which has not only been a matter for the achievement of social justice, but it is based on its importance for the achievement of other key development outcomes. Intra-household analysis suggests that when women have more control over household resources, they are directed towards key development aspects like children's education, health and nutrition (Duflo, 2003; Imai et al., 2014). This argument draws from evidence of early studies conducted in Sub-Saharan Africa that showed weak linkages between an increase in overall income from the so-called "men crops" or cash crops and the nutritional status of preschoolers (see for example von Braun and Kennedy, 1986 for agriculture commercialisation in East

Africa). Furthermore, infants located in single-female headed households were reportedly well nourished in comparison to other children as per the results of Lloyd and Cage-Brandon (1993) study in Ghana- an argument that is obviously premised on the presumed autonomy of single women.

While there is clear evidence of an immediate and direct effect of women's relative power on children's nutritional and other development outcomes; on the other hand, it is a challenge from a policy perspective to identify aspects of women empowerment to be pursued in order to achieve favorable outcomes. The multi-dimensional nature of the concept, and its context-specificity create a challenge for identifying credible measures of empowerment that can be used for monitoring purposes and to predict consequences of development interventions. The extent to which women participate in intra-household decision making has commonly been used as a direct measure of their bargaining power. However, according to the latest literature on the subject matter from the empowerment point of view, measures that rely on the identity of a person making the decision, may be flawed (see for example Bernard et.al., 2018) for several reasons. Firstly, women's participation in intra-household decisions may not signify their level of agency, as they may be acting within the constraints of preferences of other household members (presumably the male spouse), or other external factors, most notably, the prevailing social norms that embody acceptable notions of behaviour, as well as gendered roles and responsibilities and traditional belief systems. In the same vein, empowered women based on their access to resources and other material well-being parameters may opt to not be involved in production and consumption decisions within the household.

Literature seems to suggest that the motivation behind the decision -making patterns offers a more meaningful measure of empowerment for women (Vas et.al. 2015; Seymour &Peterman, 2018; Bernard, et.al., 2018). In line with Amartya Sen's (1999;10) notion of agency, which is defined as the ability of a person to act on what he or she values; women's preferences and the relative value that they place in the outcome of interest is key to understanding their level of empowerment. In that regard, scholars have agreed that the Relative Autonomy Index (RAI) is more appealing as a measure of empowerment and indeed addresses a key critique of standard decision-making power measures based on the "who", on their failure to integrate women's values (Vas et.al., 2015; Seymour and Peterman, 2018).

Measures of motivational autonomy are slowly evolving, but their applicability as parameters of bargaining power in relation to nutritional outcomes has not been explored. The Relative

Autonomy Index has since been validated as a measure of women empowerment within different contexts; for example, Vas et.al. (2015) in Chad and Seymour and Peterman (2018) in Ghana and Bangladesh. Relatively few studies however have examined its linkage to well-being outcomes. Hence, it remains a critical empirical question whether this measurement tool is more reflective of women's agency in relation to children's nutritional outcome than the standard measure of self-reported involvement in household decision making processes; in other words, the "why" vs the "who" of decision-making in relation to children's nutritional outcomes, while accounting for the context- specificity of the measure.

Through the bargaining lens, we attempt to examine the role of three bargaining power parameters based on the "who" and the "why" of intrahousehold decision making: in determining children's nutritional outcomes. We further determine whether there is a differential impact of the bargaining power parameters on girls of ages 0-60 months, relative to boys of the same age. Specifically, we make use of the non-cooperative bargaining approach (Lundberg and Pollack, 1993) to draw hypothesis for the study, while focusing on analytical comparison of the three measures of decision-making power and their relevance in determining nutritional attainment of children below the age of 60 months. The first measure based on the "who" measures the extent to which women participate in intra-household decision-making across different domains. we then make a distinction between actual decision making power and perceived decision-making power to account for the difference in perception among different communities on what empowerment entails. Finally, we adopt the Relative Autonomy Index (RAI), which reflects the motivation behind the decision-making processes as a third independent variable of interest.

This study is arranged as follows; a review of literature that addresses the theoretical considerations that are in line with bargaining approaches follows in section 2. Section 3 describes the data used in the analysis, as well as the econometric framework of analysis. Also covered in section 3 are the key bargaining parameters and outcomes of interest, namely measures of children's nutrition. Section 4 presents the results of Ordinary Least Square analysis, followed by a section on concluding remarks on the 5th section.

5.2 Review of Literature

We are guided in our analysis by two strands of literature; we firstly reflect on the literature that accounts for intrahousehold bargaining and power imbalances, as well as how these are

implicated in household patterns of distribution that determine children's nutritional status. It is also worth mentioning that the paradigm shift from unitary or Unified model of household analysis [(Becker (1965), cited by many others, such as McElrory and Horney (1981), Folbre (1984) and Iversen (2003)]; was mostly informed by its critique on its failure to explain the systematic intra-household inequalities in well-being. On the other hand, literature that focuses on the constituent elements of women empowerment or women's bargaining power is relevant for this study; as well as how these parameters translate into meaningful bargaining strength for women, in relation to children's nutritional attainment. The role of socio-cultural beliefs and perceptions that are associated with children's nutritional status is also explored as potential mediating parameters of the impact of bargaining variables on children's nutritional outcomes.

5.2.1 Determinants of Children's Nutritional Outcomes; Unitary or Bargaining Approach?

What are the key factors determining children's nutritional outcomes? Using the unitary model of household economy analysis, scholars make assumptions that individuals within households behave as though they maximise a joint utility function subject to the constraints of joint household budget (Thomas, 1994).

The household's utility maximisation function is given by;

U (x; h), subject to joint budget, denoted by

$$Y = y_j + y_m + y_f \qquad (1)$$

Where x is a vector of commodities jointly consumed by members of the household; while h is representative of household characteristics; y_j reflects household joint income while individual incomes for mother and father are denoted by y_m and y_f respectively.

The household utility maximisation translates into a series of demand functions of x shown below;

$$x_i = x_i\ (p, Y; h) \qquad (2)$$

As shown in the demand function (1) above, through the unitary model how households resource distribution patterns can only be changed/affected by shifts in prices (p) and household income resources (Y), given other household characteristics (h). Thus, children's nutritional well-being is largely a function of household budgetary allocation. The notion of single utility function of the unitary model assumes that a single decision-maker, presumably the household

head represent the tastes and preferences of other household members and would therefore ensure a pareto efficient intra-household allocation of resources among individual members, or the two decision makers (m, f) have common preferences.

Critics have pointed out that the common preferences assumption of the unitary model does not enable a distribution analysis that considers the distribution of power within the household. Whether the mother or the father are the recipient will not affect household decision-making in relation to children' nutritional attainment. Alderman et.al. (1995) further point out that the approach does not account for the "how" of intra-household distribution of resources. However, the Unitary model of household has been useful on the other hand, in offering another perspective of household behaviour in relation to differences in well-being among household members. The notion of human capital investment is at the core of Berhman's (1988) argument from his study in rural South India. Behrman (1988) results show evidence of unequal intra-household allocation of resources during times of scarcity; with parents showing more bias towards older children over younger less-well-endowed children, which he argues to be a pure investment strategy, on the part of parents. This phenomenon, he highlights is particularly so among low income lower-caste households facing a food crisis. The study makes use of Unified parental preference function with two sub-utility functions:

- Sub-utility function with reference to expected health outcomes for each of J children ($H_j, j = 1\ldots\ldots, J$)
- Sub-utility function pertaining to other outcomes of interest:

  $U = \sum_j^J a_{j\,H_j^c}$ *(3)*

are parameters representing weights that each parent place on each child's health related outcomes. The preference or weights that parents place on their children are guided by two concerns of efficiency on one hand, and equity on the other. Thus, parameter *c* is representative of the inverse of either inequality aversion (equity) or pure investment (efficiency) (Behrman, 1988). Here, parents trade equity vs maximisation on the return in their nutrients' investments. Subutility function (1) is maximised subject to two constraints:

- Part of household budget (R) or Household resources invested in children.

  $\sum_{j=1}^{J}(P_N N_j + P_X X_j) \leq R$ (4)

- Expected health production relation in which child health depends on nutrients (N_j), other purchased inputs (X_j) and individual endowments (E_j)

  $H_{j=}$ f $(E_j)\, X_j^{\beta} N_j^{x}$ *(5)*

The policy implications of Berhman (1988) findings are such that interventions that aim at reducing vulnerability of households during a food crisis should target vulnerable members of households, mainly young (less endowed) children and women i.e., targeting individuals as opposed to entire households.

There is, nonetheless, a large body of evidence that reject the notion of joint budget and common preferences in regards children's nutritional outcomes, in different settings. Studies have shown that changes in nutritional outcomes are not only affected by budgetary constraints, but also result from changes in utility functions due to changes in intra-household power relations (demonstrated in section below). Thomas (1994) study in four countries and in different regions, demonstrates a variation in parental preferences for resource allocation and unequal power relations, measured by relative educational attainment: in relation to children's nutritional outcomes. The study, the findings of which showed differential impact of fathers and mothers' education on heights of sons and daughters has been influential in pushing the agenda on the impact of women's bargaining power on children's nutritional outcomes.

Research linking differences in preferences and bargaining power of individuals within the household with children's nutritional outcomes in sub-Saharan Africa in particular, has been further supported by evidence provided by Quisumbing and Mallucio (2000) for both Ethiopia and South Africa as well as Duflo (2003) for South Africa. Quisumbing and Mallucio (2000) findings suggest that there is a variation in parental preferences in relation to the education of their sons and daughters across the different socio-cultural contexts, with fathers valuing more their son's education. Similarly, Duflo's (2003) study in South Africa whose focus was on the impact of cash transfers on children's nutrition found out that girls within households where the recipient was female were less likely to face stunting, while no impact of cash transfer earned by male recipients was evident.

5.2.2 A Review of Bargaining Approaches

The theoretical underpinnings of the Unitary model, having been refuted by numerous scholars, have raised some policy concerns, and this triggered a shift from the Unitary to alternative approaches, broadly classified as non-unitary models. Two subgroups of non-unitary models

emerge; namely, cooperative (McElroy, 1990) and non-cooperative models (Lundbeck and Pollack, 1993), both of which make assumptions of distinct tastes and preferences of individual household members. The non-unified approaches characterize intra-household decision-making process as bargaining, the outcome of which varies depending on who among the bargaining partners, has a relatively higher bargaining power. From the policy perspective, the interest may be on specific outcome, such as children's nutrition, and how these can be influenced through well-targeted interventions. In this case bargaining approaches are useful in assessing how gains accrue to individual children within households. On the other hand, if bargaining power is as critical in influencing these outcomes as the bargaining approaches have claimed; how do we define the concept, and what are the policy instruments that are to be pursued to enhance it?

To disentangle the impacts of parental preferences, relative power and household level resources (technological), on children's nutritional outcomes, scholars adapt their analysis to the bargaining framework. Assuming that preferences vary by gender of parent, through the bargaining framework; we consider a household with two self-identified female and male primary decision makers, represented by f and m respectively. The two separate Utility functions for the female and male decision-makers are denoted by U_f and U_m, respectively. The female and male parents each consume quantities of private goods denoted by x_m and x_f, and contribute to public goods q_1 and q_2; which include the nurturing and care of children.

Children's optimal nutritional status is determined by the quality production function, $q^* = Q(x, c, h)$, which summarizes an implicit relationship between child outcomes and key determinants; while c and h denote child specific and household characteristics respectively.

The two parents maximise their utility as indicated below.

$$N = [U_f(X_f, q_1, q_2) - V_f(p_1, p_2, b_f)]\ [U_m(X_m q_1, q_2) - V_m(p_1, p_2 b_m)] \qquad (6)$$

In MacElroy (1990)'s cooperative model, the two parent utility problem is maximized subject to full income constraints $pX = w_m T_m + w_f T_f$; where w_i (i=m, f) is the wage rate and T_i (i=m, f) is the time endowment for the male and female decision-makers.

The key features of the bargaining approaches are worth mentioning here, particularly the "threat points" or fall-back positions represented by V_f and V_m. Threat points are described as the (maximized) indirect utility level achievable by each member outside of the household

(Folbre, 1997). Following, Lundberg and Pollack (1993) p_1 and p_2 are the relative prices of the public goods q_1 and q_2, respectively. In the case of MacElroy and Horney (1981) cooperative bargaining theory Vi denotes the maximized indirect utility enjoyed by bargaining partners upon exiting the union- i.e. divorce. The non-cooperative approach (Lundberg and Pollack, 1993) on the other hand, hinges on the assumption that the Vi is a threat point defined not by divorce rather a noncooperative equilibrium that is defined in terms of traditional gender roles and gendered social expectations.

The threat point pushers are denoted by b_f and b_m for female and male bargaining partners respectively, and they are in turn defined by a range of factors, for example, one's level of command over assets (Quisumbing and Delabrier, 2000), relative income as single person (Thomas, 1990), or other factors, largely qualitative, such as social capital that one can tap into through kinship ties, or patronage (Agarwal, 1997). The threat point or one's fallback position outside of household is what defines an individual's bargaining power within the household.

Through the bargaining lens, members' fallback positions, are enhanced or diminished depending on their decreasing or increasing the individual's gains to cooperation, and therefore their ability to assert their preferences in the bargaining process. The resultant reduced form demand function for Optimal nutritional attainment of child (q*) is as indicated below.

$$q^* = q^*(b_f, Y, p, h, I) \qquad (7)$$

Thus, in addition to a change in commodity prices (p) and institutional shifts, the bargaining effect also influences the child nutritional outcome (q*). We further assume that the socially constructed gender- based roles and responsibilities of key decision makers do emerge outside of the bargaining process, i.e., they are a given. (Agarwal, 1997). Thus, empirically female decision-makers have preference for children's nutrition, and that the stronger their bargaining power (b_f), determined by their intra-household decision-making power; the bigger their influence on intra-household decision making, with positive impact on q*. Individual child and parental characteristics (I) as well as household level characteristics (h), also influence child nutritional outcome q*.

5.2.3 What Constitutes Bargaining Power in relation to Children's Nutritional status?

To respond to the question as indicated above, we are guided by literature that links women's intra-household bargaining power or empowerment as well as agency as a central component of empowerment with children's nutritional outcomes. Firstly, we follow Borga (2016) and others by using the two concepts of women empowerment and bargaining power interchangeably in analysing the impact of women's decision-making power on children's nutritional outcomes, which is based on the argument that their empirical specifications are intertwined (Borga 2016; Imai. et.al, 2014). However, we also take into cognisance the theoretical distinction between the two concepts, which we explore in highlighting the role of socio-cultural aspects of bargaining in the process of decision-making, that affects nutritional well-being outcomes of interest. Past scholars have often defined Empowerment, with its key constituent elements of resources, agency and achievement as a broader concept within which the concept of bargaining power is imbedded (Kabeer, 1999; Imai et.al, 2014).

While there is a large body of literature linking improved women's bargaining power with children's nutrition, there is no universal way of measuring the concept. Scholars have relied on different dimensions of empowerment to examine its impact on children's nutritional outcomes in different context, making it difficult for comparisons across different cultural contexts. Earlier scholars relied on variables of economic status as measures of women's intra-household relative power. Commonly used measures include access to and/or control of resources, mainly land (Allendorf, 2007); access to employment opportunities (Smith et.al, 2003) and control of income (Smith et.al, 2003). The use of economic proxy measures of women's intra-household relative power is based on the premise that with greater access and control over household resources, women would gain more autonomy and decision-making powers within households and would therefore direct them towards outcomes that they value. In addition to having more resources to distribute, Smith et.al, (2003) study showed that women who had more control over household resources were more likely to make timely decisions to seek health care for their children, as well as get them immunised. Consistent with Smith et.al (2003), Allendorf (2007) study results showed a positive relationship between women's land rights and children's health status in Bangladesh and notes that children of mothers with land ownership were significantly less likely to be severely wasted.

Human capital measures such as educational attainment have also been used as measures of bargaining power (Thomas, 1994). Thomas (1994) study covering 3 countries; United States, Ghana and Brazil show maternal educational attainment associated with girls` height, while paternal education had an influence on boy's height. Findings of impact of maternal education on children's nutrition however have been inconsistent. While some (for example, Borooah, 2004) found a correlation between maternal education and not paternal education on children's nutritional outcomes; consistent with Thomas (1994), others have claimed that mother's practical knowledge about children's nutrition had greater impact than formal education- see for example Appoh and Krekling (2005) for Ghana. This was particularly so among communities with low rates of educational attainment and limited access to health care services; thus, maternal education impact on child nutrition is mediated by other factors, such as public health care provisions.

Another cohort of scholars however expressed their concerns on economic and human capital proxies of maternal autonomy, and have pointed out that though quantifiable, they are compounded with challenges of establishing causation with women's decision-making power (Basu and Koolwal, 2005; Basu, 2006). Due to endogeneity concerns of use of economic proxies of relative empowerment, others have relied on unearned income as measures of bargaining power, for example, Schultz (1990) for Thailand, and Duflo (2003) study in South Africa whose focus is on the impact of cash transfers on children's nutrition. Furthermore, findings of studies relying on the economic proxies of maternal empowerment have been inconclusive and incomparable across different cross-cultural context, thus the increasing attention to direct measures of women's ability to make common household decisions i.e., their intrahousehold decision making power.

5.2.3.1 Direct Measures of Women's Bargaining Power

Women's involvement in intra-household decision- making is often used as a direct measure of bargaining power. In some cases, though, participation in intrahousehold decision-making processes is considered as an outcome of bargaining. For example, Yokying and Lambrecht (2019) study in Ghana found out that landownership among men, but not women, was closely associated with their involvement in intra-household income use decision making, thus gender was a mediating factor in the translation of landownership into meaningful bargaining power

in that aspect. Nonetheless, due to women's childcare obligations in most traditional societies, involvement in household decisions is expected to impact on children's nutrition. A number of studies have focused on women's participation or involvement in intra-household decision-making processes and have affirmed the positive association with growth outcomes for children (see for example Schroff et.al. 2011; Rahman, Saima and Goni, 2015).

Patel et.al (2007), on the other hand, goes further to make a distinction between joint and sole decision-making processes, and examined their respective impact on child nutritional status. Patel et.al (2007) findings showed a positive association with joint decision-making between two parents and a negative impact in the case of mother's sole decision-making. Patel et.al (2007) findings in Latin America, Bolivian Amazon, to be exact, and others from South Asia, as indicated above may not be applicable within the context of developing nations elsewhere. Some studies suggest that women`s (maternal) decision-making power may cause a shift in intra-household power structures, which may ultimately lead to domestic violence against women, and thus a decline in the ability to provide care for their children (for example Aden, et.al., 1997 for the case of Somalia).

5.2.4 Qualifying Preferences; The role of Community Perceptions and Belief Systems in shaping Decision-Making

While on the subject of decision-making and people's relative ability to assert their preferences (bargaining power), we often make assumptions that so long as women have access to human and capital resources, for example, they are rendered capable of exercising choice over well-defined preferences that are in line with their own personal convictions. Literature however shows that in many traditional societies, choices related to people's well-being are often shaped by community perceptions and expectations that override people's personal normative beliefs (Bichierri 2006). Literature that disentangles the impact of socio-economic factors and widely held beliefs and community perceptions on children's nutritional intake is key in informing policy responses, in terms of prioritising access to human development services or awareness and sensitization, and/or a mixture of both.

Agarwal (1997) points to the difficulties in integrating the socio-cultural aspects of bargaining into analytical specifications of bargaining models, owing to data limitations. The impact of belief systems and community perceptions on children's nutritional outcomes is nonetheless worth our attention. Take for example, the proximate factors determining children's nutrition,

namely dietary intake and children's health status, as per the UNICEF (1990) framework. Literature shows how mothers` behaviour and decision-making roles in regards these factors are shaped by prevailing norms, traditional belief systems as well as perceptions about nutritional adequacy. Studies conducted in developing countries have revealed that much of the variation in children's nutritional outcome was associated more with the socio-cultural belief systems than it was with socio-economic factors that determine households' dietary intake (Dettwyler, 1987; Kruger and Gericke 2003; Appoh and Krekling, 2005; Sibeko et.al, 2005). Dettwyler (1987) study in Mali goes on to document fundamental belief systems regarding infants' dietary intake that if not addressed may reverse the intended impacts of nutrition-enhancing interventions. Delaying solid food intake for young children is a common practise among many communities in West Africa. Also highlighted in the medical/ health care literature is the mediating role of cultural belief systems on parental attitudes to children's immunisation, see for example Prislin et.al. (1998) study in South Africa.

Similarly, literature highlights how false maternal perceptions of children's nutritional compromises the quality of feeding practices; where children's malnutrition/ undernutrition is perceived to be a factor of social transgressions, for example adultery and not poor dietary intake per se. One may argue that the lack of nutritional knowledge drives and upholds these perceptions; they do nonetheless impinge on children's nutritional outcomes and are therefore worthy of attention.

Below, I reflect on measures of decision-making power considered as proxies of bargaining power and highlight their limitations and strengths in addressing socio-cultural factors that influence children's nutritional status as mentioned above.

5.2.5 The "who" versus the "why" of Decision-Making Power

From the empowerment point of view, the extent to which one is involved in intra-household decision making process supposedly reflects one's agency; and it is on this basis that a large number of researchers regard it as a measure of one's bargaining power. However, this approach has been met with criticism, with some scholars arguing that it may be flawed due to several reasons. Firstly, there are questions on whether participating in a decision is indicative of one having a meaningful voice (Seymour and Peterman, 2018) and thus empowering. Secondly, some argue that when making assessment of people's level of empowerment there's need to

consider their preferences (for example Bernard, et.al, 2018), as these are tied to their ability to make choices, which is central to the concept of empowerment. Here we may begin to realize that women who are empowered in other dimensions, may opt not to partake in certain decision making. Vaz, Pratley and Alkire (2015) highlight how a woman in Chad might not care about making decisions regarding large household purchases or her employment. In this case, her choice to not be involved in these areas of decision-making processes may be indicative of their motivational autonomy.

The approach of using self-reported joint or sole decision-making as an empowerment measure and its interpretation of decision-making power further reveals nothing about the mechanism of how the decisions are made, which according to Seymour and Peterman (2018) may be through a compromise on one hand or yielding and/or surrendering of one bargaining partner to the wishes of a more dominant partner, the latter of which is more disempowering. Neither does this approach reflect the extent to which women in most traditional societies may be constrained by the prevailing norms and traditional practices in their ability to assert their own preferences (Vaz et al.,2015). It is on this basis as highlighted above that scholars argued for motivational autonomy as being more representative of one's agency (Seymour and Peterman, 2018).

5.2.5.1 Motivational Autonomy as a Measure of Empowerment

The Relative Autonomy Index (RAI) has gained prominence as a direct measure of the motivation behind a decision-making pattern or motivational autonomy. as a measure of the extent to which a woman faces coercive or internalized social pressure to undertake domain-specific actions. Thus, it addresses the critique of those measures of autonomy that are based on self-reported involvement in intra-household decisions, as mentioned above. Developed within the context of Human Psychology by Richard Ryan, Ed Deci, Valery Chirkov and others (Chirkov, Ryan, and Deci, 2011; Ryan and Deci, 2000, 2012), the RAI is based on the Self-Determination Theory (SDT). The tool was introduced to the women empowerment discourse through the work of Ibrahim and Alkire (2007); who adapted the RAI as a direct measure of empowerment. Subsequently, Alkire et.al, (2013) and others (Malapit et al., 2015; Sraboni et al. 2014) used the Index as a component of the broader Women Empowerment in Agriculture Index, the conceptualisation of which is in line with the notion of Agency. The concept of

Agency, which is central to Amartya Sen's Capability approach (Sen, 1985) is defined as; "what the person is free to do and achieve in pursuit of whatever goals or values he or she regards as important" (Sen,1985; 203).

By aligning with the framework of the SDT continuum, RAI has the potential as a measure of agency that accounts for the influence of social norms and belief systems on people's preferences, which is reflected in its score (please see the next section for construction). For example, looking at the domain-specific RAI in the context of "breastfeeding", as highlighted in Vas et.al. (2015) study in Chad; a negative score indicates a behaviour or a motivation behind the action of breastfeeding that is controlled, presumably by the prevailing social norms and belief systems in the community. A positive score on the other hand is indicative of a relatively autonomous decision-making pattern, the outcome and the process of which the woman personally values.

Our main analytical focus is to test empirically whether the relative autonomy Index as a measure of motivational autonomy is more reflective of women's agency in relation to children's nutritional outcomes than the standard measure of self-reported involvement in household decision making processes; in other words, the "why" vs the "who", while accounting for the context- specificity of the measure.

5.3 Data, Empirical Specification and Variable Description

This study makes use of data collected through the 2012 baseline survey (METSS-Ghana, 2012). The survey was conducted through a collaboration of 6 institutions, namely the USAID-Ghana Monitoring Evaluation and Technical Support Services (METSS), Kansas State University (KSU), University of Cape Coast (UCC), the Institute of Statistical, Social and Economic Research (ISSER) of the University of Ghana, and the Ghana Statistical Service (GSS). The baseline survey was done over a period of 3 months from June 2012 to August 2012, with the US Department of Agriculture (USDA) and USAID providing technical support.

The data is statistically representative of the Feed the Future's zone of influence (ZoI) in northern Ghana, and it covers districts in the northern, upper west, and upper east regions, as well as areas in the Brong Ahafo region. A two-stage probability sampling approach was used to select a total of 230 enumeration areas within the ZoI based on Ghana 2010 Census data in the first stage; the second stage of which was a random sample of households selected in lists

of each selected enumeration area (METSS-Ghana, 2012). In addition to the standard socio-economic data of households, the survey further collects data on children's anthropometric status and mothers' individual characteristics such as age and educational attainment. Furthermore, through the Women in Agriculture Empowerment Index (WEAI), the survey collects individual level data on 5 domains of empowerment of self- identified male and female decision-makers within each household. Of importance to our analysis is the domain of decision-making roles and motivation behind decision-making processes.

Our analysis is restricted to children of ages 0-60 months old, within households that are based in rural areas, which make up about 75% of the total survey sample of 4410 households. What motivates this decision is that the analysis relies on empowerment data collected within the Framework of Women Empowerment in Agriculture Index (WEAI). We therefore avoid a situation where individuals not engaged in agriculture may be misclassified as disempowered. We further restrict our analysis to households with a self-identified female decision-maker; thus we eliminate households with incomplete WEAI indicators, and without a female adult decisionmaker. Our final estimation sample consists of 1351 children under five years old.

5.3.1 Empirical Specification

We hypothesize that children's nutritional outcomes denoted by q_c is associated with women's bargaining power ($\hat{y}$). We expect individual child's specific characteristics (I) as well as household level variables (H) to have an influence on children's nutritional outcome. Using Ordinary Least Square we estimate the equation as indicated below, where qc is modelled as a function of women's bargaining strength, while controlling for individual and household characteristics

$$q_c = \beta_0 + \beta_1 \hat{y} + \beta_2 I + \beta_3 H + \varepsilon \qquad (7)$$

Our key coefficient of interest is β_1, which estimates the correlation of women bargaining power variables with child nutrition. Despite endogeneity concerns, we rely on OLS estimates for our analysis, since we face data limitations that render us unable to find plausible instrumental variables to correct for it. This then implies that the findings of correlations are interpreted as associative rather than causative.

Secondly, in aligning with equation (1) above for our regression analysis, we make assumption that the impact of empowerment β_1, will be the same for boys and girls. However, with increasing concerns of the phenomenon of 'boy preference' (as has been proven in analysis elsewhere in the developing world), it would be interesting to examine the differential impact of women bargaining power variables by sex of the child. We therefore introduce a girl dummy variable G (=1 if girl child) and interact it with the bargaining power variables. We also test if on average girls perform better or less than boys nutritionally, and the coefficient is indicated in equation below.

$$q_c = \beta_0 + \beta_1 y' + \beta_2 I + \beta_3 H + \beta_4 G + \beta_5 (y' * G) + \varepsilon \qquad (8)$$

The coefficient of the interaction term with the girl child β_5 measures the differential impact of women's bargaining power on girls; if significantly different from zero, we can conclude that women's intra-household bargaining strength has differential impact on boys' and girls' nutrition. The next section discusses the three bargaining variables as well as three bargaining outcomes that we focus on for our analysis.

5.3.2 Bargaining Variables

For comparison, we make use of three bargaining variables based on the two dimensions of intrahousehold decision making power; (a) the extent to which women participate in intra-household decisions on income use, including their perceived decision-making power in that aspect; and (b) the motivation behind the decision-making pattern.

(i) Decision Making Power Score

Our first measure of bargaining power is derived from the WEAI module, administered at individual level to capture the extent to which one is involved in decision-making on use of income from different sources. The indicator is constructed through responses of women regarding participation in decisions on the use of income generated from cash and food crops, livestock production, wage and salary work as well as nonfarm activities. The questions posed in this module are as such: "Did you participate in [ACTIVITY] in the past 12 months?". The next question is conditional on participating in the said activity, and it asks: "How much input did you have in making decisions about income from [ACTIVITY]?" The response of which ranges from No input, Input into very few decisions, Input into some decisions, Input into most

decisions, to Input into all decisions. Weights are assigned to each response as follows; (0) for no input; (0, 25) for input into very few decisions; (0.5) for Input into some decisions, (0.75) for Input into most decisions and (1.0) for Input into all decisions. The decision-making power score is a continuous variable made up by the sum of the weights as highlighted in brackets above.

(ii) Women's Score of Perceived Decision-Making Power

The survey module on Agricultural Production Decisions asked respondents, both male and female, questions as indicated: "When decisions are made regarding each of these indicators, who is it that normally takes the decisions?". If the respondent indicates that he/she does not partake in the decision (e.g. if the husband is solely responsible); the questionnaire further asks a question on the extent to which the individual feels he or she can make their own personal decisions if they wanted to; the response of which is indicated below with assigned weights in brackets;

- Not at all (0)
- Small extent (0.25)
- Medium extent (0.5)
- To a high extent (1)

For female respondents, the assigned weights for each response are summed to give a score of perceived decision-making power.

(iii)Women's Relative Autonomy Index (RAI)

For the construction of the RAI, we rely on data collected through the WEAI module on 'Motivation for Decision-Making'. The data is based on motivation behind decision-making across nine domains as follows; (i) Agricultural production; (ii) Getting inputs for agricultural production; (iii) The types of crops to grow for agricultural production; (iv) Taking crop produce to the market (or not); (v) Livestock raising (vi) Nonfarm business activity (vii) one's own (singular) wage or salary employment; (viii) Major household expenditures (such as a large appliance for the house like refrigerator); and (ix) Minor household expenditures (such as food for daily consumption or other household needs).

Female respondents are asked to rate (on a Likert scale ranging from 1, "never true," to 4, "always true"), how true it would be to say that their actions within a specified domain were motivated by (a) a desire to avoid punishment or gain reward (score -2); (b) the desire to avoid blame or so that other people speak well of them (score -1), (c) their own values and/or interests (score +3). A woman's RAI score for each domain is then calculated by summing the answers to the three questions using the corresponding score. The domain- specific RAI score ranges from -9 to $+9$, where positive score indicates a relatively autonomous motivation, whereas negative scores are indicative of controlled behaviour.

5.3.3 Bargaining Outcomes

To examine the impact of women's bargaining power on children's nutritional outcomes, we rely on three anthropometric z-scores, based on the UN-World Health Organization (WHO) reference/guidelines. The measure of children's Height-for-age z-score (HAZ) reflects a child's height relative to their age or stunting, which is a condition associated with long-term deprivation and is representative of past growth failures both in utero and during early childhood. Weight-for-height z-score (WHZ), on the other hand measures a child's short-term deprivation or 'wasting' and is indicative of a child's exposure to a recent nutritional deficiency. While stunting is associated with deep structural poverty, wasting is determined more by seasonal variations in food availability or disease prevalence. Lastly, Weight-for-age z-score (WAZ) measures children's weight relative to their age. This measure is a summary of both their height-for-age and weight-for-height, which is indicative of their exposure to both acute and chronic undernutrition. A child is severely stunted, wasted, and 'underweight' if their HAZ, WHZ and WAZ scores, respectively; falls below cut-off of 2 standard deviations below the median of the reference population (ACC/SCN 2000).

Table 1 below summarises the prevalence of severe malnutrition in our study area, measured through the percentage/ proportions of children of ages 0-60 months that suffer, stunting, wasting and underweight.

Table 5.1 Prevalence of Malnutrition

Indicator	**Frequency (n=1351)**		**Percent (%)**	**National**
	No	Yes		
Stunting (HAZ<=-3)	1022	329	24.4	18.8
Wasting (WHZ<=3)	1238	113	8.4	4.7
Underweight (WAZ<=3)	1258	93.12	6.7	5.0

Source; Own Calculation from using the 2012 Feed the Future Ghana survey (METSS-Ghana 2012).

As indicated in table 5.1 above, stunting which constitutes a more long-term form nutritional inadequacy is more prevalent in our sample of analysis than other forms of undernutrition at 24.4 %. Sources highlight that the overall prevalence rate for stunted children in the northern part of Ghana is as high as 36% compared to national figure of approximately 19% (Zereyesus et.al., 2015). Prevalence of severe wasting and underweight in our sample is at 8.4 % and 6.7%; compared to the national prevalence rate of 4.7 and 5.

5.4 Results

5.4.1 Empowerment Parameters

OLS coefficients for models 1 to 3, each focusing on one empowerment variable and interactions with the girl dummy are presented in Table 5.2 below. Women's control of income is significant for WHZ, albeit negative. The results suggest that an increase in the number of decisions made on the use of income is associated with a volatility in children's nutritional status, presumably because mothers who participate more in expenditure decisions, are more likely to participate in activities generating the income, while compromising on childcare, which is a key determining factor of children's long-term nutritional attainment.

Meanwhile, contrary to our expectations results of model 2 show a negative and statistically significant coefficient of correlation of empowerment measured by women's perceived decision-making power and children's weight for height (WHZ); but no significant relationship

with HAZ and WAZ, both of which are long to medium term nutritional outcomes. Our results concur with the findings of Malapit et.al (2015), which showed a negative relationship between women overall empowerment, measured through the WEAI and children's nutritional outcomes.

Table 5.2 Results summary: Children's nutrition outcomes and (Ages; 0 to 59 months)

KEY VARIABLES	**HAZ**	**WHZ**	**WAZ**
Model 1			
Women's Control of Income	0.0667	0.171	0.210
	(0.307)	(0.286)	(0.185)
Income Control*Girl	0.0994	0.573	0.00187
	(0.217)	(0.526)	(0.328)
Girl Dummy	0.450*	-0.293	-0.0698
	(0.249)	(0.232)	(0.150)
Observations	1,229	1,234	1,255
R-squared	0.179	0.047	0.066
Model 2			
Women's perceived Decision-making Power	0.216	-0.416**	-0.0634
	(0.169)	(0.203)	(0.130)
Perceived Decision-making *Girl dummy	-0.1000	0.851	0.0802
	(0.242)	(0.530)	(0.187)
Girl Dummy	0.463**	-0.324	0.0232
	(0.207)	(0.237)	(0.153)
Observations	1,195	1,232	1,252
R-squared	0.185	0.048	0.064
Model 3			
Women's Relative Autonomy Index (RAI)	0.0366	-0.0131	0.0671
	(0.173)	(0.376)	(0.233)
RAI *Girl Dummy	-0.154	-0.904*	-0.664**
	(0.244)	(0.533)	(0.331)
Girl Dummy	0.499**	-0.119	0.551**
	(0.212)	(0.238)	(0.273)
Observations	1,196	1,233	1,259
R-squared	0.175	0.045	0.067

Source: Own calculations using the 2012 Feed the Future Ghana survey (METSS-Ghana 2012). Note: Robust standard errors are in parentheses. *p < .1. **p < .05. ***p < .01.

For model 1 and 2, our results show coefficient of interaction term of the girl dummy with the empowerment variables that is not statistically significant. We therefore fail to reject the null hypothesis that women empowerment measured through their participation in income use decisions as well as their perceived decision-making power; impact on children's nutritional outcomes does not vary according to sex of the child. Empowerment measured by women's perception of their decision-making power is also associated with children's short-term nutritional status, namely WAZ and WHZ, while weakly associated with children's long-term nutritional status. Overall, our findings suggest that women's involvement in intra-household decision-making processes is more influential in determining children's short-term nutritional status, while weakly associated with long term -nutritional outcomes.

Meanwhile the results show the girl dummy performing well in all three models in terms of gains in height-for-age (HAZ). Overall, the girls of ages below 60 months are less likely to be stunted than their male counterparts. This observation echoes the findings of Haddad and Hoddinott (1994) in Cote d`Ivoire, which showed a similar pattern where pre-school boys had poorer nutritional status than their female counterparts. The scholars attributed this finding to biological factors, and they go on to cite reports that highlight low immune system and immaturity of lungs among infant boys, which in turn make them more susceptible to diseases, and hence low health endowment. We, however, interpret Haddad and Hoddinott (1994) justification of these findings with caution, based on the literature elsewhere in the developing world, (South Asia in particular), that show poorer health endowment of infant girls relative to boys. This essentially points to other factors, mainly qualitative socio-cultural that drive gender asymmetries in infant nutritional attainment.

The coefficient for Relative Autonomy Index shows no significant relationship with all children's nutritional outcomes. Though unexpected, the finding seems to align with the results of Vaz et.al., (2015) in Chad, which found no relationship between women's individual autonomy, measured through domain-specific (feeding of infants) RAI and exclusive breastfeeding, being a key determining factor for infants' nutrition. However, Vaz (2015) study results showed a significant community–level effect of RAI in the domains of household activities and employment and exclusive breastfeeding of the children. Vaz et.al., (2015) finding suggests that community level traditional belief systems and social perceptions play a bigger role in determining children's nutrition than women's own characteristics.

The coefficient of the girl-interaction term with the RAI, on the other hand show significant, albeit negative correlation with WHZ and WAZ; which suggest that women's autonomy may be important in offsetting the poor nutritional intake of boys. This appears to be the case, given the overall good performance of the girl dummy in long term nutritional outcomes. Thus, consistent with findings of earlier studies on gendered nutritional well-being of preschoolers within the context of sub-Saharan Africa, women's autonomy may be beneficial for boy's dietary intake. It is often assumed that women have preference for the girl child, given that they help with household chores and other nurturing responsibilities; and that their increased intrahousehold decision-making power, ceteris paribus, will improve girls' nutrition relative to boys. This does not seem to be the case, as an opposite result is obtained, suggesting that women's enhanced autonomy has larger impact on boys' nutritional well-being, relative to girls. Some have attributed this observation to mothers' response to male and-female variation in future earnings, which is in anticipation for provision of support for the elderly, particularly among rural communities in third world countries (see for example Haddad and Hoddinot, 1994 for West Africa and Berhman 1988 for South Asia).

5.4.2 Impact of Control Variables on Children's Nutritional Outcomes

The coefficient age of the child's age is significant for height-for-age (stunting) and weight for age (underweight); with older children bearing the brunt. Though not conclusive, this observation may be attributed to the fact that breastfeeding and other infant care practices play a larger role in the long-term nutritional status of children in the sample area. We also include the square of the children's age to account for the non-linearity of effect of age in nutrition. The coefficients for the square of children's age are significant for all nutritional outcomes. The mother's characteristics, in particular mother's age show a negative and correlation with children's weight for age, while mother's height, capturing the genotype and phenotype influences on children's weight and height, has a significant and positive association with Weight for age (WAZ) and Weight for Height (WHZ). Maternal literacy, measured by whether they are able to read and write, seem to have no relationship with children's nutritional outcomes. This observation is contrary to our expectations, but may be attributed to the choice of indicator, given that a large percentage of mothers in our sample did not go beyond primary school level.

Household Income, proxied by per capita expenditure emerges a strong determinant of the three nutritional outcomes; which is consistent with the literature on income poverty and household level- nutrition well-being (Smith et.al, 2003; Dancer et.al, 2008). Bear in mind that women's own nutritional status is critical for infants' nutritional attainment. All the other household level variables characteristics, par access to clean and safe water, are weakly associated with children's nutritional outcomes. The relationship between clean and safe water with children's short-term nutritional outcomes underscores the important role of water and sanitation through their influence on the utilization pillar of food security.

5.5 Concluding Remarks.

The study focuses on examining the impact of women's intra-household decision-making power on children's nutritional outcomes. Specifically, we employ OLS analysis to make a comparison of which among the three variables, based on two sides of decision-making power provide a more meaningful measure of women's bargaining power in relation to children's short and long-term nutritional outcomes.

Our findings show that empowerment measured by the extent to which women participate in in intra-decisions concerning the use of income is not relevant for pre-school children's nutritional status. Women's perceived decision-making power, measured by their own perception of whether they could participate in decision making within the household; is significant, but negative for weight-to-height, and not for other nutritional measures. The results suggest that women's decision-making power, based on the 'who' of household decision-making process, is either not relevant or it negatively impacts on children's nutritional well-being. It can be argued that the empowerment of women in decision-making within the agriculture production domain, is not particularly relevant for children's nutritional outcomes, supposedly due to time constraints and drudgery on the part of women that limits or constraints their time on childcare and nurturing obligations.

Meanwhile empowerment measured by women's motivational autonomy is also not significant for preschooler nutritional outcomes. However, when interacted with the girl dummy, the estimates show a significant coefficient for short to medium term nutritional outcomes, signaling a differential impact on boys and girls aged 0-59 months. Here we also pay attention

to the sign of the coefficient, which in this case is negative. This finding implies that the impact of women autonomy on children's nutritional outcomes is more beneficial for pre-school boys relative to their female counterparts.

Our results seem to suggest that young boys, as opposed to young girls are the disfavoured age-gender cohort in the intra-household distribution of nutrients. This may be attributed to, as some have claimed; the anticipation of 'bride-price', a practice that is deeply entrenched in the traditional norms within the sub-Saharan context; as opposed to the dowry system prominent in South Asia (see for example, Villa et.al. 2011). Secondly, not only do social norms and social perceptions about deservedness (gendered), play a more significant role in the intra-household distribution of nutrients, than say - women's individual characteristics; women's motivational autonomy is relevant in cushioning young boys against the poor nutritional intake.

Finally, we accept that due to data availability limitations we cannot fully substantiate our claim of the impact of traditional norms, belief systems and social perceptions in relation to 'boy or girl preference' phenomenon on children's nutritional status-indeed a conundrum that requires further scrutiny. Nonetheless, the Relative Autonomy Index as a measure of empowerment in relation to children's nutrition is quite promising and should be further explored. However, the index, as used in our analysis is limited to production and expenditure domains only. Thus, in the case of children's nutritional outcomes, there is a need to extend the measure to other domains, for example breastfeeding activities, intra-household distribution of food, and so on, in order to capture the motivation behind decision -making patterns that drive the outcome of interest.

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APPENDICES

Table 5.3 OLS Estimates Children's height-for-age scores (Haz)

	Model 1	Model 2	Model 3
VARIABLES	Haz	Haz	Haz
Income Control*girl dummy	0.0667		
	(0.307)		
Women Income Control	0.0994		
	(0.217)		
Women's perceived Decision-making Power		0.216	
		(0.169)	
Perceived Decision-making *Girl dummy		-0.1000	
		(0.242)	
Women's Relative Autonomy Index (RAI)			0.0366
			(0.173)
RAI *Girl Dummy			-0.154
			(0.244)
Child's Age (Months)	-0.190***	-0.156***	-0.155***
	(0.0177)	(0.0145)	(0.0144)
Square of child's Age (months)	0.00234***	0.00194***	0.00195***
	(0.000306)	(0.000249)	(0.000246)
Mother can read and write (1 if yes)	-0.439	-0.371	-0.325
	(0.323)	(0.258)	(0.256)
Mother's Height (cm)	-0.00605	0.00131	-0.00257
	(0.00936)	(0.00755)	(0.00740)
Age of household head (years)	0.0355	0.00419	-0.00143
	(0.0268)	(0.0216)	(0.0215)
Square of Age of household head	-0.000375	6.62e-05	0.000118
	(0.000270)	(0.000221)	(0.000219)
Household head completed 1^0school	-0.0352	-0.0149	-0.0168
	(0.0650)	(0.0511)	(0.0508)
Access to Safe Drinking Water (1 if yes)	0.178	0.198	0.122
	(0.190)	(0.151)	(0.150)
Household Size	-0.0575**	-0.00538	-0.000661
	(0.0224)	(0.0178)	(0.0177)
Dependency Ratio	-0.128	-0.0529	-0.0571
	(0.100)	(0.0815)	(0.0811)
Per capita Expenditure Quintile 1	-0.200	0.0343	-0.0418
	(0.237)	(0.189)	(0.189)
Per capita Expenditure Quintile 2	-0.179	-0.288	-0.318*
	(0.235)	(0.189)	(0.188)
Per capita Expenditure quintile 3	0.310	0.199	0.113
	(0.233)	(0.189)	(0.188)
Per Capita Expenditure quintile 4	0.0605	-0.214	-0.227
	(0.230)	(0.182)	(0.181)
Girl dummy (1 if Girl)	0.450*	0.499**	0.479**
	(0.249)	(0.198)	(0.201)
Constant	1.266	0.0215	1.054
	(1.694)	(1.367)	(1.339)

Observations	1,229	1,195	1,196
R-squared	0.179	0.185	0.175
Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

Table 5.4 OLS Estimates Children's weight-for-height scores (whz)

	Model 1	Model 2	Model 3
VARIABLES	whz	whz	whz
Income Control*girl dummy	0.171		
	(0.286)		
Women Income Control	-0.302		
	(0.202)		
Women's perceived Decision-making Power		-0.416**	
		(0.203)	
Perceived Decision-making *Girl dummy		0.245	
		(0.289)	
Women's Relative Autonomy Index (RAI)			-0.0131
			(0.376)
RAI *Girl Dummy			-0.904*
			(0.533)
Child's Age (Months)	0.0126	0.0154	0.0118
	(0.0166)	(0.0167)	(0.0164)
Square of child's Age (months)	0.000239	0.000198	0.000259
	(0.000287)	(0.000288)	(0.000283)
Mother can read and write (1 if yes)	-0.153	-0.142	-0.144
	(0.303)	(0.303)	(0.299)
Mother's Height (cm)	0.00719	0.00708	0.00613
	(0.00845)	(0.00848)	(0.00837)
Age of household head (years)	-0.0136	-0.0147	-0.0188
	(0.0250)	(0.0251)	(0.0247)
Square of Age of household head	0.000148	0.000162	0.000217
	(0.000253)	(0.000254)	(0.000250)
Household head completed 1^0school	-0.0174	-0.0233	-0.0414
	(0.0609)	(0.0611)	(0.0601)
Access to Safe Drinking Water (1 if yes)	0.106	0.0688	0.0874
	(0.177)	(0.178)	(0.175)
Household Size	-0.0114	-0.00873	-0.0183
	(0.0214)	(0.0215)	(0.0212)
Dependency Ratio	0.0522	0.0476	0.0392
	(0.0935)	(0.0937)	(0.0921)
Per capita Expenditure Quintile 1	-0.121	-0.174	-0.0969
	(0.221)	(0.223)	(0.220)
Per capita Expenditure Quintile 2	-0.221	-0.245	-0.154
	(0.220)	(0.221)	(0.218)
Per capita Expenditure quintile 3	-0.0755	-0.0989	-0.139
	(0.218)	(0.220)	(0.216)
Per Capita Expenditure quintile 4	0.410*	0.379*	1.473***
	(0.214)	(0.215)	(0.393)
Girl dummy (1 if Girl)	-0.293	-0.324	-0.119
	(0.232)	(0.237)	(0.238)
Constant	-1.234	-1.079	-0.949
	(1.535)	(1.546)	(1.518)
Observations	1,234	1,232	1,233
R-squared	0.047	0.048	0.045
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1			

Table 5.5 OLS Estimates; Children's weight-for-age score (waz)

	Model 1	Model 2	Model 3
VARIABLES	Waz	Waz	Waz
Income Control*girl dummy	0.210		
	(0.185)		
Women Income Control	-0.233*		
	(0.130)		
Women's perceived Decision-making Power		-0.0634	
		(0.130)	
Perceived Decision-making *Girl dummy		0.0802	
		(0.187)	
Women's Relative Autonomy Index (RAI)			0.0671
			(0.233)
RAI *Girl Dummy			-0.664**
			(0.331)
Child's Age (Months)	-0.0714***	-0.0718***	-0.128***
	(0.0109)	(0.0110)	(0.0189)
Square of child's Age (months)	0.00108***	0.00109***	0.00192***
	(0.000188)	(0.000189)	(0.000329)
Mother can read and write (1 if yes)	-0.418**	-0.434**	-0.368
	(0.199)	(0.199)	(0.346)
Mother's Height (cm)	-0.00286	-0.00295	-0.0110
	(0.00565)	(0.00567)	(0.00964)
Age of household head (years)	0.00939	0.00869	0.0410
	(0.0168)	(0.0169)	(0.0288)
Square of Age of household head	-8.62e-05	-7.90e-05	-0.000424
	(0.000172)	(0.000173)	(0.000291)
Household head completed 1^0school	-0.0360	-0.0369	-0.0290
	(0.0394)	(0.0395)	(0.0693)
Access to Safe Drinking Water (1 if yes)	0.127	0.140	0.551***
	(0.116)	(0.116)	(0.201)
Household Size	0.0143	0.0145	0.0276
	(0.0137)	(0.0137)	(0.0232)
Dependency Ratio	-0.0599	-0.0608	-0.138
	(0.0607)	(0.0608)	(0.107)
Per capita Expenditure Quintile 1	-0.134	-0.150	0.0264
	(0.143)	(0.144)	(0.256)
Per capita Expenditure Quintile 2	-0.277*	-0.282*	-0.0612
	(0.143)	(0.144)	(0.255)
Per capita Expenditure quintile 3	0.0373	0.0242	0.408
	(0.142)	(0.143)	(0.252)
Per Capita Expenditure quintile 4	0.352**	0.352**	0.639***
	(0.138)	(0.139)	(0.244)
Girl dummy (1 if Girl)	-0.0698	0.0232	0.551**
	(0.150)	(0.153)	(0.273)
Constant	0.435	0.362	1.400
	(1.026)	(1.031)	(1.755)
Observations	1,255	1,252	1,259
R-squared	0.066	0.064	0.067
Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

Chapter 6: Conclusion

Though this Doctoral study we demonstrate the importance of a household as the analytical focus for the well-being of women and children. In most traditional societies, the household serves as an arena where important decisions of production, consumption and resource allocation are made, and it has since been proven empirically and theoretically that the nutritional well-being of women and children are a consequence of these decisions. Chapter 2 focuses on the right to food for rural women, using South Africa as a case and argues that without any consideration of the dynamics within households, interventions aiming at the right to food for women may not achieve their goal. Through the RBA, and hence the application of principles of equality and non-discrimination, rural women's food rights are supposed to be guaranteed, but in South Africa, this has not been the case. The study points out that in the absence of a framework law that defines 'adequacy' within the South African context, the right to food for all citizens will remain an elusive goal. Consumption adequacy here would be defined in terms of not only the adequacy of nutrient intake of the individual, but whether it meets their nutrition specific needs in relation to their specific physiological needs.

Secondly, literature has pointed out that the violation of rural women's (and girls') food rights often occurs within the household or the so called 'private sphere,' where 'cultural practices' dictate deservedness, in terms of who should be fed what, and when. Indeed, the intra-household allocation processes that discriminate against women are also a result of women not being able to access key resources important for their right to food. Take for example, land which is a key resource among agrarian households; rural women's access and benefit of this resource is often mediated by socio-cultural factors constituted at household and community levels such as kinship, the conjugal contract, as well as norms and practices that govern inheritance.

Also important from the 2030 Agenda perspective on Zero hunger is how policies can be directed towards bridging the gendered asymmetries in nutritional well-being among individuals. The achievement of SDG2 hinges on this information, and it has thus become important for the development community to ask whether within the sub-Saharan context, there is enough evidence to support or refute the joint welfare notion of the unitary model. Emerging literature on the subject relies on individual level measures of undernutrtion to examine whether among individual members of households there is a systematic variation in nutritional well-

being. Judging from the inconsistencies and in findings of studies done in sub-Saharan Africa, this fundamental question is yet to be reliably answered. Some scholars even point to a grave danger of making assumptions about inequalities (or the lack of) inherent in food distribution patterns in different contexts, as this has implications for the design and implementation of interventions as well as their well-being impacts.

Through this Dissertation, nonetheless we contribute to this debate by refining existing measures of intrahousehold dynamics; by so doing contributing to a methodological advancement and informing policies that aim at reducing hunger among the most vulnerable members of households. In Chapter 3 of the Dissertation, we rely on various economic analysis tools to shed light on evidence of variations between women's nutritional well-being and that of the households within which they are imbedded in. This information is important in establishing evidence of inequalities in intra-household allocations that discriminate against women of child-bearing age. We ask whether women's nutritional status can be reliably predicted through household level measures of nutritional well-being, such that food security interventions targeting consumption poor households can reach vulnerable women. Findings from a plethora of analytical tools corroborate past literature elsewhere in the developing world that shows that indeed women's undernutrition cannot be compounded with household food insufficiency and these two phenomena are not synonymous. The implications of these findings are such that the reliance on household level measures for targeting is misleading for development practice, in that not only are households treated as "blackboxes", where intra-household dynamics are assumed away', undernourished individuals are overlooked in the process.

The analysis in the chapters that follow, (chapter 4 and 5) is an attempt to consider the impact of the intra-household dynamics, as indicated in Chapter 3, on women and children's nutritional well-being. The concepts of empowerment, bargaining power and maternal autonomy, that constitute or are constituted within households (and indeed at other arenas- the community, market and state) are explored to determine their impact on nutritional outcomes. The empowerment perspective remains critical for people's well-being. The 2030 agenda on sustainable development recognizes women empowerment not only on the basis of its importance for the achievement of key development outcomes, but also as a matter for the achievement of social justice. Goal number 5 of the 20130 agenda commits to achieving women empowerment and gender equality as an end goal in itself. The agenda further recognizes the achievement of women empowerment and gender equality as a means for the achievement of

other development goals. For example, the notion of *zero hunger* that is central to the achievement of SDG2 emphasizes the role of women as custodians of their families' and their own nutritional well-being. This is based on evidence from past research that attest to the linkages between women empowerment and key developmental outcomes, notably households' nutritional well-being and children's nutrition.

In that regard, valid and comprehensive measures of women empowerment are critical in monitoring the achievement of the Sustainable Development Goals. The challenge from a policy perspective however, is to identify aspects of women empowerment to be pursued in order to achieve favorable outcomes. The multi-dimensional nature of the concept, and its context-specificity create a challenge for identifying credible measures of empowerment that can be used for monitoring purposes and to predict consequences of development interventions. This Dissertation contributes to this debate in several ways; firstly, in chapter 4 of this dissertation in an attempt to determine the impact of empowerment on nutritional outcomes, we distinguish between empowerment measures that enhance women's agency as mothers versus those that enhance women's ability to make claims regarding well-being outcomes that are of benefit to them. Literature refers to these parameters as instrumentalist versus transformative forms of empowerment respectively, as the latter constitutes decision-making processes that go against the grain of established norms, customs and practices, as well as the prevailing social perceptions about deservedness and the legitimacy of claims (see for example Kabeer, 2010). The findings of this Dissertation are thus critical in guiding policies on empowerment measures to be pursued to impact on women's nutritional outcomes versus those that are influential in determining outcomes achieved through women's socially determined roles.

Chapter 5 of this Dissertation shifts the focus towards determining the empowerment parameters that are influential in determining the nutritional outcomes of children. We examine the role of three empowerment parameters based on the "who" and the "why" of intrahousehold decision making, in determining children's nutritional outcomes. Our objective here is to contribute to a methodological advancement and hence policy design in intrahousehold allocations by refining the existing measures of intrahousehold dynamics. We construct two indicators based on the identity of person making expenditure decisions within the household: one being the actual number of decisions made by the female decision-maker; and the second being a measure of their perceived decision-making power. We adopt the relative Autonomy

Index, a measurement tool reflecting the extent to which decision-making processes are shaped by prevailing norms and belief systems, than they are out of people's personal convictions; where higher scores indicate greater autonomy and lower score reflect actions that are extrinsically motivated. We further determine whether there is a differential impact of empowerment on infant girls relative to boys while controlling for measures of household socio-economic status. Our findings suggest that the two measures based on the identity of person making decisions are more influential in determining children's short-term nutritional status, while weakly associated with long term -nutritional outcomes. The coefficient for RAI, on the other hand shows no significant relationship with all children's nutritional outcomes. Meanwhile the results show that infant girls are on average less likely to be stunted than their male counterparts.

The coefficient of the girl-interaction term with RAI, show significant, albeit negative correlation with children's short to medium term nutritional outcomes, suggesting that women's motivational autonomy may be important in offsetting the poor nutritional intake of boys. Thus, consistent with findings of earlier studies on gendered nutritional well-being of preschoolers in sub-Saharan Africa, women's bargaining power measured through motivational autonomy may be beneficial for boys' dietary. Our findings point to a need for distributional analysis and policy making to look beyond empowerment measures that rely on the identity of person participating more in intra-household decisions and to also consider the influence of socio-cultural beliefs and practices on decision-making processes in relation to children's nutritional outcomes. The question that requires further scrutiny here remains whether the nutritional well-being of infant girls is tied to socio-cultural beliefs and practices that places value on girls relative to their male counterparts.

Declaration of co-authorship

If a dissertation is based on already published or submitted co-authored articles, a declaration from each of the authors regarding the part of the work done by the doctoral candidate must be enclosed when submitting the dissertation.

1. Doctoral candidate
Name: Boipelo Ntebeng Freude

2. This co-author declaration applies to the following article:
Is Women Undernutrition Synonymous with Household Food Insufficiency? Evidence from Northern Ghana.

The extent of the doctoral candidate's contribution to the article is assessed on the following scale:

A. Has contributed to the work (0-33%)
B. Has made a substantial contribution (34-66%)
C. Did the majority of the work independently (67-100%)

3. Declaration on the individual phases of the scientific work (A, B, C)	Extent
Concept: Formulation of the basic scientific problem based on theoretical questions which require clarification, including a summary of the general questions which, it is assumed, will be answerable via analyses or concrete experiments/investigations	**B**
Planning: Planning of experiments/analyses and formulation of investigative methodology, including choice of method and independent methodological development, in such a way that the scientific questions asked can be expected to be answered	**B**
Execution: Involvement in the analysis or the concrete experiments/investigation	**B**
Manuscript preparation: Presentation, interpretation and discussion of the results obtained in article form	**B**

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The Relative Deprivation of Women; what Role for Empowerment?

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Execution: Involvement in the analysis or the concrete experiments/investigation	C
Manuscript preparation: Presentation, interpretation and discussion of the results obtained in article form	C

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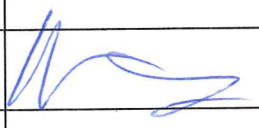
20.07.2021	**Prof Dr.Dr. Christian Henning**	

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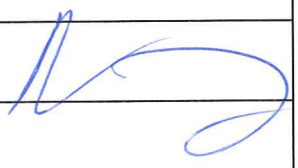
20.07.2021	**Prof Dr.Dr. Christian Henning**	

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