

I, Ivica Petrikova, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

ACKNOWLEDGMENTS

First, I would like to express my most heartfelt and sincere gratitude to my supervisors, Dr. David Hudson and Dr. M. Rodwan Abouharb. They agreed to take me on as a PhD student and believed in me from the beginning of my research career. They supported me along the way, David with praise and optimism, Rod with helpful comments on my work. They read hundreds of pages of my research. I will never be able to repay them all that effort; I can only hope that I will have the opportunity to pay it back down the road to future PhD students.

I would also like to thank Dr. Slava Mikhaylov and my fellow PhD students in the SPP department for their constructive criticism when I presented the preliminary results of my research at our PhD seminars. Further, I am immensely grateful to University College London, not only for accepting me as a PhD student but also for supporting me financially for four years with its Graduate Research Scholarship, and to the London School of Hygiene and Tropical Medicine, for granting me the Chadwick Travelling Fellowship, which allowed me to carry out field research in Nicaragua and India.

Related to that, I want to extend my gratitude to Raleigh International and the Grameen Development Services for granting me access to their projects in Nicaragua and in India and to Mr. Vatsalya Sharma, for being a wonderful research assistant.

Last but certainly not least, I want to thank my family: my parents, for watching my children so that I could write, my husband, for encouraging me to continue when I wanted to give up, and my children, just for being.

ABSTRACT

Despite persistently high levels of food insecurity in the world and large annual flows of aid from the global North to the global South in support of economic and social development, very little research to date has analysed the link between the two phenomena. In this PhD thesis I contribute to filling this gap in literature by examining whether development aid has any effect on food security and whether this effect varies with the type of aid provided and with the quality of governance among recipients. I set out to answer these questions using mixed methods in four different levels of analysis: a quantitative study of all low- and middle-income countries; a qualitative country case study of Peru, Ethiopia, India, and Vietnam; a quantitative analysis of household data from the same four countries; and a mixed-methods examination of data collected during field research in northern India.

In all four levels of analysis, I find aid to have a small but significant positive impact on food security, enhanced by the presence of good national as well as local governance. Moreover, I discover that some types of aid are more directly supportive of food security than others – as is the case for example with aid to social sectors as opposed to aid to economic sectors or with aid implemented by non-governmental as compared to aid implemented by governmental agencies. Other types of aid, including concessional loans and budget support, appear to have a positive effect on food security only in countries with a higher quality of governance. I conclude by formulating several relevant policy recommendations, with the most important one being that donors should take greater care in considering which types of aid are suitable to which specific countries, localities, and development goals.

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ABBREVIATIONS

2SLS	Two-Stage Least Squares
AAY	Antyodaya Anna Yojana
AP	Associated Press
APL	Above Poverty Line
ATET	Average Treatment Effect on the Treated
AU	African Union
BMI	Body Mass Index
BPL	Below Poverty Line
CRS	Creditor Reporting System
CSO	Civil Society Organisation
DAC	Development Assistance Committee
DFID	Department for International Development
DFPD	Department of Food and Public Distribution
EPRDF	Ethiopian People's Revolutionary Democratic Front
EU	European Union
FAO	Food and Agriculture Organisation
FAOSTAT	Food and Agriculture Organisation Statistics
FCM	Federation of Canadian Municipalities
FE	Fixed Effects
FH	Freedom House
FIAN	Food First Information and Action Network
FPS	Fair Price Shop
G8	Group of Eight
GBP	Great British Pound
GDP	Gross Domestic Product
GDS	Grameen Development Services
GHI	Global Hunger Index
GMM	Generalised Method of Moments
GO	Governmental Organisation
H	Hypothesis
HDI	Human Development Index
HRW	Human Rights Watch
ICESCR	International Covenant on Economic, Social, and Cultural Rights

IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IIPS	International Institute for Population Sciences
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IPCC	Intergovernmental Panel on Climate Change
IYCN	Infant and Young Child Nutrition
kCal	Kilocalorie
LDC	Least Developed Country
LSMS	Living Standard Measurement Survey
MDG	Millennium Development Goal
NFSA	National Food Security Act
NGO	Non-Governmental Organisation
NHS	National Health Survey
NREGS	National Rural Employment Guarantee Scheme
NTP-PR	National Targeted Program for Poverty Reduction
NYT	New York Times
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Squares
OXFAM	Oxford Committee for Famine Relief
PBS	Promotion of Basic Services
PDS	Public Distribution System
PPP	Purchasing Power Parity
PSCB	Public Sector Capacity Building
PSM	Propensity Score Matching
PSNP	Productive Safety Net Programme
QWIDS	Query Wizard for International Development Statistics
UCLG	United Cities and Local Governments
UN	United Nations
UNDHR	Universal Declaration of Human Rights
UNDP	United Nations Development Programme
UP	Uttar Pradesh
US	United States (of America)
USAID	United States Agency for International Development
USD	United States Dollar

Abbreviations

USSR	Union of Soviet Socialist Republics
WASH	Water, Sanitation, and Hygiene
WB	World Bank
WDI	World Development Indicators
WFP	World Food Programme
WGI	Worldwide Governance Indicators
WHO	World Health Organisation

INTRODUCTION

The haunting reality of global food insecurity

As of 2015, more than 800 million people in the world are undernourished (Food and Agriculture Organisation [FAO], 2014). That means that every eighth person in the world lacks access to sufficient daily caloric intake. While there has been a positive trend in diminishing world hunger throughout the past century, a few recent developments indicate that global food insecurity will remain an important item on the agenda for many decades to come.

The food crisis of 2008, during which prices of staple foods doubled or even tripled in a matter of months and drove millions of people to the brink of starvation, demonstrated many of these. First, while insufficient access to food has recently been the main culprit behind ongoing food insecurity, there are signs that global food availability might resurface as a crucial issue. Ever since the 1970s, global food production has exceeded the energy requirements of all the world inhabitants combined, even though this has not translated into sufficient food access for all. However, continuing population growth, changing consumption patterns, deteriorating environmental conditions, and stagnating cereal yields are threatening to alter the situation.

The United Nations (UN) World Populations Prospects' 'medium-variant' population-growth scenario predicts that the current world population of seven billion will increase to eight billion by 2030 and to more than nine and a half billion by 2050. Previously thought of as the peak, this number might climb further, to more than 12 billion by 2100, according to the latest research (Gerland *et al.*, 2014). Most of this population increase will occur in low-income countries; notably, the population of sub-Saharan Africa is projected to more than double from the current one billion to two and a half billion by 2050 (United Nations, 2013). According to the FAO, providing this augmented number of people with just sufficient daily energy, without taking into account the requirements of well-balanced diets, would necessitate raising global food production by 70 per cent by mid-century (FAO, 2009a).

The changing patterns in food consumption in developing countries combined with the search for renewable energy sources might further hinder global food availability. As millions of people in China, India, and other rapidly economically growing countries shift from low to middle incomes, their demand for protein-rich foods including meat and fish will grow. As a result, yearly meat consumption is expected to rise by 2050 from the 32 kilograms per capita of today to more than 50 kilograms (Government Office for Science, 2011). These new consumption patterns are projected to intensify pressure on both land and water resources while simultaneously augmenting agricultural CO₂ emissions. Shifting land from food to bio-fuel production might achieve the opposite in the short run, but it often threatens local food security

and encourages deforestation, cultivation of fragile lands, and other environmentally unsustainable practices (*ibid*).

At the same time, however, the necessary rise in global food production must occur in a world with stagnating yields and deteriorating climate conditions. An influential study by Ray *et al.* (2012) concluded that in 24-39 per cent of crop-growing areas (wheat, maize, rice, and soybeans) in the world, yields were either no longer growing or actually collapsing. Climate change might slow down yield growth further as higher average temperatures, changing patterns of precipitation, and a greater number of severe weather events are expected to reduce the yields of staple crops such as wheat, maize, and rice by 2 per cent per decade (Intergovernmental Panel on Climate Change [IPCC], 2013).

To reiterate, in order to tackle food insecurity in the coming decades, people have to increase global food production while dealing with the challenges of climate change and the changing patterns in consumption and energy production. At the same time, sufficient food availability in no way automatically translates into food security. After all, there has been enough food in the world *for everyone* for more than the past four decades and yet world hunger and undernourishment have persisted (Friedmann, 1982). This paradox is well exemplified by the recently emerged trend of ‘land grabbing¹.’ This increased investment in agriculture by higher-income countries *might* bring about higher global food production, but it is not likely to improve local food security, as the land investment deals generally contain no clause that would require investors to create local employment opportunities or to distribute food back to the local populace even in the case of famines (Khan, 2008).

At the global level, powerful international actors have repeatedly expressed their desire to end hunger and food insecurity. Among the most prominent of the more recent pledges has been the first Millennium Development Goal (MDG), in which UN members promised to halve the proportion of people suffering from hunger by 2015². At almost every world food summit or Group of Eight (G8) meeting, world leaders reiterate their commitment to this goal. For instance, at the 2009 World Summit on Food Security in Rome, participants adopted a declaration pledging ‘renewed commitment to eradicate hunger from the face of the earth sustainably and at the earliest date’ (FAO, 2009b). In 2012, G8 and several African countries again restated their resolve to improve global food security and founded the *New Alliance for Food Security and Nutrition*³. These theoretical commitments have, however, not translated into sustained global action. Even so, the MDG 1 goal of halving world hunger has been met in some developing

¹ ‘Land grabs’ are large-scale land acquisitions; the buying or leasing of large pieces of land in developing countries, by domestic and transnational companies, governments, and individuals.

² <http://www.un.org/millenniumgoals>

³ <https://www.whitehouse.gov/the-press-office/2012/05/18/fact-sheet-g-8-action-food-security-and-nutrition>

regions, such as East Asia or Latin America, but particularly Sub-Saharan Africa and South Asia have thus far lagged significantly behind in this regard⁴.

The problem rests partially in the absence of a consensus vis-à-vis the most appropriate mechanism for addressing food insecurity. Some researchers and institutions believe that food security can be best improved through increasing agricultural expenditures in developing countries, which would raise agricultural productivity and thus in turn income levels of subsistence farmers. Others emphasise the imperative to focus on improving infrastructure, both economic (transport, energy) and social (education, health). Still others highlight the importance of social transfer programmes that would bring about a more equal distribution of food available at the national level⁵. The one thing that most of the existing policy recommendations for improving food security have in common is the need for developing countries' governments to devote a larger portion of their budget to addressing the issue. In the context of one such initiative, the Maputo Declaration, 53 African countries committed to increasing their investment in agriculture to at least 10 per cent of their budgets by 2008 (African Union, 2003). However, only eight countries managed to comply with the pledge; the rest pleaded an inability to balance their budgets. A similar situation can be observed in other sectors that are crucial to the reduction of food insecurity, including transportation, education, and health.

One potential way to fill these financial gaps is through the provision of development aid. Advanced economies have certainly been vocal about their willingness to spur development and eradicate food insecurity using financial assistance. In 2002, at the Monterrey poverty summit, the international community agreed to increase development spending to 0.7 per cent of their GDP⁶. Similarly, at a summit in Gleneagles in 2005, the G8 countries promised to double aid to Africa by 2010⁷. Three years later, at l'Aquila in Italy, they dropped the Gleneagles pledge and instead promised 22 billion USD to food security efforts over the following three years. At the end, only around 50 per cent of these funds were received as the US and EU countries struggled to decrease their deficits instead (ONE, 2013). Nonetheless, despite the frequent noncompliance of donors with their promised aid targets, development assistance constitutes a significant financial flow from the global North to the global South. While in large developing countries such as India or Indonesia it denotes a relatively marginal resource - 0.2 per cent and 0.6 per cent of GDP respectively, for others it remains a very important source of income – in Ethiopia 20 per cent, in Sierra Leone 28 per cent, and in Guinea-Bissau 37 per cent relative to GDP (Query Wizard for International Development Statistics [QWIDS] data for 2012).

⁴ http://www.worldbank.org/mdgs/poverty_hunger.html

⁵ <http://www.businessweek.com/ap/financialnews/D9LLKVR80.htm>

⁶ USD 2.5 trillion for 2009 (Organisation for Economic Cooperation and Development (OECD); http://ec.europa.eu/development/body/publications/courier/courier192/en/en_007.pdf)

⁷ http://www.unmillenniumproject.org/documents/Gleneagles2005_ChairmanSum.pdf

Surely, not all aid is designed to primarily increase food security. Nevertheless, the guarantee of freedom from hunger for all citizens constitutes one of the most basic social duties of the state. For example, the International Covenant on Economic, Social, and Cultural Rights (ICESCR), to which most countries in the world are parties, recognises ‘the fundamental right of everyone to be free from hunger’ and binds parties to ‘individual, and through international co-operation, measures, including specific programmes, which are needed’ to address the issue (Art 11.2). Therefore, *all* development aid should in theory contribute to making its recipients better able to assure their domestic food security⁸. This imperative is gaining further momentum in light of the recent food crises often triggering riots and protests. Consequently, it is surprising that unlike in the case of economic growth or poverty, there exist few studies evaluating the relationship between aid and food security, whether on the global, national or local levels.

Research questions and outline of research approach

My study aims to contribute to filling this theoretical and empirical void and proceed beyond it. Development aid is disbursed by official and non-official donors with the specific purpose of promoting recipients’ economic and social development, including food security, yet it has not been sufficiently empirically examined whether the aid provided indeed bolsters food security. Aid in support of food security is provided by different actors, in different forms, and to different sectors and recipients yet knowledge on the heterogeneity of impact of aid on any development outcome, food security included, is woefully scarce. Finally, aid recipients vary in their quality of institutions and policies yet there is no evidence whether the effects of aid on food security are influenced by the quality of governance and whether this intervening role differs for the distinct aid modalities supplied. Therefore, after establishing if aid flows in general affect food security positively and whether this effect is conditioned on the quality of governance, I also examine whether some types of assistance are more beneficial for food security than others.

These considerations can be succinctly summarised in the following research question:

Does development assistance have a positive impact on food security and does this impact vary with the type of aid provided and with the recipients’ quality of governance?

In other words, are countries that receive more aid better able to ensure that their populations are sufficiently and consistently fed as compared to countries that receive less aid, other things being equal? In the same vein, are households/people that receive more aid more food secure than those who receive less aid, *ceteris paribus*? Moreover, does who, how, and where

⁸ All aid is certainly not intended to increase growth and yet most studies in aid effectiveness focus on the impact of aid on growth, arguing that eventually all aid should increase growth. I actually do not completely agree with this point, but I do believe that all aid should eventually contribute to greater food security.

development assistance is distributed influence these abilities? Finally, is the impact of aid different in countries and communities with a higher quality of institutions and policies from that in countries and communities with a lower quality of institutions and policies?

I seek to provide answers to these questions through four complementary studies. I start with a quantitative analysis of data from low- and middle-income countries. Then, I move onto to a qualitative case study of four developing countries: Peru, Ethiopia, India, and Vietnam. Afterwards, I adopt a more micro lens and inspect the relationship between the different types of aid and food security using household-level data from the same four countries. I finish with a close-up view of the food-security situation in a cluster of villages in northern India.

Intended contribution

The intended contribution of these studies to existing research is four-fold. First, as mentioned already, I assist in building up the state of both theoretical and empirical knowledge on the effects of aid on food security, relevant to political science just as to economics and development studies. Second, by opening the ‘black box’ of aid and examining the differential impact of distinct aid modalities, I contribute to the construction of evidence on the heterogeneity of aid impact, which might encourage other researchers and policy makers to do so as well. Third, I further contribute to political science by exploring on both national and sub-national levels how the quality of recipients’ institutions and policies interacts with and influences the effects of development aid. Fourth and last, in the spirit of encouraging evidence-based policy making, I contribute to international public policy by formulating concrete policy recommendations regarding the recommended ways of aid disbursement on the basis of my findings⁹. However, bearing in mind the changing global food-security landscape impacted by climate change, altering consumption patterns, stagnating yields, and population growth, along with the complicated political situations of many developing countries, in articulating these recommendations I try to be as realistic as possible and pay close attention to the issues of environmental, social, and cultural sustainability.

Thesis’ logistic arrangement and foreshadowing of results

In its quest to answer the research questions spelled out above, this PhD thesis proceeds as follows. Chapter One introduces the theoretical framework that provided the basis for my research, concisely discusses the existing relevant literature, and presents the working hypotheses. In Chapter Two I briefly discuss the thesis’ methodology. Chapter Three examines the aid-food security relationship using cross-country quantitative data while Chapter Four does

⁹ The ever-increasing emphasis placed by the OECD on results-based management in aid distribution further underlines the validity and relevance of my research: http://www.oecd.org/secure/pdfDocument/0,2834,en_21571361_34047972_31950682_1_1_1_1,00.pdf

so qualitatively, on a case study of Peru, Ethiopia, India, and Vietnam. Chapter Five, marking the switch from a macro to a micro perspective, examines household survey data from the same four countries. Chapter Six takes me to Maharajganj in Uttar Pradesh, India and offers a close-up look at the issues in question, through data gathered from surveys and longer interviews. In Chapter Seven, I summarise the main results and deliberate whether they validate or refute the hypotheses articulated in Chapter One. Furthermore, on the results' basis I formulate several relevant policy recommendations. Finally, in the Conclusion I offer a few concluding observations and remarks on the future of the aid-food security relationship.

As a brief foreshadowing of my complex results, through the multiple explorations of the aid-food security-governance relationship I find aid to play a minor yet generally positive role in strengthening food security. Better governance appears to further enhance this positive effect and that is not only on the national but also on the community level. Finally, I discover some forms of aid, such as grants and aid to social infrastructure, to be more directly supportive of food security than their counterpart types, while some forms of aid including loans and budget support to be more influenced in their effect on food security by the quality of governance than other forms of aid. If you want to discover more about these findings as well as about how I arrived at them, I encourage you to read on.

Introduction

As I mentioned in the Introduction, this thesis explores in detail the question whether development aid affects food security and whether that effect differs with the type of aid provided and with the quality of governance among recipients. In this chapter, I lay the theoretical and conceptual groundwork for that exploration. First, I define the main concepts of the thesis – food security, development aid, and governance – to help readers understand what exactly it is that I study and measure. Second, I deliberate theoretically about how aid in general and in different forms might impact food security and what conditioning role the quality of institutions and policies may play. The deliberations on the different relationships considered are interspersed with reviews of relevant literature. On the basis of the theoretical expectations and existing research results combined I formulate hypotheses, which are examined and either confirmed or refuted in the empirical studies to follow. I finish this chapter with a discussion of factors other than aid and governance that influence food security (= control variables) and a few concluding remarks.

Brief summary of the arguments extended in this chapter

In order to ease the transition into the technical food security and aid speak, I summarise the concepts and relationships to be discussed first briefly here. The dependent variable in this thesis, or in other words the main subject of my study, is food security, which is a complex phenomenon. Not to be fully equated with hunger, food security rests on four pillars: food availability, access to food, food utilisation, and future certainty or stability. The concept of development aid, my main independent variable, is less complex –I define it here as any flow of concessional funds from the global North to the global South with the main aim of spurring development. However, more complicated has been the decision how to differentiate within the uniform flow of aid. Having found no comprehensive classification in the existing literature, I came up with my own. Accordingly, I divide aid along three dimensions: *who* provides/implements it (into multilateral and bilateral aid and into aid implemented by governmental and non-governmental organisations), *how* it is provided (looking at budget support versus programme and project aid, grants versus concessional loans, credit versus non-credit aid, financial versus commodity aid, and aid volatility), and *where* it goes (division into long-term, short-term, and humanitarian aid and into aid to agriculture, social infrastructure, economic infrastructure, and other sectors). Finally, I mention the debates on governance, my main intervening variable, which most researchers consider to be important in aid

effectiveness but no agreement has been reached with regard to what exactly it (governance) is.

Following the definitions, I reflect that the likely effect of aid in general on food security is positive, since aid can plausibly be expected to increase food availability, by providing countries with more foreign currency to buy food, and to strengthen people's access to food, through social programmes and projects aimed at poverty reduction. Aid's effects on food utilisation are harder to predict and on future stability might be even negative but unlikely large enough to fully offset aid's positive effects on the other food-security aspects. It also appears probable that better governance enhances this positive impact, as countries and communities that are better governed use resources generally in a more efficient and responsible manner. Although few researchers have addressed these specific questions so far, I do find support for my conjectures in existing research from other political and economic areas.

Regarding the heterogeneity of aid impact, I expect aid provided by bilateral donors and implemented by governmental institutions to be more political and hence less effective than aid provided by multilateral donors and implemented by non-governmental organisations. Further, I conjecture that aid provided in concessional loans, as credit, as budget support, and as commodity aid is more susceptible to the quality of national and local governance than the counterpart types of aid, which I deem more supportive of food security in their own right. Finally, I suspect that short-term aid and aid to agriculture bolster food security more than aid to the remaining sectors. Again, I cannot look to existing literature to corroborate these suppositions directly, because such literature does not exist, but I do substantiate most of them through literature from other aid-effectiveness research areas.

In a less deliberative and more descriptive manner, I finish the chapter with a brief summary of major existing findings on the relationship between food security and other influential variables. I divide those into population, economic, social, agricultural, political, and environmental factors and food prices. I hypothesise the most important ones on the macro level to be GDP per capita, trade openness, food-production levels, conflicts, disasters, and global food prices and on the micro level demographic factors (gender, age, education, race/ethnicity), household incomes, local food prices, and existing social safety nets.

Without further ado, let us move into the definitional part of this chapter by introducing food security.

Defining the main concepts

Food security – The dependent variable

Food security - which as I warned already should not be conflated with hunger- is defined by the FAO and the World Health Organisation (WHO) as a state in which ‘all people at all times have access to sufficient, safe, and nutritious food to maintain an active and healthy life¹⁰.’ Conversely, food insecurity indicates the uncertainty of access to enough and appropriate foods (Barrett, 2002). Food (in)security thus inherently embodies an *ex ante* condition, with states such as hunger, malnutrition, and undernourishment related *ex post* concepts (*ibid*). Maxwell (1996: 159) captures this notion by expanding the definition of food security to a condition, in which ‘food systems operate in such a way as to remove the [people’s] fear that there will not be enough to eat.’ Food security, he stressed, ‘will be achieved [only] when the poor and vulnerable... have secure access to the food they want’ (*ibid*). As the definitions above imply, food security officially rests on four pillars: food availability, food access, food utilisation, and stability or reasonable certainty about the future (FAO, 2013).

Evolution of the concept over time

The concept of food security has evolved significantly over time. Barrett (2002), Bohle *et al.* (1994), Gonzalez (2004), and Pinstруп-Andersen (2009) all described the evolution of the term over three generations. Originally, the expression ‘food security’ was used to denote sufficient national food availability; i.e. whether a country had access to enough food to feed its entire population (Pinstруп-Andersen, 2009). Accordingly, the emphasis within the concept lay on increasing and stabilising national food production but later it shifted to the concept of national food sovereignty, i.e. country’s ability to purchase sufficient food for all its citizens (*ibid*).

In the 1980s, Amartya Sen directed attention from the supply side of the global food chain to the demand side, thus triggering a major shift regarding the widely recognised perception of food security. Highlighting the reality that since the 1970s global food production had outstripped global food demand, Sen (1982) argued that food insecurity could no longer be blamed on food scarcity but rather on the inability of people to command food using the legal means available (Bohle *et al.*, 1994). In this manner, Sen transformed the debate on food security from a scarcity-based approach to one that ‘emphasise[d] the political, economic, and legal institutions that determine how available food is distributed’ (Sen, 1982: 429).

With regard to the third-generation shift in the view of food security, researchers diverge in their opinion vis-à-vis its nature. On one side, Pinstруп-Andersen (2009) maintained that the change is represented by a heightened focus on not only the *access* to food but on the *type*

¹⁰ <http://www.who.int/trade/glossary/story028/en/>

and *quality* of the food accessed as well. On the other hand, Barrett (2002) regarded the third-generation shift in the perception of food security as an incorporation of the phenomenon's psychological aspects rather than a move towards the consideration of the food's nutritional value. He referred to Chambers (1989), who identified two key dimensions of food insecurity – an external side of risks, shocks, and stress and an internal side of vulnerability and the lack of coping mechanisms.

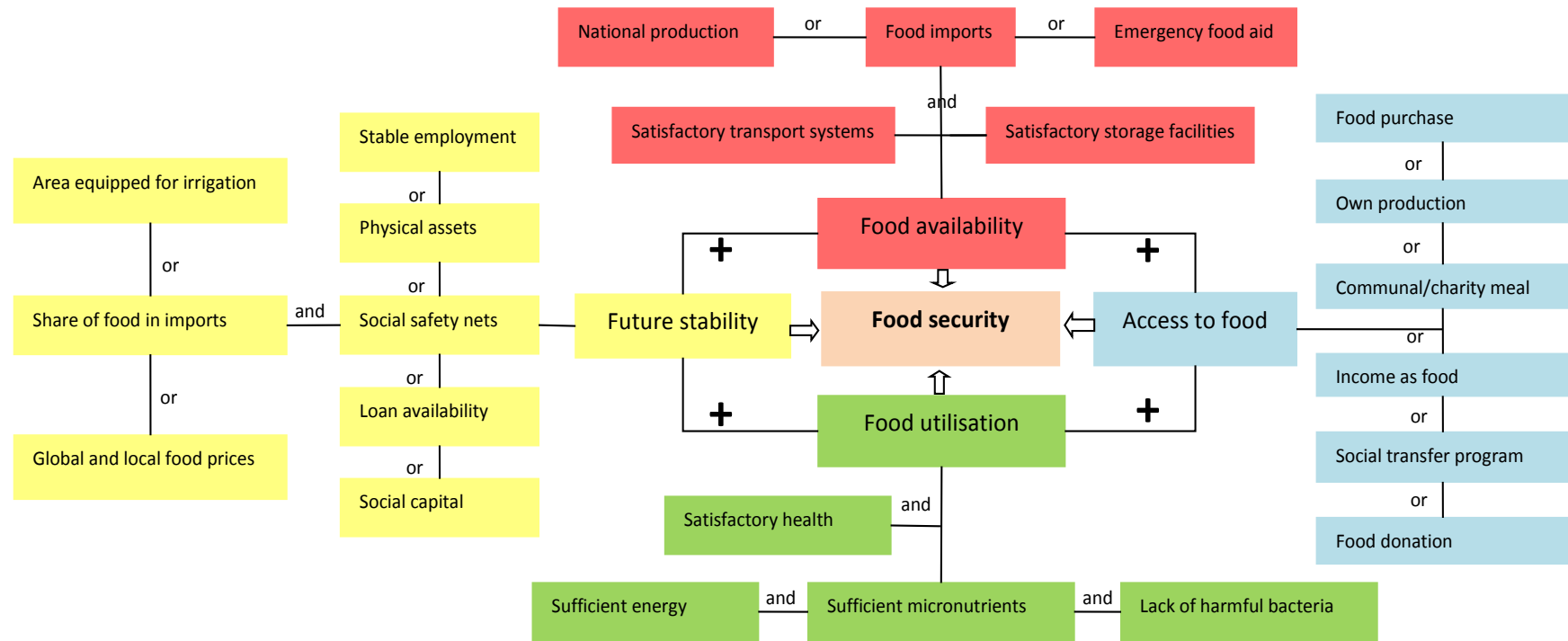
The four formally recognised aspects of food security mentioned above – food availability, access to food, food utilisation, and 'stability' – are all products of this evolution. The last, psychological dimension, which can be understood either as stability in a country's political and economic conditions related to food or as people's anxiety (or rather the lack thereof) about the quantity and quality of food available in the future, became part of the FAO's official food-security definition only as recently as 2013.

Explaining the four different aspects of food security

The *food availability* condition is satisfied when enough food is physically available in a country/region and people can obtain it either through purchase or as a donation. Sufficient *access to food* refers to people's ability to obtain enough food for themselves through legal and conventional means, which include producing, buying, and receiving a donation but exclude stealing or begging. *Food utilisation* relates to the body's physical process of digesting food and utilising its energy and micronutrients in further functioning. Its fulfilment is affected by both the type of food consumed and the health of the body consuming it and thus can be jeopardised by a lack of ingested micronutrients, by unhygienic conditions of the food consumed or by poor health.

While the three elements mentioned so far jointly bring about adequate nourishment, '*stability*' or '*reasonable future certainty*' about having access to enough food in the future needs to be fulfilled as well in order to ensure lasting food security. Factors that bolster this dimension on the country level include low climatic vulnerability and low price volatility; at the household/individual level it is stable employment and the ownership of physical assets, the availability of social safety nets and lenders, and access to social capital (strong family, friend, and community networks). Figure 1 graphically summarises the four aspects of food security along with their underlying and intervening factors as described verbally in this paragraph.

Figure 2. Basic food security scheme



Source: Author's own deliberations

Causes and consequences of food insecurity

The distal causes of food insecurity are multiple and interconnected. They range from political instability, civil war, macroeconomic imbalances, and trade dislocations through poverty, population growth, and gender issues to a lack of education and poor health (King and Murray, 2002; Smith *et al.*, 2000) and will be discussed in more detail in the following sections. However, as the definition of food security above suggests, the proximate causes can be summarised as the following four: a lack of sufficient national food availability, insufficient access to food by households and individuals, improper utilisation of available food resources to secure adequate nutrition, and uncertainty/anxiety about access to enough appropriate food in the future.

The consequences of food insecurity relate to people's coping strategies and very much depend on the severity of the insecurity. The first notable consequence is usually decline in the quality and then in the quantity of food consumption, accompanied by an increase in savings intended to help prevent hunger in the future (Merrigan and Normandin, 1996). Barrett (2002) described how people in the face of approaching food insecurity often increase the frequency with which they resort to eating 'famine foods', such as leaves, roots, bush meat, and mushrooms. This coping strategy of changing consumption patterns might be beneficial over the long run, as long as it is not severe enough to cause permanent cognitive or physical impairment (*ibid*).

However, even if permanent damage is avoided, the change in consumption patterns induced by food shortages and fear thereof tend to inflict upon people negative physical, psychological, and social effects. Reid (2000) called attention to the decline in productivity and low concentration resulting from food insecurity and its coping strategies, reflected by deteriorating school achievements among children. Olson (1999) pointed to the surprising increase in weight among mildly food insecure women. The most pronounced psychological consequences include feelings of exclusion, powerlessness, desperation, fear, stress, and a declined interest in food (Hamelin *et al.*, 1999). Finally, the social effects range from disrupted household dynamics, deviant behaviour, and revolt to distorted means of food acquisition and management (*ibid*).

If food insecurity persists or heightens to such a degree that simple curbing of consumption patterns no longer prevents undernourishment and hunger, food insecure households turn to locally available means of credit and transfer and/or selling of their assets. These survival strategies have significantly longer-lasting negative effects on the households' livelihoods and are not sustainable over the long term. Once they are no longer viable – because all potential lines of credit have been exhausted and all assets sold – many food insecure people resort to an even more severe alternative, distress migration in search of sustenance (Barrett, 2002). As

Corbett (1988) posited, this response is often the last one in a sequence of responses to food insecurity, as it commonly insinuates the loss of all the assets and employment left behind, and is followed only by death.

Measurement issues

An ideal model of food security should be able to capture all four essential aspects of food security – food availability, access, and utilisation as well as stability. Unfortunately, such comprehensive indicators are scarce and difficult to obtain. The most common food-security indicator used in the early days of the concept was average national food availability, calculated by dividing the aggregate national food availability with population (Strauss and Thomas, 1998). Nevertheless, this measurement has been almost completely discredited in light of the acceptance of the theory that food security is a function of individual access to food rather than of national availability.

Consequently, indicators such as hunger, malnutrition, undernourishment, and anthropometric measures (weight-for-age, height-for-age, BMI-for-age, weight-for-height) became more widely used to express the incidence of food insecurity. While these are preferable to average food availability/insufficiency, they do not capture the full extent of food insecurity either as they are sufficient but not necessary conditions of the concept. Some researchers, including Haddad and Hoddinott (1994) and Chung *et al.* (1997) proposed the use of alternative correlates of food security, such as asset and income poverty, number of unique foods consumed, food prices, wage rates, dependency ratios, and morbidity patterns. However, whether the correlation between these and actual food insecurity is strong enough to justify their usage as opposed to undernourishment and anthropometric measures has not been proven thus far (Barrett, 2002).

Frankenberger (1992) and Frongillo (1999) advocated the use of compound food-security indices, calculated on the basis of extensive questionnaires administered to selected households. Unlike singular measures described above, indices can capture not only food availability, access and utilisation but also the fear of not having enough food along with the type of coping strategies used. Thus, indices might be preferable measures of food security; unfortunately, the cost of collecting their data is higher than for single measures. Their objectivity can also be questioned as some respondents might be motivated to overstate or underestimate their food insecurity for various reasons (Hoelscher *et al.*, 2003; see also Hudson and Van Heerde-Hudson, 2012). In addition, in order to produce internationally comparable data in all developing countries, a consensus regarding the precise components of the index would have to be reached.

With this state of affairs in mind, the indicators on undernourishment gathered by the FAO and anthropometric measures gathered by the WHO still stand as the most accurate available proxies for food security when conducting cross-country studies. For studies on individual countries, calculating more precise food-security indices based on household surveys is possible. However, due to their specificity, such data can usually be used only for comparisons within one country across time, and perhaps with a few other countries that implemented the same survey. Cross-checking data obtained from surveys with anthropometric measures can also augment their validity.

Development aid – The main independent variable

Compared to food (in)security, the concept of development assistance is less complex and contentious. Here, it theoretically refers to all the financial flows from official development agencies and private charities in ‘developed’ countries to developing ones that have the official goal of promoting economic and social development and whose grant element constitutes at least one fourth of the amount distributed (Organisation for Economic Cooperation and Development (OECD)). In reality, in the ‘macro’-sections of my study that examine the relationship between aid and food security on the level of countries, the measures of aid used capture primarily the flows of official development aid from Development Assistance Committee (DAC)¹¹ countries to the global South, given that the availability of data on aid provided by non-DAC donors and on private aid flows is very limited. However, the data include also information on humanitarian aid. This aid type is often analysed separately from development aid but I have included it in the analysis because a) often it is very difficult to draw a separating line between a humanitarian and development action and b) the OECD data on DAC aid includes humanitarian-assistance activities as well. In the ‘micro’ sections that consider the aid-food security relationship at the household/individual level, the measures of aid are further restricted from the macro ones to aid provided by donors through programmes and projects only. On the other hand, these measures include also data on non-DAC and on private aid, as the reporting is done by aid recipients themselves rather than by donors as is the case in the macro sections.

The history of development assistance dates back undoubtedly to the ancient times (Kanbur, 2006). However, the Marshall plan – a large economic aid programme extended to Western European countries by the United States following the end of the World War Two – is largely considered to constitute the beginning of the modern provision of development aid (Führer, 1996). As the Cold War between the US and the USSR intensified, so did the provision of aid to developing countries, in an effort to ensure their support for one or the other side of the conflict. The end of the Cold War was followed by a slight decline in the levels of global aid; the numbers,

¹¹ Development Assistance Committee is a forum for selected OECD member states to discuss issues surrounding aid disbursements

however, picked up again after 2000. Since 2010, the DAC donors have provided consistently more than 150 billion USD to developing-country recipients annually (QWIDS).

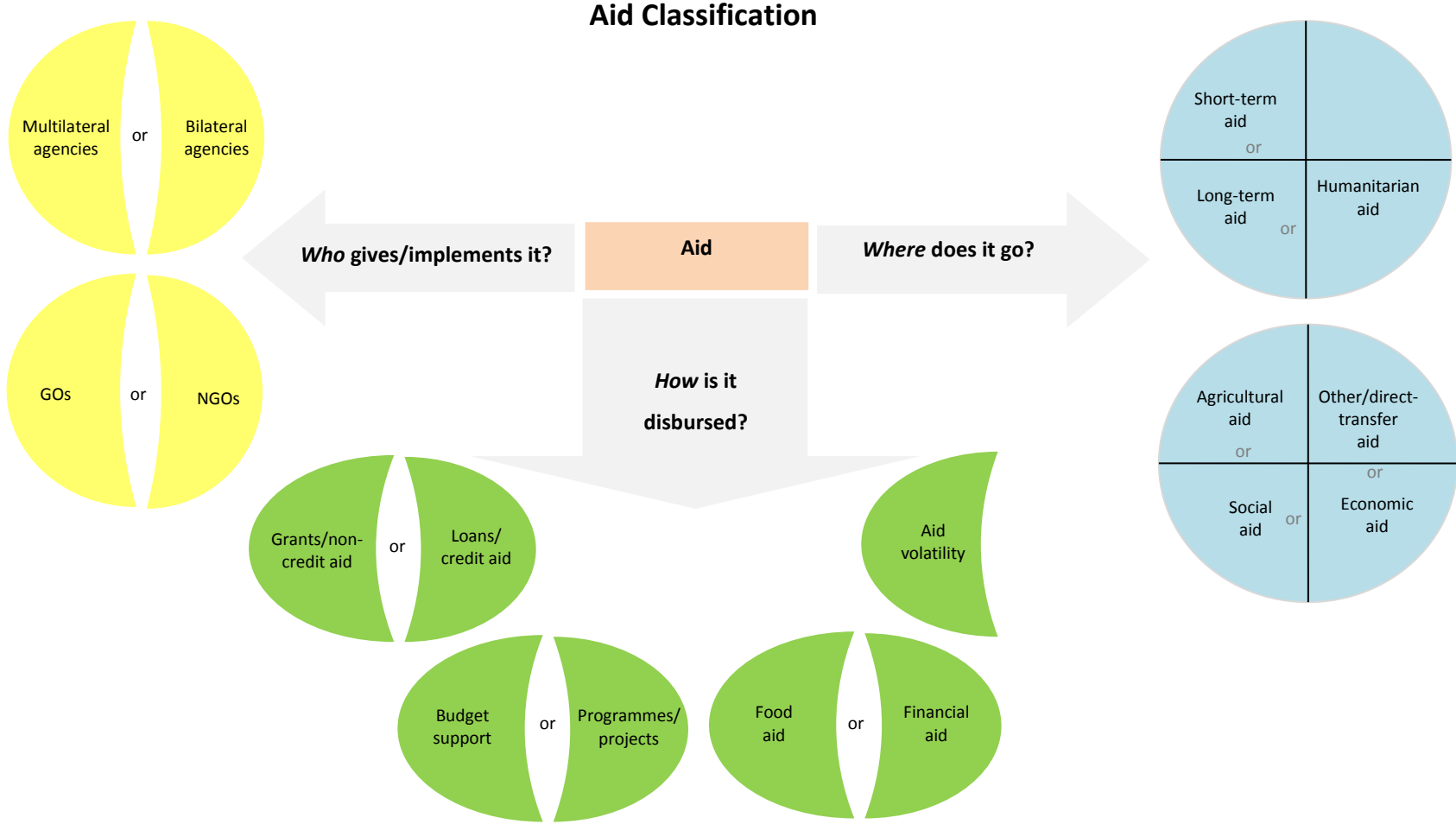
As I have pointed out in the introduction, while it is useful in itself to examine the effect of aid in general on food security because it has not been done to date, development aid constitutes such a varied financial and commodity flow that in order to formulate helpful policy recommendations, it is even more valuable to analyse the effects of different types of aid on food security separately. Researchers thus far have not agreed on a unified systematic classification of aid, and therefore I have constructed my own, guided by three main dimensions: *who* gives aid, *how* it is given, and *where* it goes. Figure 2 displays this classification, explained verbally below, graphically.

The first division, made according to the *donor's identity*, on the macro level is into official bilateral aid and multilateral aid (initially, I included here also the category of 'private aid' but finally ended up excluding it due to the unavailability of sufficient data). Official bilateral aid can be theoretically further divided into aid disbursed by DAC and by non-DAC members, although this division is relatively hard to test due to the limited reporting by non-DAC donors. On the micro level, the categorisation involves aid implemented by governmental versus by non-governmental agencies¹².

The suggested divisions of aid according to the *giving mechanism* are into grants and concessional loans, into budget support as opposed to programme and project aid, and into financial versus commodity aid (where food aid constitutes an absolute majority). Aid volatility is added to this category because, even though it is not a classification *per se*, it does characterise *how* aid is distributed. While all four categorisations can be tested in the country-level studies, only the division into a grant versus a loan component (adapted as non-credit versus credit aid intervention) and into financial versus commodity (food) aid can be outright used in the household-level studies. Budget support is by definition provided straight to recipient country governments' budgets, to be used at the countries' discretion, and hence households/individuals cannot be aware whether they have benefitted from it. The impact of aid volatility on food security when using household/individual-level data is hard to test quantitatively as data from household surveys are usually available only for one or two time periods; however, qualitative data obtained from interviews can be utilised to evaluate this aid characteristic instead.

¹² Again, initially I divided government-implemented aid further into bilateral and multilateral but ended up excluding the division due to the unavailability of sufficiently detailed aid data.

Figure 2. Aid categorisation displayed graphically



Source: Author's own deliberations

In the last dimension of aid categorisation, according to *where* aid is implemented, I first utilise a classification adopted from Clemens *et al.* (2004) into ‘long-term’, ‘short-term,’ and humanitarian aid, in order to examine whether short-term aid has a more discernibly positive impact on food security in the short run (normally three to five years) than long-term aid, as it does have on growth (according to Clemens *et al.*, 2004). Short-term aid encompasses activities that are likely to have a positive impact on recipients in that reasonably short time frame, such as budget support and programme/project aid for real-sector investment, transportation, communications, energy, banking, agriculture, and industry. Long term aid, on the other hand, contains activities whose positive impact is likely to become evident only later in time, such as technical cooperation, research and development, investment in education, health, population control, and water sanitation.

As a second classification in this dimension, I divide aid according to the larger sector where it was invested – in agriculture, in social infrastructure, in economic infrastructure, or in other sectors¹³. As far as I am aware, this categorisation has not been used by researchers thus far but it seems a very relevant one when scrutinising the effect of aid on food security, since generally aid to agriculture has been regarded as the most directly supportive of food security, by both policy-makers (e.g. Maputo Declaration by AU, 2003; Mikhail *et al.*, 2013 from OXFAM) and researchers (e.g. Berti *et al.*, 2004; IYCN, 2011; Von Braun *et al.*, 1992).

Governance – The main intervening variable

The term ‘governance’ began gaining popularity among development researchers and practitioners in the 1950s, according to Weiss (2000), as a consequence of the increasing dissatisfaction with state-dominated models of development prevalent throughout the socialist bloc and much of the developing world at the time. The original debate of governance was thus about opposing the domination of state over economic and social development processes and re-directing that role to private, non-state actors. However, after the failure of the Structural Adjustment Programmes that heavily promoted privatisation in developing countries, the focus within the governance debate became less about dismantling the state and more about improving and reforming the work of state institutions (*ibid*).

Despite this generally accepted shift in the governance discussion, the concept of governance remains vague and contested (e.g. Bovaird and Löffler, 2003; Grindle, 2004; Weiss, 2000). Some researchers believe that governance represents the process by which authority in a country is exercised, others understand it as the mechanisms and institutions that enable such process,

¹³ On the country level, ‘other’ aid comprises primarily budget support, aid to industry, construction, trade, and tourism; on the household level, ‘other’ aid often consists primarily of direct food and cash transfers.

while yet others include in the definition also the outcomes of the process (Abdellatif, 2003). As a brief illustration of the term's diverse understanding, the World Bank (1994) defines governance as 'the manner in which power is exercised in the management of a country's economic and social resources.' United Nations Development Programme (1997) views governance as 'the exercise of economic, political, and administrative authority to manage a country's affairs at all levels.' The OECD (1995) sees governance as 'the use of political authority and exercise of control in a society in relation to the management of its resources for social and economic development'. According to the Department for International Development (DFID) (2001), governance relates to 'how institutions, rules, and systems of the state ... operate at central and local level and how the state [interacts with] individual citizens, civil society, and the private sectors', while in United States Agency for International Development's (USAID) (2005) view, governance is 'the ability of government to develop an efficient, effective, and accountable public management process that is open to citizen participation and that strengthens rather than weakens a democratic system of government.'

Gisselquist (2012: 4) notes that the least common denominator of the definitions is that governance constitutes a process or mechanism through which power and/or authority is exercised to manage the collective affairs of a community. Whether governance relates to the institutions involved in the exercise or its outcomes remains more disputed. Neither there is an agreement vis-à-vis the importance of politics in governance. The World Bank and the International Monetary Fund (IMF) have traditionally focused on the term's technical and administrative aspects while most researchers have posited that governance is inherently a political process (Dasandi *et al.*, 2015; Hudson and Leftwich, 2014; Weiss, 2000).

If agreeing on a universal definition of governance has been difficult, coming to an agreement about what constitutes 'good governance' has resembled attempting to 'nail a pudding on the wall' (Bovaird and Löffler, 2003: 316). The UN website, for example, argues that governance is good when it promotes 'equity, participation, pluralism, transparency, accountability, and the rule of law, in a manner that is effective, efficient, and enduring¹⁴.' The UNDP equates good governance with democratic governance and defines as its main elements participation, consensus-orientation, strategic vision, responsiveness, effectiveness and efficiency, accountability, transparency, equity, and the rule of law (UNDP as cited in Graham *et al.*, 2003). The OECD (2001) defines good governance as institutions and/or policies that are

'participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follow the rule of law. [Also, they] assure that corruption

¹⁴ <http://www.un.org/en/globalissues/governance/>

is minimised, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making'. (OECD, 2001).

The last one is the definition to which I adhere most in this thesis, as I find it reasonably but not overly nuanced. In addition, since I use the definition and data on development aid from the OECD in the country-level studies, I find it fitting to follow the organisations' definition of good governance as well.

When confronted with this existing state of research on 'good governance', one inevitably comes to two conclusions. 'Good governance' is clearly something good but what it is precisely depends on whom you ask. The ambiguity of the term likely underlies its popularity with development researchers and practitioners as it allows them to ascribe their preferred meanings to the term (Bovaird and Löffler, 2003). Second, and related to that, 'good governance' is inherently difficult to measure. That is not to say that people have not tried. The indicators proposed have been either rules-based or outcome-based (Kaufmann and Kraay, 2008). Rules-based indicators are generally believed to be more objective, as they measure whether countries have put in place specific institutions or policies. Their main downside is that the link between policies and outcomes is often complex, subject to lags, and not very well-understood (*ibid*). Hence, even countries with very good rules-based scores of governance can have weak governance outcomes in practice. Outcomes-based indicators, conversely, capture the view of institutional and policy quality either by experts or by local users, thus reflecting the actual quality of governance better than rules-based indicators. Their chief downside is the difficulty often present in trying to link certain governance outcomes to specific institutions and policies (*ibid*).

Confronting this topic, Thomas (2010: 51) opined that in view of the underdeveloped theory and fuzzy concept of governance, currently available data on the quality of governance were not just bad but wrong and hence the usage of the data by researchers and policy-makers was 'uninterpretable' and 'arbitrary.' Kaufmann *et al.* (2007: 23) retorted that not making use of any existing data on governance quality, however imperfect, would have been arbitrary in the extreme. Moreover, they argued - and I agree - that, 'endlessly waiting for the articulation of a complete, coherent, and consistent theory of governance before proceeding to measurement and action ... while perhaps intellectually satisfying to a few, would be impractical to the point of irresponsibility' (p. 26).

Looking to the role of good governance, however specifically defined and measured, in aid effectiveness, some researchers have challenged its importance (Clemens *et al.*, 2004; Heady *et al.*, 2004; Morrissey, 2004). Nevertheless, my rational intuition suggests that in theory, aid has the potential to be more successful at achieving its goals, including food security, when

disbursed to countries with better functioning institutions. A similar view can be extended with regard to sensible policies and even the presence of democracy. In countries with sounder economic policies aid is likely to be more economically effective. In democracies, citizens generally have a more substantial voice in the administration of public affairs than in non-democracies and thus foreign aid receipts can be expected to be utilised more in favour of the public good.

Most of the reflections above have been related to national-level governance. Recently, however, some researchers have begun paying more attention to local governance as well, noting its importance to development (e.g. Blair, 2000; Nijenhuis, 2002; Stoker, 2011). One of the most influential ones, Nijenhuis (2002: 19), described local governance as the ‘process through which local municipal decision-making is defined, incorporating both local government, civil society and the private sector’. However, in his description of good local governance he does not stray far from the definitions of good governance more generally – in his view, local institutions and policies must be ‘participatory, transparent, accountable, and contribute to equity’ to be considered good (*ibid*). Blair’s (2000: 21) definition largely concurs, depicting good local governance as ‘meaningful authority devolved to local units of governance that are accessible and accountable to local citizenry’. Very little research to date has explored empirically the role of local governance in aid effectiveness; however, similar to the case of national-level governance, my intuition suggests that in regions and communities with better policies and institutions aid should have a chance to make more of a positive impact than otherwise.

Relationship between food (in)security and development aid in general

Since the concept of food security encompasses the four different dimensions discussed above – food availability, access, utilisation, and stability, a theoretical deliberation of the relationship between development aid in general and food security should evaluate the relationship between aid and each of the four components first. These deliberations are then followed by a review of existing relevant literature. At the end of the section, I summarise the evidence presented, point out gaps in existing research, and formulate hypotheses with regard to the effect of aid in general on food security overall and the conditioning role played by recipients’ institutions and policies in this relationship.

Effect on food availability

The first connection to consider is the one between aid and food availability. A country/region can obtain a satisfactory amount of food through its own agricultural production, food imports or in the worst-case scenario, the receipt of food aid (Figure 1). At first sight it can

seem that any development aid should positively affect a country's food availability, as any financial inflow should enhance its ability to purchase food from abroad if it is not self-sufficient in food production. The relationship might not always be as clear-cut as, however. Aid comes in a wide variety of forms and it is quite easy to imagine how, for instance, small development projects focusing on educational advancement might not increase a country's income and thus in turn its food availability, at least not in the short run. Nevertheless, one can still conclude that the impact of aid on food availability is in theory likely to be often, even if not always, positive.

Literature evaluating the effect of development aid on food availability specifically does not exist. However, research on the effects of aid on economic growth, closely related to food availability¹⁵, is more than plentiful. The absolute majority of authors publishing on this topic have discovered aid to have a perhaps small but statistically significant positive impact on growth, including Hansen and Tarp (2001), Lensink and White (2001), Burnside and Dollar (2000, 2004), and Roodman (2007). Meta-analyses conducted by Doucouliagos and Paldam (2008, 2009) challenged this view, arguing that many positive results on the aid-growth relationship were fragile to changing samples and specifications. The authors explained the discrepancy between their and other findings through publication bias, according to which researchers are more likely to publish statistically significant than non-significant results. However, the bias would not likely affect all research and most recent works on this topic have again shown aid to have a positive effect on growth, most often through a positive impact on investment (e.g. Arndt *et al.*, 2015; Brückner, 2013; Galliani *et al.*, 2014). On the basis of these results, I can thus assume that the relationship between development aid and food availability is likely to be similarly often if not always positive.

Effect on access to food

Next comes the link between development aid and food access. Figure 1 suggested that there are quite a few more paths to appropriate food access than to food availability. While most people access food by buying it or producing it themselves, they can also receive it from their families or neighbours as gifts, as income, as part of a social-welfare programme or as a donation. Development aid can strengthen these entitlements in numerous ways. Agricultural development projects can provide farmers with tools to produce more food, microfinance programmes can help people earn more income in new businesses and thus buy more food, and budget-support grants can enable governments to launch social-assistance school-feeding programmes. Nevertheless, as in the case of food availability, not all development aid is likely to increase people's food access in the short run – e.g. an educational programme – and poor governance or faulty implementation can render ineffective even well-designed development

¹⁵ If a country's national income is rising, so is likely its ability to purchase more food from abroad if needed.

projects that target specifically food security. However, as better food access often results naturally from poverty reduction, the bottom line in assessing the relationship between aid and food access is that if aid in general decreases poverty, it is likely to also improve people's access to food (Frongillo, 2003; Maxwell and Smith, 1992).

Literature on the effects of aid on poverty is also plentiful but when compared to the literature on the effects of aid on growth, it is less unified in its results. One reason underlying this lack of agreement is undoubtedly the absence of a generally accepted poverty measure. Gomanee *et al.* (2003) analysed the effect of aid on poverty using pro-poor expenditures, generally associated with poverty reduction, as the dependent variable. They found that a greater amount of aid indeed led to lower poverty rates. Similarly, Kosack (2003) discovered a positive relationship between increases in aid flows and poverty reduction measured in terms of the Human Development Index (HDI). Nevertheless, other studies did not find such conclusive results. Agénor *et al.* (2005) used the case of Ethiopia to restrict the positive impact of aid on poverty by the ratio of aid to GDP of the recipient country while Masud and Yontcheva (2005) found that aid had a positive effect on some aspects of poverty reduction (infant mortality) but no effects on other ones (adult literacy).

Yet other researchers advocate the view that whether aid has an impact on poverty reduction and hence in turn on people's food access depends on its sectoral type. Shindo (2007) posited that one of the main reasons underlying the poor performance of African and South Asian countries in reducing poverty and undernourishment has been the failure of donors to act on their pledged commitments to increase funding to agriculture and rural development. In contrast, Duncan (1998), Smith *et al.* (2000), and Addison *et al.* (2005) claimed that the unyielding rates of food insecurity in the world could be overcome with the help of an increase in general Official Development Assistance (ODA) rather than by focusing specifically on agricultural investment. Finally, some researchers dispute the positive impact of development aid on poverty reduction and deficient food access altogether. Leading voices in this camp, Melito *et al.* (2008), indicated that due to both donor-coordination and sustainability issues, most funding directed to poverty reduction does not achieve any meaningful results.

Hence, with regard to the impact of development assistance on recipient countries' poverty and food access, the existing literature does not offer a unanimous answer. Most researchers relying on quantitative data analyses concluded that aid tends to encourage poverty amelioration or at least some of its aspects. However, some development practitioners using case studies pointed out that the sectoral type of aid matters in the relationship or that due to volatility, sustainability, and coordination and corruption issues, aid in that specific case had no positive impact on poverty reduction and food access. This divergence in opinion speaks to the micro-macro paradox of aid discussed at greater length later in this chapter and this thesis.

However, to return to theorising on the effect of aid on food access, while I suspect it to be generally positive, it likely is conditioned on the quality of governance and might occasionally not be significantly positive, depending on the type of aid provided.

Effect on food utilisation

Food utilisation is the most intimate and individual component of food security and thus its connection with development aid is harder to hypothesise about than the previous two aspects. To recap, appropriate food utilisation requires food that is sufficiently rich in energy and contains all the necessary micronutrients and no harmful bacteria (Figure 1). In addition, bad health can hinder food utilisation even if the correct amount and type of food is received. Thus, education (about the type of food necessary to provide the micronutrients needed), health, and infrastructure (especially access to clean water and sanitation, to avoid the contamination of food with bacteria) appear to be most closely linked to good food utilisation. While some development aid might influence these positively,¹⁶ it is easy to imagine that in the short run many development projects and programmes will not improve food utilisation in any way, even if the country has good institutions and policies in place and the project/programme is implemented exactly according to the plan.

Literature specifically addressing the link between food utilisation and development aid does not exist. Furthermore, unlike in the two previous aspects of food security, there is no single variable whose increase can be approximated with a corresponding progress in food utilisation. Therefore, research on the impact of development aid on the various sectors associated with food utilisation - primarily health, education, and infrastructure - needs to be examined.

Vis-à-vis the effect of development assistance on health and education, the prevalent view is that the effect is positive albeit not particularly significant. As I have mentioned, a study by Masud and Yontcheva (2005) found aid disbursed by NGOs to be positively correlated with health improvements (reduction in infant mortality) in the recipient countries, but the relationship between aid and education (adult literacy rate) appeared insignificant. Mishra and Newhouse (2007) confirmed the existence of a positive association between aid per capita and health (also using infant mortality as a proxy) while Dreher *et al.* (2008) along with Heynemen (1999) found aid to education to be supportive of primary school enrolment. Michaelowa and Weber (2006) also corroborated the positive impact of aid on education but found it too small to in turn significantly influence poverty rates and food security.

It is even harder to estimate the impact of development assistance on the strength of infrastructure and government regulation, especially regulation in food safety and hygiene

¹⁶ Moreover, if aid really brings about economic development, in the very long run it should always contribute to the improvement of all the three sectors mentioned.

matters. Regarding infrastructure, the trend within DAC development aid has been away from the traditional focus on the provision of national public goods and towards a greater focus on financing social services and international public goods (Kanbur *et al.*, 1999). Thus, while aid might be supportive of good infrastructure, it is probably less so now than in the past. Studies linking development assistance with government regulation in food safety do not exist; however, if using governance as a proxy, many researchers have argued that aid actually undermines the effectiveness of government regulation and public institutions (Knack, 2001; Prasad *et al.*, 2007; Abouharb and Cingranelli, 2006, 2009). Thus, based on existing research it is difficult to reach a clear answer to the question whether development aid strengthens or weakens food utilisation, with the effect likely to be often neutral, perhaps slightly leaning to the positive.

Effect on 'reasonable future certainty' future stability

Since the 'reasonable future certainty' or future stability aspect of food security is more psychological than the previous three, its relationship with development aid is probably the hardest to assess. As Figure 1 suggests, there are factors that strengthen a country's food stability, such as low exposure to climatic risks and relatively stable food prices, and factors that enhance an individual's or household's feeling of future food security, including stable employment, asset ownership, strong family ties, the existence of social safety nets, and the opportunity to take out a loan if needed. If development assistance brings about economic development, in the very long run it should bolster all the factors mentioned (except for family ties, perhaps). However, in the shorter run, this effect is not likely to be felt, in part thanks to the innately volatile nature of the assistance, which often decreases precisely when the need is most intense - such as during the global economic crisis of 2009/10. Thus, the impact of aid on 'stability' or 'reasonable future certainty' might actually be even negative.

Equal to the previous cases, research addressing specifically the link between development aid and stability of food security does not exist. Regarding factors that can threaten future food-security stability on the country level, existing literature is somewhat conflicted vis-à-vis the intervening effects of aid. On one hand, Collier and Goderis (2009) showed that aid could mitigate the negative impacts of external shocks, in their case modelled by drops in commodity prices. On the other hand, Rosen and Shapouri (2008) found rising food prices, which affect food stability negatively, to also have a negative impact on aid levels, since in a situation of higher prices and fixed aid budgets an allocated financial amount can purchase less food than previously. Looking at the more personal level, literature examining the impact of aid on people's mental wellbeing, including feelings of future security, has not been too reassuring either. For example, Lensink and Morrissey (2000) found that the uncertainty of aid reduced the

positive impact of aid on growth. In a similar vein, Bigdon and Korf (2002) established that in order to bolster feelings of security and psychological wellbeing in post-conflict settings, donors would need to adopt more complex and culturally sensitive approaches. These findings strengthen my original belief that aid, due to often high volatility and unpredictable nature, is not generally likely to strengthen people's feelings of reasonable future certainty about food security and might even depress them, especially in non-democratic and corrupt settings.

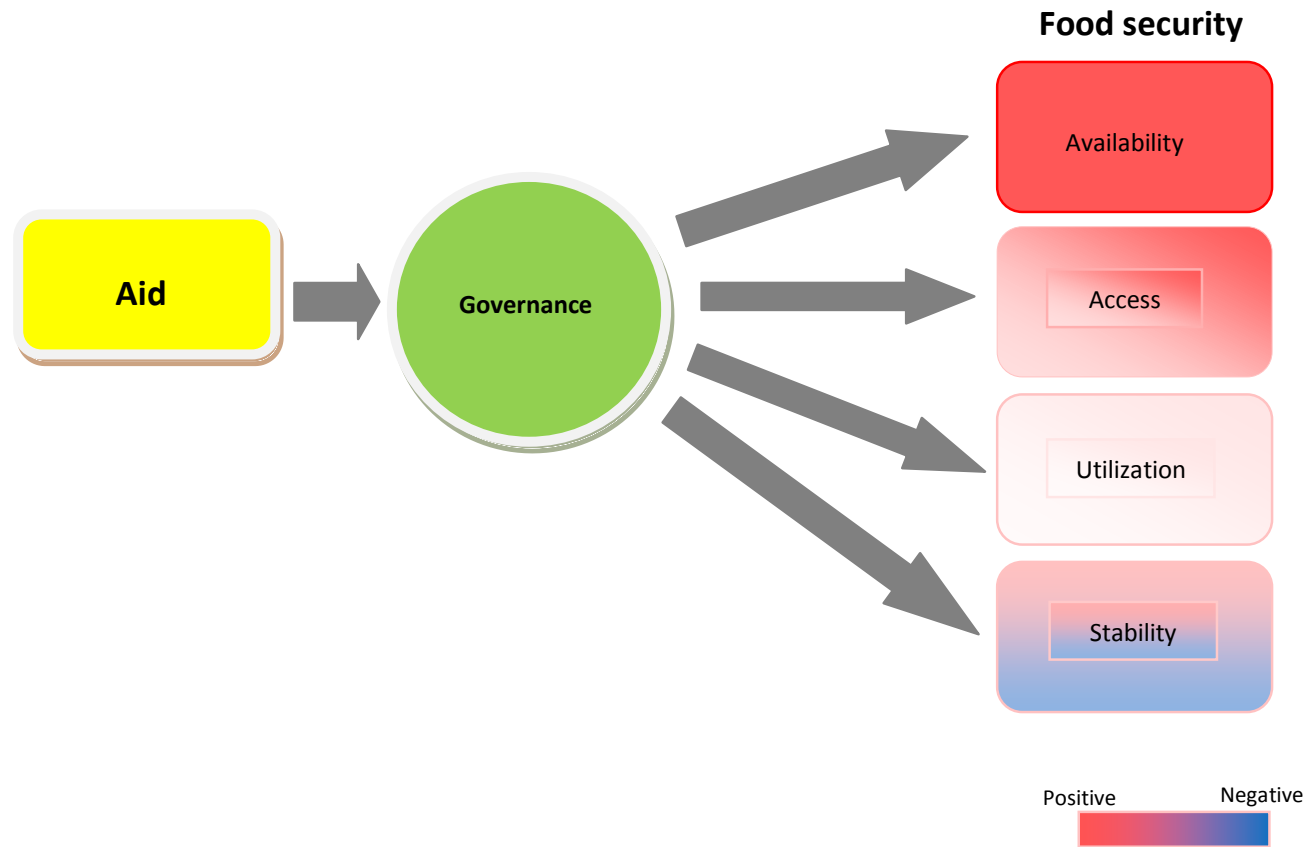
Effect of aid on food security and the conditioning role of governance in light of the existing literature's shortcomings

Figure 3 summarises the conjectures drawn up above with regard to the impact of aid on the four key dimensions within food security. According to these, aid can in most cases be expected to have a positive impact on food availability and on food access, with a less straightforward effect on food utilisation and a possibly negative effect on food stability. Hence, the impact of aid on food security overall can theoretically be expected to be mostly positive and at the same time positively conditioned on the quality of recipients' institutions and policies (aka, governance).

The biggest shortcoming of the existing literature on the effects of aid on food security, obvious from the set-up of the discussion above, is the dearth of research addressing that specific relationship, at least on the macro level. Bach and Matthews (1999) used computer simulations to estimate the effect of aid on food security and concluded that aid likely has a small but positive impact on food security. Lips (2005), in suggesting that global food insecurity could be resolved through an annual \$112 billion transfer from OECD to developing countries, implied a clear albeit not empirically established conviction that such transfer of funds would have a positive effect on food security¹⁷. However, empirical studies rigorously analysing country-level data on aid and food security have been to my knowledge non-existent thus far, which is consequently an area of research where my thesis makes undoubtedly an important contribution.

¹⁷ On the micro-level, many researchers also found a positive link between development projects and recipients' food security (Berti *et al.*, 2004; Bhutta *et al.*, 2008; Hoque *et al.*, 1996; IYCN, 2011).

Figure 3. Theoretical conjectures vis-à-vis the effect of development aid on food security



Source: Author's own deliberations

The literature on the links between aid and development outcomes other than food security, including growth and poverty reduction, to which I turned in an effort to formulate a hypothesis on the relationship between aid and food security in the absence of specific studies, has, however, also some important limitations. As the passages above made clear, there are conceptual problems with the terms examined, where, for example, poverty reduction is by some operationalised as improvement in HDI while by others as reduction in the proportion of population living on less than 1.25 USD a day. Moreover, there are significant inconsistencies between the findings attained through country-level versus household-level studies as well as between those from qualitative as opposed to quantitative studies. For example, researchers of the relationship between aid and economic growth highlighted already several decades ago the existence of a 'micro-macro paradox', where aid appeared to have a strong positive impact when examined using case studies but more difficult-to-discern impact when using cross-country data (Mosley, 1986; also McGillivray *et al.*, 2006).

I do not propose to resolve these debates but at the same time, I aim to learn from them in order to increase the value of my contribution to existing literature. Consequently, and as I explain in more detail in the next chapter, I conduct the analysis of the aid-food security relationship in this thesis both on the macro and on the micro levels, using a combination of quantitative and qualitative methods. Moreover, in awareness of the contested nature of how food security should best be measured, I use multiple approximating variables so as to increase the external validity of my results.

Regarding the role of governance in aid effectiveness, my theoretical postulations indicated that in all four dimensions of food security (availability, access, utilisation, and stability), countries as well as localities with better institutions and policies are likely to extract more positive impact from the aid received than countries and localities with comparatively worse institutions and policies. Unsurprisingly, given the absence of literature examining the relationship between aid and food security, empirical research has thus far not considered the conditioning role of governance in the aid-food security relationship specifically either. Nevertheless, most studies looking at the role of governance in other aid-effectiveness areas (economic growth, poverty reduction...) found it to be positive and significant. For example, the seminal paper by Burnside and Dollar (2000) concluded that aid's positive impact on growth was more pronounced in countries with sounder economic policies. In a similar vein, Jenkins and Scanlan (2001) along with Kosack (2003) suggested that countries with more democratic institutions were more likely to distribute aid to the intended beneficiaries.

Some authors qualified the positive relationship. Drèze (2004), using an Indian case study, showed that the positive reinforcement between democracy and aid's positive impact did not always arise. Clemens *et al.* (2004) highlighted that although heterogeneity among recipients

mattered, it was more the heterogeneity among aid flows that underlay different aid outcomes. Morrissey (2004) found aid to be supportive of economic growth independent of recipients' economic policies altogether while Dalgaard and Hansen (2001) claimed that sound policies did not increase aid effectiveness and in some cases could even reduce it.

However, the majority of researchers and development practitioners believe that governance plays a positive role in aid effectiveness, or, as Hudson (2015: 161) puts it, 'the position that aid ... work[s] if the [right] policies and institutions are in place is now the accepted wisdom'. Clearly, as the introductory section on governance showed, the debate remains complicated due to the questions of what precisely constitutes governance and when it is 'good.' While I do not aspire to settle the discussion, similar to the case of food security and its contested measurement I opt to use several governance measures to bolster the validity as well as applicability of my findings. But again, I will get to a more detailed discussion of this topic in the next chapter.

Keeping the caveats debated above in mind, on the basis of my theoretical postulations as well as the existing literature findings, my study starts with the following basic hypothesis:

Hypothesis 1: Development assistance in general has a small but significant positive impact on food security in developing countries, whether examined on the macro or micro level, and this effect is reinforced by the presence of good governance.

Relationship between different types of development aid and food (in)security

As I have posited earlier, while it is useful in itself to investigate what impact aid in general has on food security and how their relationship is influenced by recipients' quality of governance, aid is disbursed in a myriad of different modalities and hence in order to further increase my contribution to existing research as well as to formulate helpful policy recommendations it is imperative to consider also the impact of different types of aid on food security.

The categorisation of aid applied here encompasses - as explained in detail above and depicted graphically in Figure 2 - three broad dimensions: *who* gives aid, *how* aid is given, and *where* aid goes, with most dimensions comprising several classifications. Similar to the previous section, for each aid categorisation I first offer theoretical postulations vis-à-vis its relationship with food security that I expect to find, followed by a review of the existing empirical evidence, and a corresponding hypothesis.

The impact of different types of donors on food security

There is an important difference to be made in this category between the identity of donors as observed on the macro and on the micro level. At the macro level, which works with country-level data, donor information refers to those countries and institutions that provided the aid in the first place. On the other hand, at the micro level, which works with data reported by households, information on donors refers to the agencies and institutions implementing the aid programmes and projects in question, without inquiring specifically about the original source of the programme/project financing. Keeping this distinction in mind, two different lines of consideration are followed.

At the macro level, aid according to *who* provides it is divided into bilateral and multilateral. The decisions about bilateral giving are made by single country governments while multilateral giving is agreed upon by many countries' governments jointly with the institutions' bureaucracies. Consequently, one can plausibly expect bilateral aid to be more inspired by geopolitical and strategic considerations. Old colonial and current linguistic ties are also likely to play a larger role among bilateral donors. Multilateral giving can be, conversely, expected to be distributed more on the basis of real development necessity and thus more effective at achieving its goals. Separately, within bilateral giving, DAC aid might be more effective than non-DAC aid, since it tends to be more transparent¹⁸ and, unlike non-DAC aid, is bound by an agreed set of guidelines.

Looking at the existing literature, most researchers agree that multilateral aid is more efficient, cheaper, and better coordinated than bilateral aid, which is indeed seen as more political and burdened with more 'strings attached' (Asher, 1962; Balogh, 1967; Burnside and Dollar, 2000; Minch, 2005; Petrikova, 2015b). Multilateral giving is hence largely believed to be more successful at achieving its official objectives, including the reduction of food insecurity.

At the micro-level, the main considerations relate to the efficiency and effectiveness of project implementation. From this perspective, I imagine that private, i.e. non-governmental institutions are the ones with the greater positive impact on food security as they tend to be less bureaucratic than multilateral and bilateral aid agencies and hence face lower administrative costs. For the same reasons, NGOs might also be more flexible in their ability to respond to changing situation on the ground even though possibly facing comparatively more problems with funding.

Ever since the 1990s, NGOs have indeed been praised for lower costs and higher efficiency in delivering aid when compared to official aid agencies (Hulme and Edwards, 1997; Lewis and Opoku-Mensah, 2006). More recent empirical studies have toned down the praise, suggesting that NGO aid does not differ from official multilateral and bilateral aid in its patterns of giving as

¹⁸ DAC donors have to report data on their aid disbursements to the DAC database.

much as originally believed (Koch *et al.*, 2008; Nunnenkamp *et al.*, 2009) and might be only slightly more altruistic and efficient (Masud and Yoncheva, 2005; Petrikova, 2015c). Nevertheless, many large multilateral and bilateral agencies implement large portion of their aid through NGOs, still regarding them as more efficient and cost-effective.

On both the macro and the micro levels, the existing research findings thus approximately fall in line with my theoretical postulations. The corresponding hypotheses are consequently the following:

Hypothesis 2.1: Considered from the macro perspective, multilateral development aid is more effective than bilateral aid at bolstering food security. Aid provided by DAC donors is more beneficial than aid provided by non-DAC donors.

Hypothesis 2.2: Considered from the micro perspective, aid implemented by private (non-governmental) organisations is more effective at bolstering food security than aid implemented by official institutions, whether of the multilateral or bilateral type.

The impact of different types of aid mechanisms on food security

Grants versus loans/Non-credit versus credit aid

The division of aid into grant and loan components can be applied both at the macro and micro levels of analysis, although with some different caveats to consider. At the macro level, the classification refers to whether aid is provided to countries as grants or as loans offered at a concessional rate (the grant component has to be at least 25 per cent, otherwise the loan cannot be considered part of development aid). Compared to grants, loans require in theory greater activity and responsibility of the recipient government since they eventually need to be repaid, albeit at a lower than the market rate. Countries with better economic policies and more responsible –aka, less corrupt - governments should consequently fare better with loans than countries with worse policies and more corrupt governments. On the other hand, even countries with the best economic policies experience recessions and therefore concessional loans can lead even the best-meaning governments into deep debt. Extending these observations to the effect of loans and grants on food security, based on theory I expect loans to be less successful than grants, at least in the relatively short run normally observed by empirical studies, and successful at all only in countries with relatively better institutions and policies.

Turning to the existing literature, Lerrick and Meltzer (2002) as well as Bulow and Rogoff (2005) confirmed the view that while costing the same as concessional loans, grants deliver more benefits to the global poor. However, Clements *et al.* (2004) and Odedokun (2004) found

grants to bear a negative impact on revenue collection and contain a greater risk of creating a dependency mentality in recipients. Thus, corroborating my postulations, research suggests that grants are more beneficial to bolstering food security in the short run but that the effect of loans can be equally good or even better in countries with a high quality of institutions and policies.

At the micro level, the classification also refers to whether aid provided to recipients needs to be repaid or not. While in the past credit-based aid programmes and projects were not very common, the success of microcredit institutions such as the Grameen Bank in Bangladesh inspired a relatively recent explosion of aid projects focused on microfinance. The considerations to make here are not dissimilar from those made at the macro level above; one can imagine that while microcredit aid might encourage aid recipients to work harder in order to be able to repay the loans, it can also easily lead to indebtedness, and hence non-credit aid is likely to be supportive of household food security in a more straightforward but perhaps also more ‘addictive’ manner. The quality of local governance probably also plays a positive role in this relationship, enabling microfinance institutions to work better in contexts with well-functioning institutions and policies.

Existing research roughly mirrors these considerations. Many studies on the impact of credit (microfinance) projects found them to have a positive effect on recipients’ wellbeing, particularly on their income (Khandker, 1998, 2001; Mosley and Hulme, 1998; Wright, 2000). Some researchers also discovered a positive relationship between credit projects and reduced vulnerability (McCulloch and Baulch, 2000; Zaman, 1999) and between credit projects and children’s nutritional status (Panjaitan and Cloud, 1999). A few other studies argued, however, that microfinance projects had no effect on recipients’ food security (Konchar, 1998 as cited in Schrieder and Sharma, 1999) or even that the effect they had was negative (Diagne, 1998; Morduch, 1998; Schrieder and Pfaff, 1997). The underlying explanation for the negative effect is usually the excess debt that the recipients acquired through micro-borrowing. The most recent evidence from randomised-control studies of microfinance (Anelgelucci *et al.*, 2015; Attanasio *et al.*, 2015; Augsburg *et al.*, 2015; Banerjee *et al.*, 2015; Crépon *et al.*, 2015; Karlan *et al.*, 2011; and Tarozzi *et al.*, 2015 – summarised by the Poverty Action Lab¹⁹) has generally confirmed the findings of no effect, portraying microfinance programmes in seven countries as having had no statistically significant impact on participants’ income and health or on female empowerment.

On the basis of these deliberations and research findings, I formulated the following hypotheses:

¹⁹ <http://www.povertyactionlab.org/publication/where-credit-is-due>

Hypothesis 3.1: Considered from the macro perspective, grants are more directly supportive of food security than concessional loans while the effect of loans is more positively conditioned on good governance.

Hypothesis 3.2: Considered from the micro perspective, non-credit aid is more supportive of food security than credit aid but credit aid is more positively conditioned on good governance.

General budget support versus programme/project aid

This division can only be examined at the macro level since by definition budget support is provided directly to recipient governments and hence its effect is impossible to measure using data reported by aid-receiving households. Unlike programme and project aid, general budget support requires a significantly larger involvement of the recipient government in its implementation, since the aid money is infused directly into the government's budget. Therefore, similar to the case of loans, in order for this aid mechanism to be at all effective, the receiving government must be willing to use the aid money for purposes that promote development rather than for personal enrichment of government officials. The slight danger of aid programmes and projects might lie in the fact that since they are usually executed by donor agencies and their hired foreign or local staff, they can create an alternative administrative structure to the state one. In the long run, such a structure could undermine the country's ability to resolve its problems without external help; however, in the shorter time frame this should not have a notably negative effect on countries' food security. Applying these reflections to the expected impact of aid on food security and its components, I anticipate programme and project aid to be generally more successful than budget support in enhancing food security and budget support to be more conditioned on the quality of the recipient's institutions and policies.

Researchers indeed consider general, and to a lesser extent sectoral, budget support to be more fungible and hence to weaken local government capacity to a lesser extent than project assistance (Cordella and Dell'Arricia, 2007). These qualities render it in their view a more appropriate financing tool in countries with acceptable governance records and solid institutions in place (Devarajan and Swaroop, 1998). The fact that budget support does not suffer from the same 'myopic' vision focused on obtaining short-term results as project assistance further supports this argument (Crola, 2009). However, programme and project assistance allows donors to better ensure that the aid reaches its intended recipients, a particularly important characteristic in the effort to reduce food insecurity (Cordella and Dell'Arricia, 2007). In addition, the levels of programme and project aid are less volatile than budget support's, as they are usually disbursed on a multi-year basis (Eifert and Gelb, 2005). Thus, based on the existing

research findings combined with my theoretical postulations, the corresponding hypothesis here is the following:

Hypothesis 4: Project and programme aid are more successful at bolstering food security than general budget support unless the recipient possesses above-average governance records.

Financial versus commodity aid

The third classification within aid mechanisms is into commodity and financial aid. This classification can be applied both at the macro and at the micro level. As opposed to the divisions according to the donor's identity or into grant and loan components of aid, however, the effects of this division on the impact of aid on food security should not differ significantly whether measured on the macro or on the micro level.

Most aid flows are financial; however, some aid comes in the form of food (bulk of commodity aid) or other materials (unrefined oil, old clothes...). Commodity aid is most often disbursed with the aim to fulfil a pressing need: for example, food aid tends to be provided to famine areas, where financial help could presumably not be as effective. Similarly, medicine supplies and old clothes are frequently sent to post-disaster areas, where they are believed to help more effectively than cash. While the cited reasons hold true in many emergencies, often there is a fine line between deciding to donate commodity instead of financial aid for purely altruistic reasons and doing so for more practical purposes (domestic producers of food and other donated articles stand to benefit from commodity aid more than from financial aid) (Lipsky and Thibodeau, 1988; Zerbe, 2004). Moreover, if the donated commodity is available also in the recipient locality, local producers might be displaced from the market by the free donations. Keeping these considerations in mind, financial aid should have a more beneficial effect on food security than commodity aid, except for crises and emergencies.

The general consensus among aid researchers is similar; they see food aid as *potentially* more effective than monetary aid at bolstering food security but only if it follows a set of rules that generally arise solely during humanitarian crises (conflicts and disasters) (Barrett, 2002; Uvin, 1992). In other situations, they regard monetary aid not only as more beneficial but food aid as potentially harmful, as it can inadvertently price out local food producers and hence provide a disincentive to local food production in the following years (Del Ninno *et al.*, 2007; Gelan, 2006). Some authors also point to the frequently poor targeting of food aid, which further reduces its effectiveness (Clay *et al.* 1999; Jayne *et al.*, 2002), to food aid's negative effects on people's perceived sense of food security due to its transient and unreliable nature (Gilligan and Hoddinott, 2007), and to the abuse of food aid for political purposes by corrupt governments (e.g. HRW, 2010). The suitable hypothesis in this aid classification is thus:

Hypothesis 5: Financial aid is generally more beneficial to food security than commodity (food) aid; the reverse is true only in humanitarian crises.

Aid volatility

Aid volatility does not constitute a categorical division within aid as the previous three aid mechanisms discussed; nonetheless, it is an important characteristic of *how* aid is disbursed and thus merits inclusion in this discussion. While some developing countries might be receiving steady annual inflows of aid, increasing proportionately to inflation rates and population growth, other countries face a much more volatile aid market, with high receipts one year and low receipts the next. This volatility translates also into the field where donor-run projects are set up and cancelled on an often very *ad-hoc* basis. It is unquestionable that the impact of this precarious nature of aid on development as well as on all aspects of food security, and particularly on future certainty, is harmful, but the question remains regarding the extent of this negative effect.

Researchers generally agree that aid volatility is negative for all developmental goals. Bulíř and Hamann (2008) found that aid is significantly more volatile than domestic revenues and that it is pro-cyclical, exacerbating the negative impact of the volatility during economic downturns. Other authors have analysed the specifics of the negative effects, to conclude that the unpredictable nature of aid may result in the volatility of expenditures and the instability of domestic policies (Lensink and Morrissey, 2000; Rodrik, 1990). Similarly, Mosley and Suleiman (2007) showed that aid volatility damages the macro-effectiveness of aid and reduces the ability of the recipient countries' public sectors to implement coherent investment programmes and fiscal policies. Thus, it is almost certain that high levels of aid volatility do not have a positive impact on recipients' food security whether measured on the macro or micro levels but an empirical analysis is needed to show how significant the negative effect is. Consequently, I have formulated here a very simple hypothesis:

Hypothesis 6: Higher levels of aid volatility exacerbate food insecurity, both at the macro and the micro level.

The impact of different aid targets on food security

Humanitarian aid versus short-term aid versus long-term aid

Since humanitarian aid is intended to only smooth short-term consumption, its long-term positive effects on development cannot be expected to be substantial. Regarding the short-term

and long-term-oriented aid, according to Clemens *et al.* (2004) both contribute to economic and social development but while the impact of short-term aid (=aid to productive sectors) can be observed in the short run (three to five years), the impact of long-term aid is likely to become apparent significantly later than the aid received and its impact might therefore be more difficult to separate from other factors influencing development at that point in time. Therefore, the authors hypothesised that only short-term aid would have a measurable effect on growth and subsequently confirmed this finding in their data analysis.

Applying this logic to food security, humanitarian aid similarly cannot be expected to exert significant positive influence in the longer run. In fact, it is possible that in some instances the long-term effect of humanitarian aid – particularly of food aid – on food security is negative, as the donated free food might displace local food production. However, its immediate effect is likely to be at least somewhat positive. Both short-term and long-term aid should theoretically be able to contribute to an improved level of food security; however, according to Clemens *et al.*'s (2004) line of argument, as with growth, the impact of long-term aid on food security would appear only many years after the intervention and would be harder to discern at that point due to other affecting factors. The appropriate hypothesis hence is:

Hypothesis 7: Short-term aid has a more pronounced and discernible positive impact on food security than either humanitarian or long-term aid, both on the macro and micro levels (at least in the short-term conventionally measured in aid-effectiveness literature).

Aid to agriculture, economic infrastructure, social infrastructure, and other sectors

The second division of aid according to *where* it flows, into that supporting agriculture, economic infrastructure, social infrastructure, and other sectors, is the one where I expect the largest disparities in food-security impact. Since agricultural aid tends to focus on increasing agricultural productivity and production, it should generally have a long-lasting positive impact on food security, by boosting food availability and farmers' access to food, whether considered from a country-level or a household-level perspective. Improving economic and social infrastructure should in most cases also help improve access to food as well as food utilisation, through an increase in economic opportunities and the provision of better health and nutritional services. However, one can imagine situations in which such impacts are not achieved either because the aid programmes/projects are not implemented well or fail to empower the truly marginalised layers of the society. The effect of 'other' aid on food security is harder to analyse in theory but unless it constitutes the bulk of all the aid received, I do not expect its effects to be positive on the macro level. On the micro level, this type of aid is often constituted by direct

transfers – whether of cash or of food – and the postulations about its effects on food security can be likened to those on the impact of food aid and of humanitarian assistance.

Looking to the existing literature, researchers also regard agricultural aid as the most crucial in bolstering food security. On the macro level, they see agricultural investment as directly supportive of agricultural and rural growth, which boosts poverty reduction and food security primarily in rural areas (Von Braun *et al.*, 1992). One potential downside might be that agricultural development assistance frequently fuels agricultural imports as well, as rising incomes lead to changing dietary preferences often satisfied only through imports (e.g. wheat products, processed foods...) (Pinstrup-Andersen and Cohen, 1998; Haque, 1999). That effect should not, however, harm recipients' food security in the short run.

On the micro level, the existing findings have been a little more nuanced. One of the major conclusions shared by many authors has been that while agricultural interventions generally increase crop production and sense of food security, nutritional outcomes such as children's height-for-age or weight-for-age scores are affected only occasionally (Berti *et al.*, 2004; IYCN, 2011). Other researchers have warned that such programmes often fail to reach the poorest, most marginalised farmers (Fiallos and Cantero, 2008). On the basis of these findings, authors of the IYCN meta-analysis report recommended that agricultural knowledge-transfer projects aim at increasing the production of foods directly consumed by poor households, include explicit nutrition counselling, and introduce micro-nutrient rich plant varieties (IYCN, 2011).

Research has thus far not evaluated the specific impact of aid to economic or social infrastructure on food security on the macro level; the results with regard to the impact of this type of aid on other outcomes have, however, been mixed. For example, Dreher *et al.* (2008) looked at the link between aid to education and enrolment rates and found the specific type of aid to be more effective than aid in general. On the other hand, Williamson (2008) found development aid to the health sector to be an ineffective tool of human development promotion.

Similarly on the micro level, social-infrastructure (education, health, water and sanitation...) and economic-infrastructure (microfinance, business and vocational training, job creating projects...) projects have been examined quite frequently with regard to their impact on income generation and consumption but rarely with a view to participants' food security. One of the few empirical studies to link social infrastructure projects with nutritional outcomes specifically, Bhutta *et al.* (2008) looked at the impact of nutritional counselling on children's health and found that both the promotion of breast feeding and education about complementary infant feeding had a positive impact on children's height-for-age. On the other hand, Hoque *et al.* (1996) examined the impact of a hygiene-education project in Bangladesh and discovered no

difference between the treatment and control group in terms of sanitation knowledge five years after the project's implementation.

As a subset of economic-infrastructure projects, the already-discussed microfinance initiatives have quite a varied record of impact on recipients' food security. Evidence on the effect of other types of economic projects has been similarly mixed. Oxenham's (2002) study of the impact of vocational training projects on recipients' livelihoods determined that only complex projects aimed at strengthening various types of capital (human, social...) and including components of savings, credit, and enterprise development had the chance to achieve positive effects. Gibson (1993) investigated a multitude of income-generating projects in Kenya and Zimbabwe and found that while their impact on participants was generally positive, the projects had a hard time accessing the poorest communities, were largely unsustainable in the longer term, and were burdened with excessive operational spending by the organising institutions.

Finally, no empirical research has linked 'aid to other sectors' with food security specifically either on the macro or on the micro level. On the other hand, if one considers 'other' aid on the micro level to be constituted primarily by direct transfers of cash and/or food, then research linking it with food security of recipients does exist but again is not unified in its conclusions. The views on the impact of food transfers on longer-term food security have been rehashed here already; direct transfers of cash are generally considered to be more useful but concerns have been raised that the money provided is often not used to increase dietary intake and hence does not consistently lead to better nutritional outcomes (Bailey and Hedlund, 2012; Chen *et al.*, 2009).

On the basis of my theoretical deliberations and existing research, the final hypothesis is hence:

Hypothesis 8: Aid to agriculture has a more pronounced and discernible positive impact on food security than aid to social and economic infrastructure or aid to any other sector, both on the macro and on the micro levels.

Figure 4 concisely summarises the hypotheses put forward above in a graphic manner.

Figure 4. Graphic summary of the predicted effects of different types of aid on food security

	<i>Hypothesised effects</i>	Impact on Food Security		Testability
		<i>Levels</i>		<i>(Studies I, II, III, and IV)</i>
		Macro	Micro	
	Aid in general	↑ G	↑ G	I, II, III, IV
Who gives/ implements aid?	Multilateral agencies	↑ G		I, II
	Bilateral donors	↑ G		
	DAC Non-DAC	? G		
	Governmental organisations (GOs)		↑ G	III, IV
	Non-governmental organisations (NGOs)		↑ G	
How is aid disbursed?	Concessional loans/Credit aid	↑ G	↑ G	I, II, III, IV
	Grants/Non-credit aid	↑ G	↑ G	
	General budget support	↑ G		I, II
	Program aid	↑ G		
	Project aid	↑ G		
	Commodity/Food aid	↑ G	↑ G	I, II, III
	Financial aid	↑ G	↑ G	
Aid volatility	↓	↓	I, II, IV	
Where does aid go?	Humanitarian aid	↑ G	↑ G	I, II, III
	Short-term aid	↑ G	↑ G	
	Long-term aid	? G	? G	
	Agriculture	↑ G	↑ G	I, II, III, IV
	Social infrastructure	↑ G	↑ G	
	Economic infrastructure	↑ G	↑ G	
Other sectors/Direct transfers	? G	↑ G		

↑ positive effect, ↓ negative effect, ? mixed effect, - no effect; • most, •less, •least; G -positively conditioned on governance

Literature shortcomings and my anticipated research contribution, restated

The existing literature on the effects of different aid modalities on food security and the intervening role of governance discussed in the sections above is limited in many the same way as the literature addressing the impact of aid on food security in general, except its limitations are more pronounced. Research connecting several kinds of aid with food security specifically is very scarce, particularly at the country level. Furthermore, literature addressing the relationship between different types of aid and development outcomes other than food security is plagued by similar problems of ambiguous concepts and disconnect between findings from macro and micro levels just as is the literature addressing the effects of aid in general.

My strategies for dealing with these issues are also similar to those outlined in the section on aid in general above. By examining the impact of all the delineated aid types on food security on both the macro and micro levels, I make a systematic contribution to the existing research on

aid effectiveness not only in food security specifically but also more generally . Further, by investigating the intervening role of governance in each of the relationships, I make a significant contribution to research on the importance of institutions and policies in enabling aid to achieve its goals. Last, by exploring the relationships described with the use of different concept measurements, different levels of analysis where possible, and different research methods, I augment the external as well as internal validity of my results and in turn also the policy relevance of my findings.

Expected impact of other variables

However, before proceeding to a discussion of the specific methods that I plan to use to examine the relationships outlined in my hypotheses, I need to discuss other factors that impact countries' and people's food security. As you might imagine, they are not few.

Table 1. Factors with influence on food security

	Macro (country) level	Micro (household/individual) level
Population factors	Population	Gender Age Health Family structure (female-headed) Education
Economic, social, and agricultural factors	GDP (PPP) per capita Debt repayments Trade openness Food production levels	Household income/Wealth index Family employment Government assistance (safety nets) Infrastructure availability
Political factors	Good governance Democracy, human rights	Local governance quality Social ties
Environmental factors	Conflict Disaster	Recent crisis
Food prices	Global food prices Local food prices	Local food prices

Source: Author's own deliberations

They are listed in Table 1 and I have divided them into country-level and individual/household-level, depending on where their impact can best be observed and measured. In their enumeration, I have tried to be as inclusive as possible but given the conceptual complexity of food security, for brevity's sake I have left out some variables that affect food security only marginally. For each of the variables listed, I discuss its anticipated impact on food security based on the existing research findings.

I treat these factors as independent of aid for the purposes of this discussion but as must be clear from the above discussion of the four different aspects of food security and its influents, most can be influenced by aid as well. In that manner, they channel an additional indirect effect of aid on food security. I will touch on this topic in greater detail in the empirical part of the

thesis, when I examine the effect of aid on food security in four country cases using analytical country narrative approach.

Country-level variables

Population factors

Population and its related concepts (population growth, population density, percentage of urban population) are largely accepted as partial determinants of food security at the national level. Larger population sizes are generally associated with lower food-insecurity levels although the underlying mechanism is not clear (Petrikova, 2013). High population growth and population density are even more significantly linked to adverse food security outcomes, while a larger portion of urban population generally has the opposite effect (Leisinger, 2000, Leisinger *et al.*, 2002).

Economic, social, and agricultural factors

At the country-level, higher levels and rates of economic growth (GDP) translate into a greater ability to purchase food in international markets and thus augment national food stocks. However, neither a high average GDP per capita nor its increase *automatically* boost national food security in all cases, as they might not always elevate incomes and food access among the poorest levels of society, who are the ones likely suffering from food insecurity (Timmer, 2000). Debt repayments constitute a related concept, which – if high – can have dampening effects on countries' food security.

The dispute vis-à-vis the effects of trade barriers and trade openness on food security has been a highly charged one among development researchers for decades. According to the classic Ricardian comparative-advantage trade model, all countries benefit from trade. The positive relationship between trade and growth has been empirically confirmed by many economists, including Dollar and Kraay (2002) and Berg and Krueger (2003). However, some researchers challenged the assumptions on which the Ricardian model is based as unrealistic²⁰ and therefore claimed that not all trade can bolster economic growth (Lipsey and Lancaster, 1956; Sawada, 2009). Thus, while the dismantlement of trade barriers and opening up to trade indisputably affects countries' economic growth and in turn their food security, the direction of the impact might vary according to the type of trade and other accompanying policies.

The question how much food countries ought to produce domestically is also quite controversial. On one side of the academic spectrum lie the 'Malthusians,' who worry about *global* food availability and urge all countries to raise their food production levels (Cohen, 1995;

²⁰ E.g. only two countries and two goods, perfect competition in both countries, no labour mobility, no transportation costs...

Del Ninno *et al.*, 2007). On the opposite side lie the techno-ecologists, who believe that global food insecurity is mainly the result of flawed re-distribution, not of insufficient production, and therefore they encourage countries to liberalise trade and thereby gain foreign currency to purchase sufficient food for everyone (Bongaarts, 1996; Tweeten and McClelland, 1997). Given the large array of different arguments on this topic, it is hard to determine whether the effect of higher domestic food production on national food security is positive or neutral; most likely, the relationship varies by case.

Political factors

As I have discussed already, governance, regime type, and human-rights records constitute important conditioning factors in the aid-food security relationship, with the hypothesised potential to reinforce the positive effect of aid on food security. As such, these variables are not treated as simple control variables but ones that interact with aid in its influence on food security. However, on their own these indicators are also widely regarded to affect food security positively if good and negatively if bad (Azmat and Coghill, 2005; Sahley *et al.*, 2005).

Environmental factors

Conflicts exert a negative bearing on all aspects of food security. Regarding food availability, agricultural production tends to fall by 1.5 per cent per year in periods of conflict (Kang and Meernik, 2005; Teodosijevic, 2003). Although international or national food aid often steps in, the average per-capita daily intake of people decreases by 7 per cent (*ibid*). The immediate reasons for this decline include the destruction of rural infrastructure, loss of livestock, deforestation, the use of land-mines, and people's displacement. Moreover, hunger is sometimes used as a weapon (Messer, 1990; Duffield, 2007).

Natural disasters such as droughts, floods, earthquakes, tsunamis, and volcano eruptions usually lead to massive crop losses and destruction of stored foods, and hence automatically reduce national food availability (Carter *et al.*, 2007). Their negative impact tends to be particularly harmful in countries with rain-fed farming and in economies that are highly dependent on agriculture. Disasters also negatively influence people's food access, as poor people have generally fewer means to cope with the resultant increase in food prices and often begin to face food insecurity (if they had not been food insecure already) (*ibid*).

Food prices

The literature has identified two important facts regarding the impact of global and local food prices on countries' food security. First, a rise in food prices tends to negatively affect food security only in those countries where citizens' non-food expenditures are not large enough to accommodate this price augmentation (Fafchamps, 1992). In developed countries, consumers

might be annoyed by rising prices of bread or rice but most are not existentially threatened as is the case in some developing countries²¹. Second, the rise or fall in international food prices does not automatically translate into a rise/fall in local prices. The rate of price transmission depends on many factors, including the extent of domestic market integration, import duties, export taxes, non-tariff barriers and other domestic policies (FAO, 2011a). Thus, a rise in food prices is likely to exacerbate food security but this link is more direct in the case of local prices and contingent on countries' per-capita income levels.

Individual/household-level variables

Population/demographic factors

The composition and demographic characteristics of households have been found to affect people's food security to a significant degree. High dependency ratios –more children per adult - complicate the achievement of food access for all household members; however, this relationship does not hold for larger household sizes in general (Chazee, 2004). Female-headed households tend to suffer from more food-access problems as well but their difficulties tend to subside as the household head's age and education increases (IFAD, 1998).

On a similar note, individual food security can be threatened by discriminatory intra-household relationships even in households with sufficient food access for all members. Behrman (1988) finds that parents in South Asia favour sons in food allocation over daughters, with the pattern more salient in the 'lean season.' Other authors have observed similar practices in other developing countries, in relation with daughters as well as adult women and the elderly (Maxwell, 1996).

People's general health status also has a significant impact on their food security, as unhealthy individuals might not be able to achieve food security even if receiving a calorically sufficient and nutritional balanced diet (Strauss and Thomas, 2008).

Other influential factors in this category are the region where people live – whether urban or rural – and of what race/caste/ethnic origin they are. Regarding the rural-urban divide, people living in urban areas have traditionally been more food secure than rural inhabitants, contributing to increasing rates of urbanisation across the world. Nevertheless, as cities in developing countries have grown, the divide has become less notable and research on the effects of the most recent economic crisis suggested that the urban and rural poor were equally vulnerable to food insecurity (Garrett and Ruel, 1999; Haddad *et al.*, 1999; Ruel *et al.*, 2010). People of minority race and ethnic origins and in India also people from the lowest castes have

²¹ However, following the 2009-2010 economic crisis, even some EU Member States struggled with food insecurity (FAO, 2010).

generally suffered from higher rates of poverty and food insecurity than others (e.g. Alkon and Agyeman, 2010; Mehta, 2003).

Economic, social, and agricultural factors

Many researchers, such as Maxwell and Smith (1992) and Frongillo (2003), treat poverty rates as virtually identical with food security. However, a study by Bhattacharya *et al.* (2004) demonstrated that while the relationship between poverty rates, food insecurity and negative nutritional outcomes tends to hold for adult people, it is not always the case with infants and young children. Thus, whereas it is safe to assume a strong positive relationship between poverty rates (low household income and/or low wealth index) and deficient food access, a complete identification of poverty with food insecurity as a whole should be avoided.

Vis-à-vis employment and other income-generating opportunities, according to Von Braun (1995) they have a high chance of improving both national and local food security. This is especially true if labour markets operate freely and poor people can migrate throughout the country in search of work (not the case in China - Ling and Zhongyi, 1995). It can obviously be difficult for some poor countries to significantly increase the number of formal work positions, and particularly so in rural areas; however, even food-for-work programmes have proven successful in strengthening participants' food access (Ahmed *et al.*, 1995)²².

Social safety nets constitute another effective economic mechanism that states can use to bolster citizens' food security. Their role is two-fold. Primarily, they can help individuals, families and communities that have been struck by crises respond to them without having to resort to severe coping measures, such as selling-off means of production or migrating in distress (Adato and Feldman, 2001). Furthermore, safety nets can also assist people who suffer from chronic food insecurity. Devereux (2002) demonstrated on the case studies of Mozambique, Namibia, and Zambia that even tiny income transfers from safety nets are often invested, thus helping some poor people escape the cycle of chronic food insecurity and poverty. In targeting food insecurity specifically (not poverty in general), the most successful safety nets are ones directly tied to the provision of food, such as food-for-work, supplementary feeding, and food stamp programmes (Rogers and Coates, 2002).

Finally, good-quality local infrastructure, particularly the availability of easily accessible and well-equipped health centres and hospitals can have a highly positive effect on people's food security (Strauss and Thomas, 2008).

²² Not always their food security as it was never clear how long the programs would last (Gedamu, 2006; Gilligan and Hoddinott, 2007)

Political factors

While existing research has not yet linked food security with the quality of local governance per se, similar to the country level I hypothesise that the quality of local institutions and policies can play an important conditioning role in the relationship between aid and food security. On its own, it can also have a direct positive link with food security as regions with better-running services can generally respond more effectively to food crises and distribute government aid more effectively (Blair, 2000; Nijenhuis, 2002; Stoker, 2011).

Another crucial factor is the strength of social ties, or social capital, whose importance in ensuring short-term household food security development researchers recognised only recently. Even in societies where the central government structures break down, as they did in Somalia, strong social ties within communities can act as a powerful type of informal insurance: if one household loses its access to food, another household or the community steps in to provide (Petrikova and Chadha, 2013; Pingali *et al.*, 2005).

Environmental factors

Just as conflicts and disasters negatively affect food security on the country-level, they do so also on the local level. Furthermore, individual/household food security tends to be threatened by other household crises and shocks, including the death and serious illness of income providers, loss of employment, death of livestock or the loss of dwelling (Littrell *et al.*, 2011; Petrikova and Chadha, 2013).

Food prices

Similar to global food prices, the effects of higher local food prices on food security can be positive or negative, depending on whether a household is a net food consumer or a net food producer and to what extent (Swinnen and Swicciarini, 2012). The negative effects on the food security of net-consuming households with a relatively low portion of non-food expenditures.

Conclusion

In this chapter, I have set up the theoretical and literature framework in which the empirical research in this thesis is grounded and against which it measures its findings. In the thorough analysis of existing relevant literature, I have identified a lack of research specifically linking aid, both generally and even less so in its various modalities, with food security, particularly on the country level. Helping to fill these gaps constitutes one of the largest endeavours and potential contributions of my thesis. Research on the intervening role of institutions and policies (aka, governance) in aid effectiveness in food security is even scarcer and thus represents another major area where my thesis aims to make a valuable contribution. My final contribution is more

policy-oriented: on the basis of my findings, I formulate relevant policy recommendations vis-à-vis the most appropriate aid modalities for bolstering food security. In an effort to enhance the relevance and applicability of these recommendations, I have strived to learn from the shortcomings of the existent aid-effectiveness literature and examine the relationships under consideration using a multitude of observational lenses (both macro and micro), of research methods (both quantitative and qualitative), as well as of food-security, aid, and governance measures.

In the next chapter, I discuss in relatively broad terms the methodological tools that I uses to gather and analyse data and arrive at findings. Specific methodological approaches are described in more detail in each empirical chapter separately, as they differ from one part of the study to another.

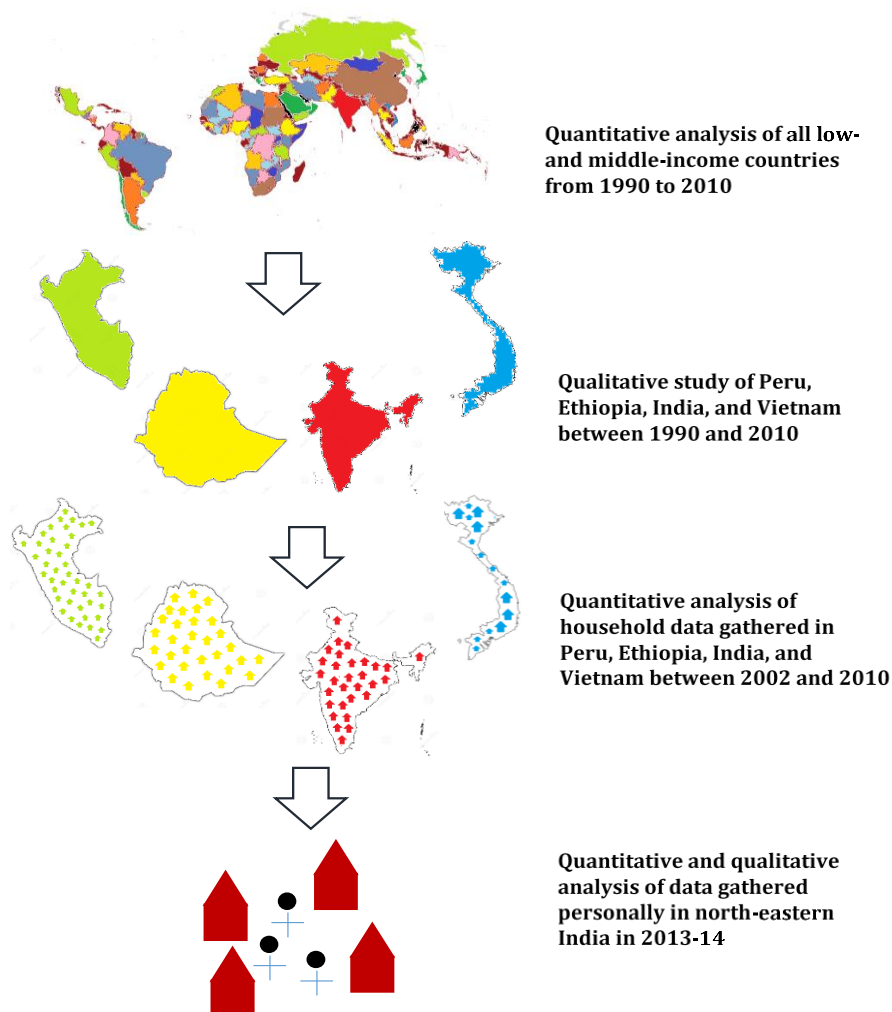
Introduction

This chapter offers an introductory overview of the methods that I use to examine the aid-food security relationships discussed and to test the hypotheses formulated in Chapter One. The first part of this chapter introduces the different data sources on food security used throughout the thesis. The second part presents the empirical methods utilised, which I have chosen with a view to the existing data. In light of the first two sections, the third one addresses the expected validity and reliability of the results.

A map to the empirical research ahead

As I mentioned briefly in the Introduction and in Chapter One, I examine the relationship between aid and food security in four different studies (graphically depicted by Figure 1).

Figure 1. Graphic depiction of the thesis' four different studies



Source: Author's own creation

First, in order to identify global patterns of the relationships between different types of aid, recipient countries' food-security levels, and their quality of governance, I conduct a quantitative cross-country study that uses data from all developing (low- and middle-income) countries for which sufficient information is available for the years 1990 to 2010. I have chosen to restrict my sample to these two decades as the data on food security prior to 1990 were collected quite differently from the way they are nowadays, hindering the potential comparability, and after 2010 were not available at the time of conducting the analysis (2012-2013).

Second, in an effort to gain a closer look at the country-level relationships between aid, food security, and governance, I carry out a case study of four developing countries. In it, I first test whether the conclusions reached in part one hold also when using a case-study approach with qualitative data. To facilitate this process, I chose to examine country cases that are 'typical' from the perspective of the aid-food security relationship and finally selected Peru, Ethiopia, India, and Vietnam from a longer list of countries. I discuss the reasons for this selection in greater detail in Chapter Four. In addition to testing the findings from the quantitative study, the qualitative analysis allows me to explore and explain the processes and causal mechanisms underlying the aid-food security relationships in greater detail.

Third, in order to examine the aid-food-security-governance link also from the perspective of aid recipients, next I conduct a quantitative examination of household- and individual-level survey data. This study marks the end of the thesis' macro-level and beginning of its micro-level analysis. Using information collected by the Young Lives project, focused on studying household and childhood poverty, from the same four countries as those examined in the preceding study, I can analyse the effect of development assistance on recipients' food security along with the intervening impact of governance more directly.

Fourth, in an effort to bring the observatory lens even closer and inspect the process through which specific aid interventions affect household and individual food security based on personally-collected information, in the last study I carry out a mixed-method (both quantitative and qualitative) analysis of data gathered from surveys and longer interviews administered in a cluster of villages in northern India.

Choice of multi-level study and mixed methods

There are at least two reasons that have inspired me to examine the research questions and hypotheses via a multi-level model. First, by investigating the impact of aid on food security from both a macro and a micro perspective, I can find out whether there are different factors driving the effectiveness of aid on the country- level as compared to the household level. In this way, my research is able to offer insights into the afore-mentioned micro-macro paradox of aid

effectiveness, where aid often seems to have a different impact when looked at from the household than from the country point of view. Second, by inspecting both perspectives, my thesis can speak with authority on both global-level patterns and on local-level specificities within the aid-food security relationship and consequently formulate recommendations useful to makers of macro-level development policy as well as to micro-level implementers of development projects on the ground. Klein and Kozlowski (2000: 211) support this tactic, characterising multi-level approach to research as ‘complex, rigorous, and able to capture much of the nested complexity of real ... life.’

The factors underlying my decision to use mixed methods in the thesis are also several. For those unfamiliar with the term, one of the most commonly cited articles on the topic defines mixed methods research as ‘the type of research in which a researcher ... combines elements of qualitative and quantitative research approaches ... for the broad purposes of breadth and depth of understanding and corroboration’ (Johnson *et al.*, 2007: 123). There are many advantages to combining qualitative and quantitative approaches (see e.g. Chen, 2006; Creswell *et al.*, 2011; Greene and Caracelli, 2007; Yin, 2006). First, the utilisation of quantitative along with qualitative methods on both the macro and micro levels allows for the triangulation of data sources, which significantly enhances the external validity of my findings. Second, the quantitative and qualitative methods compensate for each other’s weaknesses and build on each other’s strengths. Third, the combination of methods allows for expansion, enabling me to obtain a larger and simultaneously more detailed picture of the aid-food security-governance relationship. Fourth, and this relates not only to the use of mixed methods but also of multi-level research design, because the data on food security and development aid are often not of very good quality and do not capture the full meaning of the concepts, examining data from different sources with a multitude of methods increases the plausibility and soundness of my conclusions and related policy recommendations. In the following sections, I elaborate on these points by discussing the data sources and empirical methods utilised in greater detail.

Mixed-method research is not without its shortcomings, naturally. The chief one, as explained by Jick (1979), is the difficulty of replicating the results of such research, particularly of its qualitative parts, which reduces studies’ reliability. However, as I discuss in more detail further in this chapter, the consequently-strengthened validity of my results outweighs this drawback in my opinion.

The availability of data on food security, development aid, and governance

Food security, aid, and governance data in the cross-country study

On the global level, the best data sources on food security are provided by the Food and Agriculture Organisation (FAO) and the World Health Organisation (WHO). While both organisations²³ have been frequently criticised for the methodology utilised in collecting the data, their data sources cover the majority of developing countries for at least some years between 1990 and 2010 and both have been gradually improving on the front of data reliability (Svedberg, 2008; FAO, 2011b). I use two measures from each organisation – the *Prevalence of undernourishment* and *Depth of hunger* from the FAO and the *Proportion of stunted children under five* and the *Proportion of underweight children under five* from the WHO²⁴. All four measures have been routinely used by researchers as approximates for country levels of food security, even though none of them captures the concept in its full complexity.

The FAO's measures of undernourishment prevalence and depth of hunger speak best about countries' ability to ensure sufficient food availability and access to food for its citizens. Out of the two, the depth of hunger focuses more on the severity of food insecurity while the prevalence of undernourishment on the pervasiveness of food insecurity; both, however, include only the more severe food-insecurity cases, where people have been negatively affected not only by uncertainty about future food access or by the lack of nutritious food but also by the absence of *any sufficient* food (actual caloric deficiency). The food security measures obtained from the WHO, the proportion of under-five children that are stunted and that are underweight, are better able to encapsulate the overall nutritional state of the population, as being underweight or stunted can be a result not only of faulty food availability or access, but also of deficient food utilisation. Nevertheless, they still do not reflect the cases of food insecurity characterised primarily by inadequate food stability and by concentrating only on children younger than five years old, they might not be portraying the picture of countries' state of food insecurity in its full complexity either.

On the other hand, the data availability regarding development aid is probably better on the global level than on any other. The QWIDS and CRS databases operated by the OECD contain good-quality longitudinal data on development aid committed as well as disbursed, divisible by the type of donor, by the aid mechanism utilised as well as by the sector to which the aid was provided. The one downside, mentioned above already, is that it is primarily the DAC members of the OECD who submit all their aid data to the databases and to a lesser extent other OECD members. Non-OECD donors are not equally open about their aid provision patterns and while

²³ The FAO perhaps more than the WHO

²⁴ 'Stunted' means too short for age, 'underweight' means too light for age.

their proportional global contribution to aid was miniscule until the late 1990s, as of late it has been increasing in importance, particularly with the economic rise of China (e.g. Hudson, 2015; Petrikova, 2015b).

Governance data are again more problematic. As I mentioned in the previous chapter, there is a disagreement among researchers with regard to what governance is and when it can be considered good and when not good. Despite this lack of specific conceptualisation, different researchers have used different quantitative measures of governance over the past several decades. As my primary measure in this level of study, I use the Worldwide Governance Indicators (WGI) developed by Kaufmann, Kraay, and Matruzzi and published by the World Bank. They appear to cover most comprehensively the definition of good governance by the OECD (2001) to which I adhere here and despite wide criticisms, constitute the most commonly utilised governance indicator for cross-country studies at this time (Arndt and Oman, 2006).

As a robustness check, however, I use two further indicators: the Polity IV project's *polity2* measure and a policy index modelled after the one used by Burnside and Dollar (2000). As compared to the WGI, the *polity2* measure is rules-based and hence can compensate for the perceived weaknesses of outcome-based indicator such as the WGI. Its main downside is its quite narrow focus on the type of country's regime rather than its more diverse policies. The policy index attempts to measure the quality of countries' economic policies, focusing on budget balance, trade openness, and inflation, which are arguably not as directly related to food security as they are to growth, in the studies of which the policy index was originally used. Nevertheless, it has been more frequently used by macro-level researchers of aid effectiveness, and hence in order to increase the validity of my results I have made the choice to also include it.

Food security, aid, and governance data in four-country qualitative case study

Country-level data sources that I utilise in the four-country case study (second level of empirical analysis) include all those used in the quantitative cross country study and discussed in the paragraphs above. In addition, I have supplemented the data attained from the large open-access databases with more qualitative, descriptive data from reports and analyses produced by governments, international organisations, or non-profit think-tanks and with secondary data from research monographs and academic articles. The intensified focus on just four countries – Peru, Ethiopia, India, and Vietnam - along with the use of qualitative analytical methods also allows me to consider the connections between the various indicators in a less linear and more complex manner than in the large quantitative study.

Food security, aid, and governance data in four-country quantitative household study

Moving to the household-level analysis, in the third stage of study I use data from household surveys collected by the Young Lives project in the same four countries as those examined in the second part of the study. I chose these data due to their relatively good information on both food security and development aid received by respondents, particularly when compared to other contenders in this category including the World Bank's Living Standard Measurement Surveys (LSMS) and National Health Surveys (NHS). The Young Lives datasets contain information on Peruvian, Ethiopian, Indian, and Vietnamese young children and their families from 2002, 2006, and 2010²⁵.

The relevant food-security variables include children's nutritional indicators such as their weight-for-age, height-for-age, and BMI-for-age. Furthermore, the surveys contain modules on household perception of food security, on which basis food-security indices can be estimated. As such, the data are able to capture household food insecurity in a more complex manner and more precisely than the data available on the country level. The surveys also contain modules on development assistance received by the households surveyed, which do not inquire precisely about the total amount of aid obtained but do so about the type of aid, its delivery mechanism, as well as about the implementing institution²⁶. The most problematic part are data on the quality of local governance, which I finally measure through the quality of local public institutions (the police, the professional judge, the water supply, the electricity supply, public phones, public internet, and banks) as rated by several local community leaders.

Food security, aid, and governance data in field study

For the fourth study, I collected data personally in a cluster of villages near Gorakhpur (Maharajgan area), Uttar Pradesh in India between 2012 and 2014, from households participating in (or living nearby) a multi-component development project operated by the Indian arm of the international NGO Grameen Development Services (GDS). My first field study took place in December 2012- January 2013, when with the help of an Indian enumerator Vatsalya Sharma I distributed questionnaires to 146 participating and 23 non-participating households. We returned one year later (December 2013-January 2014) to conduct in-depth interviews with several households (10 from participating and 5 from non-participating in the project) in an effort to obtain qualitative data that would facilitate a deeper understanding of the processes underlying the effects of the different project components on recipients' food security as discovered through the quantitative analysis. The questionnaire as well as my

²⁵ A fourth data collection round is currently – as of 2015 – in progress.

²⁶ Unfortunately, these detailed data are not available for all four countries in the same manner. In the case of Ethiopia, they were collected twice, in 2006 and in 2010. In India and Vietnam, they were collected once, in 2010, and in Peru not at all. Therefore, the data on development assistance in Peru is the most limited in scope.

standard interview questions are discussed in greater detail in Chapter Six and included in full in the Appendix.

However, as a brief introduction, in the questionnaires I chose to measure household food security through an index adopted and adapted from the Young Lives survey. I considered gathering data on children's anthropometric measures as well but due to logistical difficulties I was finally forced to abandon the idea. Aid in the survey is operationalised through questions about the type of external assistance received by each household and the quality of local governance through an average of perception ratings by three community leaders. The in-depth interviews enriched the quantitative data on food security, aid, and governance with descriptive colour and explanatory power.

The data gathered in my field study have both advantages and disadvantages as compared to the sources used in the first three empirical parts. I designed the surveys and interview questions myself and therefore all the questions that I deemed as truly necessary were in place. Moreover, conducting the in-depth interviews a whole year after the surveys provided me with enough time to analyse the results from the surveys and include questions about apparently important relationships or discrepancies into the open-ended questions in the interviews.

The downsides of the data arose primarily due to financial and time constraints. Aside from the already mentioned inability to gather anthropometric data, I also failed to distribute the surveys to as many households as I initially desired. Furthermore, I could not socially afford to interview people without any financial compensation for longer than 30-40 minutes. Finally, for cultural and linguistic reasons I found it difficult to talk to females within the households as the male heads of households usually assumed themselves to be the only appropriate spokespeople for their families. Nevertheless, despite these shortcomings, the data that I did manage to gather offer a valuable resource for my study and compensate for some of the drawbacks of the data sources used in the previous levels of analysis.

Research methods utilised

With a view to the different types and sources of data utilised in each level of my study, I have elected to use an eclectic mixture of empirical research methods of analysis, which I introduce in this section. Here I discuss each method only briefly, reserving detailed descriptions for each of the relevant empirical chapters.

Analysis level one: Quantitative cross-country study

In this level of study, I work with quantitative data accessible freely from international databases, for all low- and middle-income countries (annual GDP per capita below 12,615 USD – World Bank definition) available for the years 1990 to 2010. As I remarked earlier, the lower

temporal boundary was set up due to concerns about faulty comparability of food security data in the years prior to 1990, while the upper boundary has to do with the lack of availability of any more recent data at the time of conducting the research.

The data in aggregate are both cross-sectional and longitudinal, or in more laymen's term, they constitute a 'panel'. The most common approach to examining data collected for many countries over several years in social science is through fixed-effects Ordinary Least Squares (OLS) panel regressions, which allow researchers to control for unobservable characteristics at both the country and at the time level. The model's simplified equation is the following

$$f_{it} = \beta_0 + \beta_1 A_{it} + \beta_2 G_{it} + \beta_3 (A_{it} * G_{it}) + \beta_4 X_{it} + \gamma_t + \varepsilon_{it}$$

where f_{it} is the level of food security observed for country i in year t , A_{it} are aid receipts per GDP, G_{it} is the quality of governance, $A_{it} * G_{it}$ is the aid-governance interaction term (which represents the impact of aid on food security that is conditional on governance), X_{it} are control variables, γ_t is the unobserved time effect and ε_{it} is the error term. Time dummies are included to capture worldwide business cycles.

Nevertheless, the data in question suffer from both autocorrelation and endogeneity, both of which are discussed in greater detail in the next chapter, and hence I use more sophisticated statistical methods such as Two-Stage Least Squares (2SLS) and Generalised Method of Moments (GMM) equations as the primary tools, with the fixed-effects OLS employed only in the context of sensitivity analyses. The 2SLS model can be expressed mathematically as

$$(1) f_{it} = \beta_0 + \beta_1 A'_{it} + \beta_2 G_{it} + \beta_3 (A'_{it} * G_{it}) + \beta_4 X_{it} + \gamma_t + \varepsilon^f_{it}$$

$$(2) A'_{it} = \delta_0 + \delta_1 IV_{it} + \delta_2 X_{it} + \gamma_t + \varepsilon^a_{it}$$

where β_0 and δ_0 are constants, f_{it} is the level of food security observed for country i in year t , A_{it} are aid receipts per GDP, G_{it} is the quality of governance, $A_{it} * G_{it}$ is the aid-governance interaction term (which represents the impact of aid on food security that is conditional on governance), IV_{it} are variables that affect aid but are exogenous to undernourishment, X_{it} are other exogenous variables that affect food security and the allocation of aid, γ_t are unobserved time effects, and ε^f_{it} and ε^a_{it} are the error terms. Time dummies are included to capture worldwide business cycles.

The two-stage approach is one of the most commonly used when trying to correct for endogeneity. In my case, it exists due to the simultaneous relationship between aid and food security, where not only aid affects food security but food security may also influence donors' decisions about aid. The 2SLS corrects for this by using in its first stage an instrumental variable, which should be related to the dependent variable (here, food security) only through its relationship with the endogenous independent variable (here, development aid). Researchers have used different sets of variables to instrument for aid; I follow Rajan and Subramanian's (2005) approach and use a mixture of strategic and colonial variables.

The GMM regression is modelled by the following equation

$$f_{it} = f_{it-1} + \beta_0 + \beta_1 A_{it} + \beta_2 G_{it} + \beta_3 (A_{it} * G_{it}) + \beta_2 X_{it} + \gamma_t + \varepsilon_{it}$$

where f_{it} is the level of food security observed for country i in year t , f_{it-1} is the level of food security observed in the previous time period ($t-1$), A_{it} are aid receipts per GDP, G_{it} is the quality of governance, $A_{it} * G_{it}$ is the aid-governance interaction term (which represents the impact of aid on food security that is conditional on governance), X_{it} are control variables, γ_t is the unobserved time effect, and ε_{it} is the error term.

As the 2SLS model, the GMM one strives to correct for the present endogeneity, by instrumenting for aid with its lag. In addition, it takes into account the data's autocorrelation, in which observations from one time period are related to observations from the period before.

Analysis level two: Four-country case study

In the second level of study, my analysis remains at the country level but focuses only on four countries – Peru, Ethiopia, India, and Vietnam. As I stated already, the same international databases as in level one are used also in level two as the sources of basic data on the countries' food security, development aid, and governance. The numerical data, however, are supplemented by qualitative information obtained from policy and research reports and from secondary literature. The main approach that I employ to analyse these data is analytical narrative, which combines the rigours of rational-choice theory with the richness of detail of traditional historical narratives (Rodrik, 2003). Within this framework, I analyse the data collected using the specific empirical methods of process tracing, pattern matching, and explanation building, with a particular focus on testing the relationships that were found to hold true in the previous chapter and brandishing them with more detail. The crux of the chapter is thus structured around the same models as those used in the quantitative study, with the qualitative information used to test the findings from the quantitative study and, more importantly, to deepen our understanding of the processes that led from the independent variables through the conditioning ones to the dependent ones. The qualitative data are further utilised to shed light on the nuances and exceptions present in each of the relationships.

Analysis level three: Quantitative household-level study in four countries

The data used in this section were collected on the level of households, even though many of the questions asked pertain solely to the children under study or to their primary caretakers (usually their mothers). In their original form, the data are both cross-sectional and longitudinal (available for three different time periods) but the data on development assistance received were collected in all countries except for Ethiopia only once, in 2010. In Ethiopia the collection

was carried out twice, first in 2006 and second in 2010. In none of the four countries, however, did the surveys examine the households prior to receiving any external development assistance. This is partially because it was not the surveys' main objective to investigate the impact of the development projects implemented in the areas under study but regardless, it would have been impossible to do so given that most of the areas surveyed have been sites of development projects for many decades now.

With this reality in mind, the best approach to analysing the effect of the various development initiatives on recipients' food security is via an empirical approach called Propensity Score Matching (PSM), which allows for statistically rigorous impact evaluation even in the absence of pre-treatment data. This quasi-experimental method is based on the construction of a synthetic control group to the treated one on the basis of observable relevant indicators. The output indicators of the 'constructed' control group are then subtracted from the indicators of the treated group (those households that received aid) to determine the significance and size of the treatment's impact. Mathematically, the model can be expressed by the following equation

$$FS_t^j = \alpha + \beta X_t^j + \gamma P_t^j + \vartheta^j + \varepsilon_t^j$$

where FS stands for the food security of household j for time t, α is the constant, β is the coefficient of the control variables X, γ is the impact of the projects (P) on the treated, and finally, ϑ^j and ε_t^j are the time-invariant and time-variant components of the error term, respectively.

However, in the case of Ethiopia, where the available relevant data are longitudinal, I use a more complex, panel-level version of PSM, which I explain in greater detail in Chapter Five.

Analysis lever four: Household-level study in northern India with own data

On this level, the data available are both quantitative and qualitative in nature, as they were gathered on the basis of surveys as well as longer structured interviews with open-ended questions. The methods selected to analyse the data are thus also double-pronged, both quantitative and qualitative.

Propensity score matching is used first to analyse the survey data obtained and to establish the size and significance of the different development interventions received by the households under study. Second, I use the information collected in the long interviews to enlighten the processes that took place to bring about the discovered impacts as well as to enrich the quantitative results with greater depth and detail, utilising tools of simple content analysis. Talking with various household members about their food security and the aid that they have received provided me with an unprecedentedly close view of the aid-food security relationship

on the personal level and constituted a suitable counterpart to the quantitative global-level results obtained at the beginning of the research in the level-one analysis.

Anticipated reliability and validity of obtained results

Thanks to the use of multiple research methods, both quantitative and qualitative, the anticipated validity of my research results was strengthened, at a slight expense of reliability. Joppe (2014: 1) defined reliability as ‘the extent to which results are consistent over time and an accurate representation of the total population under study... [and the extent to which] ... the results of a study can be reproduced under a similar methodology.’ In other words, reliability defines how well the study carried out can be repeated to produce the same results. The quantitative studies that I proposed, particularly those in level one and level three of my analysis, are highly reliable, as they employ publicly available datasets and thus their examination should always lead to the same findings. The four-country case study, albeit qualitative, also relies on freely available data and while the method of analytical narrative leaves more space for different avenues of interpretation than rigorous regression analysis, its results can nonetheless be considered fairly replicable. Only my fourth level of analysis, the local quantitative and qualitative study, is inherently less reliable since it works with data collected personally through my own surveys and interviews. Nevertheless, in an effort to enhance the study’s overall reliability I have made the dataset gathered in the villages of northern India publicly available online.

On the other hand, as I mentioned before, the utilisation of own data sources and qualitative methods along with publicly available data and quantitative methods increases the degree of my study’s triangulation (the use of multiple research methods in an effort to cross-examine the results obtained) and thus significantly bolsters its validity, i.e. the truthfulness of the research findings (Joppe, 2014). If the results attained in the four levels of study all point in one direction, validating or refuting a hypothesis seems more credible than doing so on the basis of one study alone. Conversely, if the results attained in the different levels of analysis disagree, it will become clear that the original hypotheses need to be qualified, reframed or completely rewritten. Moreover, to reiterate, supplementing quantitative research methods with qualitative ones allows me to analyse not only the mere size and direction of the effects of development assistance and its different types on food security but also to trace the processes and linkages through which these effects take place and to endow the relationships observed with greater depth and the colour of detail.

Conclusion

In this short chapter, I introduced in broad terms the methodological contours of my thesis, including its data sources, its methods of analysis, and the anticipated reliability and validity of its results. In each of the four empirical chapters that follow, I explain the specific methodological approach utilised in more detail. Next up is the first empirical chapter, in which I look at the relationship between food security, aid, and governance from a broad, cross-country perspective.

CHAPTER THREE: CROSS-COUNTRY STUDY

Introduction

This chapter marks the beginning of the empirical part of my thesis, where I examine whether there is any relationship between development aid and food security, whether this relationship is positively conditioned on the quality of governance, and whether it differs in nature by the type of aid provided. In this study specifically, I consider all low- and middle-income countries for which data are available and examine my research questions using quantitative empirical research methods. The main aim of this chapter is to identify global trends and causal mechanisms in the relationships between aid, governance, and food security.

In order to re-establish the context within which I am placing my research as well as the expected results, in the following section I offer a brief recap of the relevant literature and the hypotheses formulated earlier in the text. I follow this overview with a detailed discussion of my data sources, their summary statistics, and the empirical approach chosen to analyse the data. When presenting the results, I first focus on the general relationship between aid and food security only, followed by a series of sensitivity tests to assess the robustness of the initial findings. I then proceed to debate the results obtained vis-à-vis the impact of different aid modalities on food security. In the discussion and conclusion part I highlight the chapter's main findings, point out its main weaknesses, and consider how the subsequent levels of analysis can improve upon them.

Recap of relevant literature and main hypotheses

The main variables investigated

To reiterate, the key concepts within this study are food security, development aid, and governance. As I discussed in detail in Chapter One, food security refers to a state in which people at all times have access to food that is sufficient and nutritious enough for them to lead an active life. The necessary components of satisfactory food security are satisfactory food availability, sufficient access to food, acceptable food utilisation, and reasonable stability of these three factors over time.

Development aid denotes the flow of funds from primarily Western countries but also increasingly from emerging economies to developing countries in the global South, with the official aim of encouraging the recipients' economic, social, political, and environmental development. In this study, I classify the flow by the type of donor into multilateral (provided by international organisations) and bilateral aid; by the mechanism of distribution into grants versus concessional loans, budget support versus programme/project aid, food aid versus

financial aid, and low versus highly volatile aid; and last by ‘final destination’ into agricultural, social, economic, and other aid and into humanitarian, short-term, and long-term assistance.

The term governance, as used here, stands for the way in which authority is exercised in a country through institutions and policies. As ‘good’ are considered those institutions and policies that are participatory, transparent and not corrupt, accountable, reasonably effective and efficient, and that follow the rule of law (OECD, 2001).

Key existing findings

While empirical examinations of the impact of aid using cross-country data are replete, there is a real dearth when it comes to studies on the impact of aid on food security specifically. Many studies looked at the effect of aid on other aspects of poverty reduction and concluded that while aid might have a positive effect on populations’ human development and health, its effect on countries’ education levels is more questionable (Kosack, 2003; Masud and Yontcheva, 2005; Michaelowa and Weber, 2006; Mishra and Newhouse, 2007). Similarly, research on the impact of aid on growth leans towards positive findings, with some reservations. Most published studies found aid to bolster the rate of countries’ economic growth (e.g. Arndt *et al.*, 2015; Brückner, 2013; Burnside and Dollar, 2004; Galliani *et al.*, 2014; Hansen and Tarp, 2001) even though their meta-analysis suggested that most findings were fragile to changing specifications and did not always hold up after modifying samples (Doucouliagos and Paldam, 2009).

Looking to the potentially intervening effect of governance in aid effectiveness, again, there are no studies examining this question with a view to the impact on food security. However, research focused on other areas of aid impact indicated that governance *does* likely play a reinforcing role - both in strengthening aid’s positive effect on growth and in ensuring that aid reaches the beneficiaries intended (Burnside and Dollar, 2000; Hudson, 2015; Jenkins and Scanlan, 2001; Kosack, 2003). Some studies challenged this notion (Dalgaard and Hansen, 2001; Morrissey, 2004) but the majority of researchers believe that governance constitutes an important conditioning factor in aid effectiveness.

Unsurprisingly, research on the effect of *specific types* of aid on food security is non-existent and on other types of outcomes also relatively scarce. When looking at aid divided into multilateral and bilateral (based on whether it has been provided by international organisations or by bilateral country agencies), most authors argue in favour of multilateral aid as it is believed to be less political in nature, better coordinated, and burdened with fewer strings attached (e.g., Burnside and Dollar, 2000; Minch, 2005). There is more disagreement in the grants versus loans debate, with most researchers considering grants to be better at reducing poverty but a few arguing in favour of loans due to their purportedly less pernicious impact on revenue collection and domestic investment levels (Bullow and Rogoff, 2005; Djankov *et al.*, 2006; Odedokun,

2004). Budget support is considered to be more fungible than programme/project aid, which could be either positive or negative depending on countries' quality of governance (Cordella and Dell'Arricia, 2007; Crola, 2009; Devarajan and Swaroop, 2000). Food aid is seen as more effective than financial aid only in humanitarian emergencies (Barrett, 2002) and aid volatility is by-and-large regarded to be harmful (e.g., Bulíř and Hamann, 2008). Finally, vis-à-vis the effects of the aid divided by the sector to which it is provided, agricultural aid is generally seen as the type with the largest positive impact on countries' food security and 'short-term' aid as the type with the most *observable* positive impact (Bach and Matthews, 1999; Clemens *et al.*, 2004).

The hypotheses to be tested

In light of the existing research discussed in detail in the literature review (Chapter One) and briefly summarised here, I formulated a set of hypotheses to test in my empirical examinations. To refresh our memory, most importantly I expect to find that aid in general has a small but significant positive impact on countries' food security and that this impact is conditioned on the quality of governance (H1). Looking at the heterogeneous impact of aid on food security, I anticipate that multilateral aid is more beneficial for food security than bilateral aid (out of which DAC aid is expected to be more beneficial than non-DAC aid) (H2.1), that financial aid is more beneficial than food aid (H5), and that aid volatility harms food security (H6). Furthermore, I anticipate short-term aid and agricultural aid to bolster food security to a greater extent than other types of aid (H7 and H8). Regarding the differential impact of loans versus grants and of budget support versus programme/project aid on food security, given that both loans and budget support require significant cooperation of the recipient governments, I expect to discover that especially in these aid mechanisms the quality of recipients' institutions plays a significant conditioning role (H3.1 and H4).

Description of the data used

Food security – Dependent variable

As previously mentioned, no perfect cross-country measure of food security exists. Available approximations, described in Chapters One and Two, include the FAO's undernourishment prevalence ratio (the percentage of population lacking sufficient calories) and depth-of-hunger measure (indicates how much food-deprived people fall short of minimum food needs in terms of dietary energy, expressed in kilocalories) and the WHO's measures of the percentage of under-five children that are underweight (too light for their age) and those that are stunted (too

short for their age)²⁷. As Svedberg (2008) posited, none of these variables fully captures the complexity of food security but using them together bolsters the results' overall validity - i.e. if similar results are found on all of them, they are more likely to represent a real trend with regard to global food insecurity than if the different results contradict each other²⁸.

However, one should simultaneously keep in mind that although the measures are mutually highly correlated, they capture slightly different aspects of populations' nutritional status. The prevalence of undernourishment and the depth of hunger speak about whole populations while the WHO's variables only about children younger than five years. Parents generally do their utmost to feed their children adequately even if they lack the resources to do so for themselves (Dinour *et al.*, 2007) but on the other hand, children are more susceptible to nutritional deficiencies than adults. Consequently, the rates of underweight and stunted pre-schoolers generally differ from countries' overall undernourishment rates but the discrepancy might occur in either direction. On a different note, the depth of hunger and the percentage of underweight children are indicators of more immediate food insecurity than the percentage of stunted children. A sudden or severe food shortage is likely to push some people into deep hunger, leading to high caloric intensity of food deprivation and low-weighting children; on the other hand, milder but more chronic food insecurity tends to be reflected by children's shorter statures (WHO).

Development aid – Main independent variables

Data on aid flows are available from the QWIDS and CRS databases of the OECD. Data regarding aid flows in general and the divisions into bilateral and multilateral aid²⁹ and into grants and loans are available since 1990 in constant 2010 USD disbursements. Unfortunately, disbursement data divided according to the sectors where the aid was spent are available only after 2002 and known for their unreliability (Petrikova and Chadha, 2011). Therefore, in these instances I use data on committed aid, which are available from 1995 onwards.

When examining the impact of aid in general on food security I follow the majority of researchers and use a measure of aid disbursed per recipient's GDP (natural logarithm, lagged by one time period). However, since the categorisation of aid is available only for gross aid flows, instead of using only net aid receipts as most researchers do, I use data on gross aid receipts and control for repayments (following Clemens *et al.*, 2004). Moreover, as a robustness check I perform one analysis using also data on net aid per capita.

²⁷ Children are considered to be too light or too short for their age if they fall below 1.96 standard deviations from the mean in the respective categories.

²⁸ I want to warn the reader here that all the dependent variables discussed measure food insecurity, not food security, and hence finding negative signs on independent variables means that those actually strengthen food security.

²⁹ The division includes also private aid but the OECD database contains virtually no data in this category.

In investigating the impact of multilateral versus bilateral aid and grants versus concessional loans I substitute the general aid flow data with the two different measures per GDP. I do the same with respect to the divisions into DAC and non-DAC aid; into financial and food aid; into long-term, short-term, and humanitarian aid; and into agricultural, economic, social, and other aid. When dividing aid into long-term, short-term, and humanitarian categories, I follow Clemens *et al.* (2004) – defining short-term aid as budget support and programme/project aid for real-sector investment, transportation, communications, energy, banking, agriculture and industry; long-term aid as technical cooperation, research and development, investment in education, health, population control, and water sanitation, and humanitarian assistance as any emergency aid³⁰. In categorising aid into financial versus food aid and into agricultural, economic, social, and other aid I abide by the delineated groupings within the CRS database.

However, in exploring the impact of general budget support on recipients as opposed to the effect of programme and project aid, I include a ratio of aid provided as budget support together with a measure of general aid per GDP. I do so because often the amount of aid provided as budget support is very small relative to the rest of aid and if included in dollar terms its impact would be hard to detect. Similarly, when considering the effect of aid volatility on food security, I use the general aid flow per GDP along with a coefficient of variation measure, calculated for each recipient as the ratio of the mean of aid received from 1990 to 2010 to its standard deviation. A higher coefficient of variation corresponds to a greater degree of aid volatility.

Governance – Intervening variable

As a measure of governance, I have already mentioned in the previous chapter that I have considered using three different variables. My first option was to follow Burnside and Dollar (2000) and use a weighted policy index composed of budget balance, trade openness, and inflation³¹. However, while these aspects of governance appear relevant when examining the impact of aid on economic growth, they do not seem to matter to the same degree when looking at aid's effect on food security. Consequently, I explored the usage of two other variables: a widely used Polity IV's *polity2* score, a rules-based indicator, which measures countries' 'authoritarianism' on a scale from -10 to 10 and the Worldwide Governance Indicators (WGI), an outcome measure based on an aggregate expert evaluation of institutional quality (Kaufmann and Kraay, 2008)³². The downside of *polity2* is that it only evaluates the nature of countries' regimes; the downside of the WGI is its availability only after 1995. For theoretical reasons, I

³⁰ In fact, I use the terms 'humanitarian aid' and 'emergency aid' interchangeably in this study.

³¹ This index was adopted and used by a multitude of other authors, e.g. Hansen and Tarp (2001) and Easterly (2003).

³² WGI is measured on a scale -2.50 to 2.5, with higher numbers meaning better governance. The sources on which the data are based include surveys of households and firms such as the Afrobarometer, commercial business-information providers such as the Political Risk Service, non-governmental organisations and think tanks such as the Freedom House, and public sector organisations such as the World Bank and other regional banks.

chose to use the Worldwide Governance Indicators, which rate six different dimensions of governance – voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption - and thus comply most comprehensively with the OECD’s definition of ‘good governance’ cited earlier. Even though criticised by many, to date the indicators have remained the most widely used measure of cross-country governance (Arndt and Oman, 2006). However, as a robustness check I examine the impact of aid when conditioned on *polity2* and the weighted policy index as well.

Control variables

As I indicated in Chapter One, my main control variables on the macro (country) level are GDP per capita (logarithm), debt repayments, cereal yield, a dummy variable for Least-Developed Countries (LDCs), total population (logarithm), a domestic food-production index, a local food-price index and a global food-price index, a dummy variable for conflict, a trade-openness measure³³, and a measure of social and economic rights. All the control variables, just like the measures of aid and governance, are used in regressions lagged by one time period. The conflict data come from the Uppsala Conflict Data Programme and the rights data from the Cingranelli and Richards’ dataset; data on the rest of the variables were obtained from the World Bank’s World Development Indicators (WDI) and the FAO’s database. Initially I also included a measure of political and civil rights and a dummy variable for disaster; however, as both appeared consistently insignificant I excluded them from the final analysis.

Final dataset

The final dataset is an unbalanced panel, comprising data in three-year averages from 1990 to 2010 for 81 low- and middle-income countries (listed in the Appendix). The year 2010 is the last year for which data were available at the time of conducting the analysis; 1990 was chosen as the lower cut-off point due to the unavailability of data on most independent variables prior to that date. The data were averaged over three-year periods to take into account the potentially cumulative effects of aid (following e.g. Burnside and Dollar, 2000).

Summary statistics

Table 1 displays summary statistics of all the variables employed for the second time wave (1993-95)³⁴ and the last time wave (2008-10). As expected, the level of the four dependent

³³ In the robustness regressions with the weighted policy index, I exclude trade openness as it is included in the index.

³⁴ Summary statistics of the second-wave, not first, data are listed because comparatively more data were missing from the first wave.

variables – prevalence of undernourishment, depth of hunger, and percentage of underweight and stunted children under five – declined between 1993-95 and 2008-10.

Table 1. Summary statistics of all the variables utilised

	1993-1995					2008-2010				
	Obs	Mean	St. Dev.	Min	Max	Obs	Mean	St. Dev.	Min	Max
<i>Food security</i>										
Undernourishment (%)	67	21.18	16.30	0.00	64.00	66	14.51	12.95	0.00	65.00
Depth of Hunger (kCal)	67	237.2	61.3	120.0	380.0	66	213.0	52.4	120.0	350.0
Underweight (%)	40	20.80	14.72	0.70	56.70	28	18.63	11.78	2.20	41.30
Stunted (%)	40	33.62	14.49	3.70	66.50	28	27.78	12.57	7.10	43.20
<i>Development aid</i>										
ODA pg	67	0.10	0.12	0.00	0.53	66	0.07	0.09	0.00	0.35
ODA pc	67	38.03	53.56	1.65	253.07	66	43.94	43.27	1.13	229.66
Multilateral aid (share)	67	0.35	0.20	0.00	1.00	66	0.37	0.21	0.00	0.98
Concessional loans (share)	67	0.35	0.29	0.00	0.95	66	0.18	0.21	0.00	0.78
Budget support (share)	67	0.08	0.15	0.00	0.88	66	0.06	0.11	0.00	0.52
Food aid (share)	67	0.04	0.11	0.00	0.84	66	0.02	0.05	0.00	0.37
Short-term aid (share)	67	0.45	0.27	0.00	1.00	66	0.34	0.23	0.00	0.99
Long-term aid (share)	67	0.44	0.25	0.00	1.00	66	0.57	0.22	0.01	0.98
Agricultural aid (share)	67	0.07	0.09	0.00	0.64	66	0.06	0.12	0.00	0.85
Social aid (share)	67	0.32	0.24	0.00	1.00	66	0.46	0.20	0.01	0.96
Economic aid (share)	67	0.21	0.23	0.00	0.99	66	0.16	0.18	0.00	0.75
<i>Governance</i>										
WGI	67	-0.46	0.52	-1.66	1.01	66	-0.50	0.55	-1.46	1.20
Polity2	67	1.06	6.22	-9.00	10.00	66	2.71	5.98	-9.00	10.00
Policy Index	40	47.21	112.67	-578.20	158.97	66	83.24	43.09	17.47	203.27
<i>Control variables</i>										
GDP pc (PPP, 2010 USD)	67	3457	2998	358	11560	66	4720	3665	599	12752
Population (in millions)	67	64.7	197.0	0.4	1220.0	66	65.9	199.0	0.8	1320.0
Food Production Index	67	91.17	11.24	49.00	122.00	66	119.40	20.55	66.00	172.00
Emergency food aid pc	67	3.69	9.42	0.00	82.51	66	3.70	7.47	0.00	41.49
Trade Openness	67	63.30	31.10	14.93	165.61	66	79.56	35.39	25.21	199.45
Social and Economic Rights	67	7.28	3.51	0.00	13.00	66	8.40	3.09	3.00	14.00
Conflict	67	0.27	0.45	0.00	1.00	66	0.16	0.37	0.00	1.00
Local Food Prices	67	1971	1054	236	7049	66	2571	1645	470	10026
Global Food Prices	67	124.13				66	154.06			
Repayment (in millions)	67	1130	3420	0	27000	66	2610	7020	0	40000
LDC	67	0.34	0.47	0.00	1.00	66	0.30	0.50	0.00	1.00
Cereal yield	67	1955	1090	274	6499	66	2319	1419	88	7793

Source: Author's own calculations

However, the improvement in overall undernourishment rates has been more remarkable than in children's nutritional status. This finding is disappointing to some extent, as undernourishment in the first years of life carries more significant negative long-term consequences for human development than undernourishment later on.

Regarding the main independent and conditioning variables, Table 1 shows that on average, the countries examined received in 2008-2010 less aid in per GDP terms but more aid in per capita terms than in 1993-1995. Looking at the temporal evolution of the different aid types, the trend among donors has clearly been away from providing aid in loans, as budget support, and as food aid. Donors have also begun to disburse more aid to social infrastructure and to long-

term sectors at the expense of aid to agriculture, to economic infrastructure, and to short-term sectors. Interestingly, the three governance measures display a varying time trend. Whereas the WGI scores on average slightly worsened between the two waves of data examined, the policy index and the *polity2* scores improved.

Turning attention briefly to the summary statistics of the control variables utilised, most measures increased on average between the first and the last time period under study – including GDP per capita, food-production index, trade openness, local and global food prices, repayments, cereal yield, and population. It is encouraging to see that fewer countries were involved in an active conflict in 2008-2010 than in 1993-1995 as well as that the mean score on social and economic rights improved in that time frame.

Empirical methods

As I discussed in Chapter Two, data on aid and food security suffer from both autocorrelation and endogeneity. The Arellano-Bond (1991) test showed that food security data are correlated to the first order; i.e. that the food-security levels in one time period are correlated with the levels in the previous time period. Regarding endogeneity, aid can hardly be expected to be completely exogenous to food security as countries with higher insecurity levels are more likely to receive larger amounts of aid.

The common method of resolving these problems in the cross-country aid literature is to either use Two-Stage Least-Squares (2SLS) regressions or dynamic panel regressions (Clemens *et al.*, 2004; Michaelowa and Weber, 2006; Dreher *et al.*, 2008) For my primary analysis, in which I examine the impact of aid in general on food security, I use both approaches. However, first, as a baseline analysis, I present the results of Ordinary Least-Squares (OLS) regressions with fixed country effects³⁵ and year effects, which has the ability to control for bias from time-invariant unobservable characteristics. The model used is the following:

$$f_{it} = \beta_0 + \beta_1 A_{it} + \beta_2 G_{it} + \beta_3 (A_{it} * G_{it}) + \beta_4 X_{it} + \gamma_t + \varepsilon_{it}$$

where f_{it} is the level of food insecurity observed for country i in year t , A_{it} are aid receipts per GDP, G_{it} is the quality of governance, $A_{it} * G_{it}$ is the aid-governance interaction term (which represents the impact of aid on food insecurity that is conditional on governance), X_{it} are control variables, γ_t is the unobserved time effect, and ε_{it} is the error term. Time dummies are included to capture worldwide business cycles.

Second, to account for the data's endogenous nature, I analyse the data with a Two-Stage Least-Squares regression with fixed effects, using the following model:

³⁵ The Hausman test showed that fixed effects are preferable to random effects in this model.

$$(3) f_{it} = \beta_0 + \beta_1 A'_{it} + \beta_2 G_{it} + \beta_3 (A'_{it} * G_{it}) + \beta_4 X_{it} + \gamma_t + \varepsilon_{it}^f$$

$$(4) A'_{it} = \delta_0 + \delta_1 IV_{it} + \delta_2 X_{it} + \gamma_t + \varepsilon_{it}^a$$

where β_0 and δ_0 are constants, f_{it} is the level of food insecurity observed for country i in year t , A_{it} are aid receipts per GDP, G_{it} is the quality of governance, $A_{it} * G_{it}$ is the aid-governance interaction term (which represents the impact of aid on food insecurity that is conditional on governance), IV_{it} are variables that affect aid but are exogenous to undernourishment, X_{it} are other exogenous variables that affect food security and the allocation of aid, γ_t are unobserved time effects, and ε_{it}^f and ε_{it}^a are the error terms. Time dummies are included to capture worldwide business cycles.

As instruments for aid I considered using Hansen and Tarp's (2001) instruments, which include a dummy for Egypt, arms imports (t-1), policy (t-1), policy-squared (t-1), policy*lnpopulation, policy*initial GDP per capita, policy, initial GDP per capita squared, policy*aid(t-1), policy*aid-squared (t-1), and aid-squared (t-1). However, since policy, even in its lagged term, is most likely not exogenous to food security, I turned to Rajan and Subramanian's (2005) instruments instead. In their examination of the aid-growth relationship, they exploited the fact that aid tends to be extended also for non-economic reasons and as instruments used variables capturing strategic and colonial ties between aid donors and aid recipients. Modifying their example to suit my dataset, I use the following variables – three dummy variables that indicate whether the recipient country was ever a British colony, a French colony, or another European colony, the countries' performance in political and civil rights, and the number of deaths in a major disaster. The underlying logic is that donors tend to give more aid to countries with old colonial ties, with better political and civil rights records, and to countries that recently experienced disasters.

Overall, these variables account for more than 20 per cent of the donors' allocation decision and unlike policy, they are reasonably exogenous to the dependent variable. The colony variables should not be related to food security other than through aid and my initial tests suggested that neither political/civil rights nor disasters were significantly correlated with food security. Another concern is that the instruments could be correlated with governance and thereby violating the exclusion restriction underlying the instrumentation. However, the fact that the correlation coefficient between the instruments and the WGI is low (<0.2) and not statistically significant in my sample should allay this worry. The general insignificance of the Sargan tests of over-identifying restrictions and the Durbin-Wu-Hausman tests comparing the IV and OLS estimates further strengthen the instruments' validity³⁶.

As a third method, which accounts for both endogeneity and serial correlation, I use the system Generalised Method of Moments (GMM) estimator developed by Blundell and Bond

³⁶ In 2SLS regressions where the interaction term with WGI is used, I instrument for it by its multiplication with all the instrumental variables (Wooldridge, 2002)

(1998) and implemented into Stata by Roodman (2009) as the `xtabond2` command³⁷. My equation in this case is the following:

$$f_{it} = f_{it-1} + \beta_0 + \beta_1 A_{it} + \beta_2 G_{it} + \beta_3 (A_{it} * G_{it}) + \beta_2 X_{it} + \gamma_t + \varepsilon_{it}$$

where f_{it} is the level of food insecurity observed for country i in year t , f_{it-1} is the level of food insecurity observed in the previous time period ($t-1$), A_{it} are aid receipts per GDP, G_{it} is the quality of governance, $A_{it} * G_{it}$ is the aid-governance interaction term (which represents the impact of aid on food insecurity that is conditional on governance), X_{it} are control variables, γ_t is the unobserved time effect, and ε_{it} is the error term.

In the model, I correct for the first-order autocorrelation of the dependent variable and treat aid as endogenous, instrumenting for it with its own lag. The Arellano-Bond test of second-order autocorrelation and the Hansen test of the exogeneity of instruments confirm the model's validity.

When scrutinising the impact of general aid flows on food security, I report results from the OLS regressions with fixed effects, the 2SLS, and the GMM regressions. However, since it is impossible to find relevant instruments for the different types of aid that I investigate and since I consider the GMM model the most accurate one of the three, I proceed with the analyses of the heterogeneous impact of different aid modalities using only the GMM (`xtabond2`) estimator with robust standard errors³⁸.

Results with aid considered as a uniform flow

Table 2 displays results on the impact of total aid flows on food security, obtained using three distinct estimators – OLS with fixed effects, Two-Stage Least-Square, and Generalised Method of Moments regressions with three-year averaged data.

³⁷ The `xtabond2` command includes Windmeijer's (2005) finite sample correction.

³⁸ All the regressions were run with robust standard errors to control for potential heteroskedasticity.

Table 2. The effect of aid on food security and the conditioning effect of governance (FE, 2SLS, and GMM models)

MODEL	FE								2SLS								GMM							
	Undernour.		Hunger		Underweight		Stunted		Undernour.		Hunger		Underweight		Stunted		Undernour.		Hunger		Underweight		Stunted	
<i>Food insecurity</i>	-0.84	-0.41	-2.18	-0.33	-0.38	-0.60	-1.87	-0.52	-2.20	-0.43	-5.53	-2.12	-0.68	-0.03	-3.80	-3.89	-1.21	-0.80	-3.94	-4.19	-0.31	-0.23	-0.36	-0.11
ODA per GDP	2.75	1.81	2.20	0.45	0.81	2.09	2.54	1.83	4.58	0.76	5.89	0.90	0.85	0.72	4.92	3.09	1.92	2.07	2.10	2.20	1.88	1.80	1.17	0.53
Governance	-0.19	-1.61	-1.39	-1.66	-0.43	-1.37	-0.05	-1.45	-0.14	-0.16	-0.76	-1.18	-0.46	-0.05	-0.56	-0.40	-0.44	-0.77	-0.85	-1.32	-0.19	-0.39	-0.05	-0.42
ODA*governance	1.16	2.72	2.33	1.79	3.85	1.80	0.20	1.72	0.95	0.85	1.11	1.58	2.46	0.02	1.90	1.24	1.96	2.23	2.31	2.78	1.19	1.85	0.90	2.18
		-0.10	-0.55			-0.09	-0.17			-0.01	-0.06			-0.03	-0.02			-0.04	-0.08			-0.02	-0.04	
		2.82	2.12			1.94	1.69			2.75	2.95			0.43	1.74			2.24	2.46			0.58	1.94	
GDP(PPP) pc	-5.74	-5.50	-16.77	-16.19	-2.98	-2.98	-4.59	-4.59	-7.96	-8.50	-24.42	-29.37	-4.45	-4.67	-5.98	-4.04	-7.50	-7.17	-26.04	-27.97	-3.94	-3.36	-7.55	-7.22
	1.73	1.67	1.68	1.60	2.07	2.12	1.95	1.96	2.88	3.44	2.21	3.29	1.87	1.78	2.88	1.55	2.27	2.70	2.37	2.81	2.33	2.61	3.89	3.09
Population	-11.90	-12.74	-41.98	-44.60	-10.66	-10.66	-9.61	-9.48	-7.54	-8.70	-36.93	-41.26	-5.70	-6.73	-4.51	-2.39	-1.58	-1.62	-1.55	-2.50	0.36	0.31	-1.44	-1.29
	3.31	3.29	2.81	3.00	2.84	2.81	0.02	0.02	2.87	2.58	3.35	2.17	1.97	1.98	1.24	0.46	2.13	2.35	1.91	2.75	0.45	0.35	1.86	1.63
Food production index	-0.05	-0.05	-0.08	-0.07	-0.03	-0.03	-0.03	-0.03	-0.07	-0.05	-0.81	-0.27	-0.05	-0.05	-0.05	-0.07	-0.03	-0.02	-0.11	-0.10	-0.01	-0.01	0.00	0.00
	1.95	1.97	1.98	1.96	2.51	2.52	1.72	1.65	3.69	2.54	1.71	1.79	2.88	2.54	1.95	2.20	2.37	2.18	2.10	2.17	1.98	1.69	0.33	0.47
Trade openness	0.00	0.00	0.03	0.02	-0.03	-0.03	-0.03	-0.03	0.00	0.00	0.06	0.10	-0.03	-0.02	-0.02	-0.01	0.00	-0.01	-0.03	-0.03	0.00	0.00	-0.02	-0.02
	0.05	0.15	0.27	0.88	2.26	2.26	0.85	0.87	0.01	0.29	1.16	1.63	1.79	1.01	1.08	0.61	0.21	1.01	1.77	1.94	0.39	0.32	0.19	1.88
Social and economic rights	0.03	0.04	0.04	0.05	-0.02	-0.02	0.06	0.05	0.02	-0.03	0.02	-0.24	-0.03	-0.03	0.06	0.11	-0.13	-0.13	-0.26	-0.32	-0.04	-0.03	-0.07	-0.09
	0.56	0.84	0.25	0.31	0.45	0.46	1.15	1.09	0.36	0.35	0.02	0.83	0.52	0.50	0.83	1.22	1.29	1.28	1.84	2.31	0.78	1.16	0.23	0.92
Local food prices (xth)	-0.01	-0.01	-0.03	-0.03	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.03	0.00	0.00	0.00	0.00	-0.28	-0.47	-0.64	-1.50	-0.20	-0.12	-0.08	-0.12
	1.69	1.68	1.85	1.72	0.52	0.52	0.37	0.37	3.05	2.99	2.78	2.85	0.37	0.10	0.55	1.04	0.63	1.19	2.46	2.97	0.50	1.37	0.35	1.23
World food price index	0.01	0.02	0.06	0.06	0.01	0.01	0.01	0.01	0.02	0.02	0.07	0.09	0.02	0.02	0.01	0.00	0.01	0.01	0.07	0.09	0.01	0.01	0.00	0.00
	1.61	1.66	1.78	1.65	1.83	1.82	0.36	0.36	1.58	2.58	2.06	2.70	2.69	1.88	1.07	0.02	1.12	1.24	1.82	2.04	1.17	1.07	0.93	0.83
<i>N of observations</i>	358				212				340				240				358				212			
<i>N of groups</i>	82				62				81				67				82				62			
<i>R2 within</i>	46%	43%	30%	23%	52%	51%	34%	31%	38%	38%	29%	32%	46%	39%	35%	39%								
<i>R2 (first stage regression)</i>									24%	24%	22%	22%	24%	25%	22%	23%								
<i>DWH test (Prob>z)</i>									0.740	0.966	0.360	0.710	0.069	0.064	0.160	0.260								
<i>Sargan test (Prob>χ^2)</i>									0.808	0.731	0.370	0.360	0.320	0.324	0.450	0.440								
<i>AR2 test (Prob>z)</i>																	0.170	0.132	0.687	0.827	0.249	0.280	0.470	0.927
<i>Hansen test (Prob>χ^2)</i>																	0.774	0.103	0.242	0.428	0.946	0.804	0.838	0.816

Regressions were run with robust standard errors and time dummies. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level. Regressions were also controlled for the following un-displayed control variables: conflict, LDC status, cereal yield, and repayments.

The effect of aid on food security and the conditioning role of governance

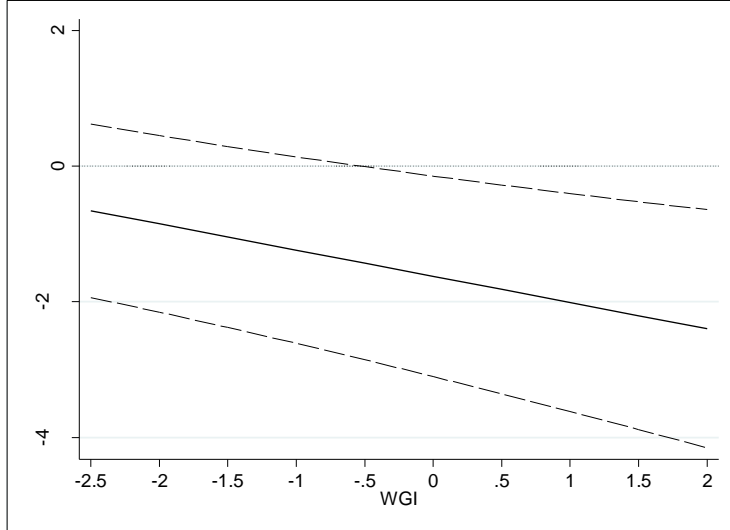
Aid is consistently negative (aka, supportive of food security) in all three sets of regressions employed. When using the 2SLS estimator, the aid term appears significant in half the regressions; with the OLS and GMM estimators it is significant in three quarters of cases. The somewhat lower significance of the 2SLS regressions can likely be attributed to the relative weakness of the instruments employed.

The size of the impact varies quite widely based on the model used but overall, it seems that an increase of aid per GDP by one decade (=one logarithm) leads to a reduction in countries' undernourishment rates by 1 to 2 percentage points and in the proportion of underweight children by 0.2 to 0.6 percentage points. Depth of hunger is in this manner reduced by somewhere between 2 and 5 points while child stunting by 0.5 to 3 percentage points. In spite of the variation in the size of the coefficients, however, taken together the results lend quite solid support to the hypothesis (H1) that aid has a significantly positive impact on food security.

Similar to aid, the governance variable is negative and significant in most regressions. This result suggests that, as I expected, countries with better governance -or, more accurately, with higher WGI scores- suffer from lower levels of food insecurity. However, the size of the effect is relatively small. With a one-unit increase in the WGI score, undernourishment prevalence falls on average by 0.4 to 1.6 percentage points and the rates of underweight and stunted children by 0.4 to 1.4 percentage points. Hence, even if a country went from the worst-rated governance possible (WGI of -2.5) to the best-rated one (WGI of 2.5), its undernourishment levels would not decrease on average by more than 2 to 8 percentage points.

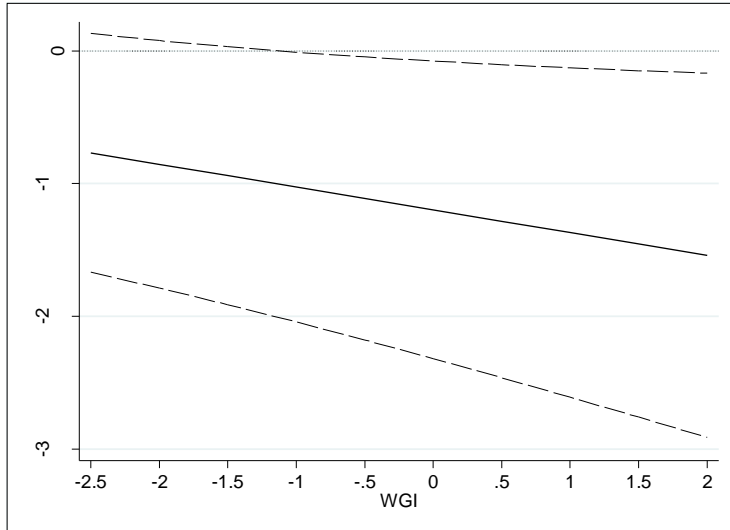
Looking at the aid-governance term, it is also negative and mostly significant – with the exception of regressions that use underweight children as the dependent variable. This outcome indicates that aid is likely to influence food security more positively in countries with better governance and bolsters the hypothesis that aid effectiveness is conditioned on the quality of recipients' institutions and policies. Graphs in Figure 1 and in Figure 2 show the interactive relationship graphically, for undernourishment prevalence and for the proportion of under-five children that are stunted.

Figure 1. Marginal effect of aid on undernourishment (90% c.i.)



Source: Author's own graphic

Figure 2. Marginal effect of aid on stunting (90% c.i.)



Source: Author's own graphic

The marginal effects, obtained with the GMM regressions, indicate that as WGI scores increase, the positive effect of aid on recipients' food security increases in strength and significance as well. In fact, in countries with WGI scores lower than -1, aid appears to have no statistically measurable impact on food security, whereas in countries towards the high end of the WGI spectrum, a one-decade increase in aid per GDP leads to the reduction of stunting by more than 1 percentage point and of undernourishment by more than 2 percentage points.

Table 3. Disaggregating the governance term

<i>Food insecurity</i>	Undernourished		Stunted	
ODA per GDP	-1.19	-0.93	-0.39	-0.290
	2.17	1.98	2.41	1.93
Voice and accountability	0.10	-0.53	1.36	1.12
	0.43	0.34	1.57	1.35
Political stability	-2.23	-3.12	-2.44	-2.61
	1.66	1.75	1.91	1.99
Government effectiveness	-0.08	-0.48	0.85	0.97
	0.25	0.20	0.80	0.98
Regulatory quality	-2.06	-3.61	-0.82	-1.26
	1.78	2.27	1.06	2.32
Rule of law	0.13	0.30	0.24	1.06
	0.47	0.15	0.25	1.27
Control of corruption	-2.17	-3.53	-1.70	-1.83
	1.36	1.68	1.99	2.50
Voice and accountability*ODA		-0.04		0.16
		0.43		0.69
Political stability*ODA		-0.17		-0.53
		1.78		2.05
Government effectiveness*ODA		-0.03		0.11
		0.23		0.73
Regulatory quality*ODA		-0.20		-0.78
		2.27		2.43
Rule of law*ODA		0.01		0.15
		0.05		0.52
Control of corruption*ODA		-0.22		-1.07
		1.72		2.42
<i>N of observations</i>	358		212	
<i>N of groups</i>	82		62	
<i>AR2 test (Prob>z)</i>	0.335	0.265	0.253	0.414
<i>Hansen test (Prob>χ2)</i>	0.982	0.631	0.948	0.997

Regressions were run using the GMM estimator, with robust standard errors, time dummies and the same control variables as regressions in Table 2. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

In order to explore the aid-governance-food security interactive relationship even further and find out which specific aspects of governance condition the positive effects of aid the most, in Table 3 I disaggregated the Worldwide Governance Index into its six components – voice and accountability, political stability and the absence of violence, government effectiveness, regulatory quality, the rule of law, and control of corruption. To define each element at least briefly, voice and accountability measures the extent to which countries' citizens are able to participate in selecting their government along with the freedom of expression, association, and media. The political-stability component models the likelihood of countries being destabilised by violence including terrorism whereas government effectiveness scores the quality of public services, the capacity of the civil service, its independence, and the quality of policy formulation. Regulatory quality stands for the ability of the government to provide policies and regulations

supportive of private-sector development. The rule of law captures the extent to which people have confidence and abide by the countries' rules, including the quality of contract enforcement, property rights, the police, and the courts. Finally, control of corruption gages to what extent public power in countries is exercised for private gains³⁹.

The regressions in Table 3 only looked at the undernourishment and stunting measures of food insecurity as the two measures of food insecurity that appeared to be most influenced by the quality of governance and produced quite similar results. Overall, they suggest that political stability, regulatory quality, and control of corruption are the most important governance aspects in this regard, with voice and accountability, government effectiveness, and the rule of law playing seemingly no significant role in ensuring aid's positive effect on food security. If the coefficients from the interactions between the different governance aspects and aid were to be taken at their face value, then it would appear that the control of corruption has the largest conditioning impact, followed by regulatory quality and political stability. Nevertheless, as I touch on further in the Discussion section, the different components of the WGI have been accused of being overly mutually correlated, and hence drawing on the basis of their data too specific conclusions could be problematic (e.g. Langbein and Knack, 2010).

The effect of control variables

Briefly turning attention to the effect of control variables on food security, the most consistently significant appear to be GDP per capita, population, and food production, all boosting food security. I expected this result regarding GDP per capita and food production but was somewhat surprised by such a strong and positive association between food security and population, as existing literature – except for my own previous study (Petrikova, 2013) - did not hint at its existence. In further research, it would be interesting to investigate why countries with larger populations, holding other things constant, have fewer problems with keeping their inhabitants well-nourished than countries with smaller populations.

Other variables with a positive, although not consistently significant, impact on food security are trade openness, local food prices, cereal yield, and social and economic rights. Global food prices, repayments, being in a conflict, and being an LDC all have a negative effect on food security but only in the case of global food prices is the effect steadily significant.

Most of the relationships discovered between control variables and food security were predicted by theory; one exception is the different direction of the food security-food prices association based on whether the prices are local or global. According to my findings, higher global food prices reduce food security while higher local food prices bolster it. The underlying

³⁹ This information comes from <http://info.worldbank.org/governance/wgi/index.aspx#doc>, Kaufmann et al. (2007), and Kaufmann and Kraay (2008).

explanation could be that in developing countries, often the most food insecure people are small farmers, who benefit from a rise in prices for which they can sell their produce. However, they are simultaneously harmed by the increase in global food prices as they tend not to be fully self-sufficient in their production and buy some imported food from stores. The inverse relationship also suggests the discrepancy between global and local food prices and implies the difficulty with which global prices translate into local ones (e.g. Benson *et al.*, 2008).

Comparing the different regression models

Table 2 clearly shows that many of the regressions used different sample sizes. Because the data available on underweight and stunted children are significantly less numerous than data on the other two dependent variables, I chose not to restrict them to the same samples. Moreover, each of the three estimators worked with a slightly different set of control variables (GMM lagged food insecurity terms, 2SLS used instrumental variables), which led to minor discrepancies in the number of observations as well. Nevertheless, although the results produced by the different statistical estimators and on the distinct dependent variables are not identical, their main differences are in the size of their coefficients, not in their significance or in their direction. Consequently, the multitude of methods used to examine the effect of aid on food security strengthens the findings' validity. However, in order to further investigate the model's fragility to changing specifications, in the following section I perform a series of additional robustness tests.

Sensitivity analysis of results

The first sensitivity test involves repeating the three different regression models – OLS with fixed effects, 2SLS, and GMM – with annual data. The results, included in the Appendix (Tables 8-10), are very similar to those obtained with three-year averaged data. Aid and governance are slightly less significant while the aid-governance interaction is slightly more significant, but overall the findings still provide support to Hypothesis 1 (H1), that aid strengthens food security and that this effect is influenced by the quality of aid recipients' governance.

Results from the remainder of the sensitivity tests are all presented in Table 4⁴⁰. In the second sensitivity test, I substituted the WGI variable with the policy index used by Burnside and Dollar (2000) and with *polity2* from the Polity IV project. The results, in the upper part of Table 5, show that the substitution does not majorly alter the general conclusions reached above either. Aid still seems to strengthen the recipients' food security and the impact is stronger in countries with better/more democratic institutions and policies.

⁴⁰ All sensitivity tests except for the first one were run using GMM regressions with three-year averaged data.

It is interesting to note here that even macroeconomic policies (the ones in the policy index) that are seemingly unrelated to food and nutrition issues improve the positive effect of aid on food security. The underlying reason is probably more complex but essentially it implies that countries with lower inflation, greater openness to trade, and better budget balance are better positioned to make good use of the aid that they receive in strengthening food security. The fact that *polity2* improves the positive impact of aid on food security as well is less confounding, as authoritarian regimes (=worse I scores) can also - based on theory - be expected to deter the flow of aid to intended recipients more than democratic regimes.

The third sensitivity check pertains to the fact that throughout the analyses I use data on gross aid rather than on the more commonly utilised net aid. I do so because data on aid categorisation are available only for gross aid and as an attempt at remedy I control for repayments. Nevertheless, in Table 4 I examine the impact of aid on food security using data on net aid per capita. The results show that the difference is not overwhelming. The coefficients do vary but the broad inference remains the same - aid reinforces food security and its effect on food security generally seems to be conditioned on governance

In the final robustness check, I introduce an aid-squared variable into the regressions, to examine whether aid in its positive impact on food security has diminishing returns as it does in its effect on growth (e.g. Rajan and Subramanian, 2008). The aid-squared coefficients are indeed significant and positive, corroborating the claim of diminishing returns. However, the core results do not change dramatically - ODA per GDP still appears negative and significant and the interaction variable between aid and governance is negative and significant with undernourishment as food insecurity.

Overall, the sensitivity tests have achieved two things. First, they have strengthened the robustness of the finding that aid flows have a generally positive impact on food security and that this impact is likely conditioned on the quality of recipients' institutions and policies. Second, they have proven that the results attained via the GMM regressions with gross aid per GDP and WGI as governance do not significantly differ from results obtained using different estimators or different specifications of aid and governance. In this manner, they provide support to my decision to proceed with the remaining empirical investigations using only one model.

Table 4. Sensitivity analysis: Substituting WGI with polity 2 and the policy index, ODA per GDP with net ODA per capita, and including aid squared

	Undernourished		Hunger		Underweight		Stunted		Undernourished		Hunger		Underweight		Stunted	
	<i>with polity2</i>								<i>with policy index</i>							
ODA per GDP	-1.07	-0.61	-2.00	-1.85	-0.39	-0.15	-0.32	-0.46	-0.97	-0.94	-0.69	-0.71	-0.28	-0.26	-0.13	-0.13
	2.17	1.76	5.14	2.46	2.13	1.11	2.09	2.51	2.17	2.11	2.18	1.04	1.92	1.95	1.74	1.74
Governance	0.14	-1.01	0.59	-0.18	0.08	-0.38	0.02	0.17	-3.78	-2.24	-9.28	-7.37	-0.65	1.87	-1.31	-1.15
	1.46	4.12	2.70	1.28	0.98	1.77	0.13	1.16	2.14	1.91	3.29	2.51	1.72	0.75	2.61	1.75
ODA*governance		-0.07	-0.04			-0.03	-0.13			0.00	0.00			0.00		0.00
		2.97	1.67			1.32	4.25			2.17	2.43			0.56		0.27
<i>N of observations</i>	406				253				220				124			
<i>N of groups</i>	76				56				68				45			
<i>AR2 test (Prob>z)</i>	0.136	0.111	0.14	0.14	0.117	0.118	0.701	0.901	0.135	0.23	0.113	0.119	0.113	0.742	0.381	0.382
<i>Hansen test (Prob>χ²)</i>	0.948	0.859	0.872	0.828	0.888	0.912	0.977	0.981	0.945	0.975	0.971	0.982	0.971	0.995	0.993	0.992
	Undernourished		Hunger		Underweight		Stunted		Undernourished		Hunger		Underweight		Stunted	
	<i>with net ODA per capita</i>								<i>with ODA per GDP squared</i>							
ODA per GDP									-5.92	-5.75	-9.76	-12.51	-3.56	-3.56	-3.30	-0.59
									2.24	2.08	2.75	3.29	2.88	2.96	2.70	1.40
Net ODA per capita	-0.78	-1.59	-0.54	-3.55	-0.33	-0.13	-0.66	-0.28								
	2.33	3.09	2.01	4.95	1.72	1.27	0.99	1.67								
ODA per GDP squared									2.52	2.44	3.75	4.49	1.59	1.60	0.51	0.60
									2.70	3.56	2.14	2.39	2.75	2.70	1.71	1.77
Governance	-0.36	0.55	-0.54	-1.51	-0.11	-0.11	-0.03	-0.20	-0.35	-0.85	-0.60	-2.42	0.10	0.26	-0.03	-0.12
	1.68	0.99	1.83	2.75	1.55	1.47	1.18	1.71	1.81	1.85	0.91	1.74	1.09	0.64	1.17	0.14
ODA*governance										-0.35		-0.10		0.01		-0.14
										3.29		1.92		1.17		2.08
Net ODA*governance		-0.33	-0.77			-0.08		-0.07								
		1.87	2.12			1.81		1.56								
<i>N of observations</i>	358				212				358				212			
<i>N of groups</i>	82				62				82				62			
<i>AR2 test (Prob>z)</i>	0.116	0.137	0.129	0.162	0.129	0.156	0.962	0.989	0.111	0.11	0.118	0.196	0.141	0.187	0.985	0.906
<i>Hansen test (Prob>χ²)</i>	0.954	0.893	0.903	0.904	0.903	0.946	0.981	0.965	0.796	0.721	0.956	0.863	0.896	0.918	0.986	0.976

Regressions were run with robust standard errors, time dummies, and the same control variables as regressions in Table 2. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

The impact of distinct aid modalities on food security

Consequently, I analyse the impact of the different types of aid on food security using only GMM regressions with three-year averaged data. I do not use 2SLS regressions in this part of the investigation because finding relevant instruments for the different aid modalities would be impossible. Neither do I use OLS regressions with fixed effects because I consider the GMM estimator more accurate at modelling the relationship between aid and food security.

Aid divided by the type of donor

Table 5 presents the results of regressions first with aid divided into bilateral and multilateral⁴¹ and second with bilateral aid divided into DAC and non-DAC.

Table 5. The impact of who gives aid on recipients' food security

	Undernourished		Hunger		Underweight		Stunted	
Bilateral aid	-0.37	-0.86	-0.82	-3.32	-0.31	0.21	0.13	0.77
	1.88	2.58	2.57	3.35	1.96	0.58	1.65	1.23
Multilateral aid	-0.60	-0.68	-2.22	-2.93	-2.11	-2.56	-0.21	-1.66
	2.17	2.19	4.52	4.67	3.41	3.49	1.81	2.05
Governance	-0.41	-6.11	-0.66	-1.67	0.16	-0.02	-0.01	-0.04
	1.88	3.52	2.22	3.65	1.45	0.24	0.36	0.29
Bil. aid* governance		-0.36		-0.68		-0.02		-0.24
		2.58		2.17		1.37		2.05
Multi. aid*governance		0.05		-0.86		-0.11		-0.02
		1.48		4.28		1.56		0.43
<i>N of observations</i>	356				240			
<i>AR2 test (Prob>z)</i>	0.177	0.082	0.161	0.164	0.135	0.160	0.402	0.558
<i>Hansen test (Prob>χ²)</i>	0.950	0.911	0.200	0.844	0.942	0.936	0.973	0.961
	Undernourished		Hunger		Underweight		Stunted	
DAC aid	-0.09	-0.11	-0.44	-0.43	-0.10	-0.07	0.00	-0.04
	1.83	2.31	1.96	1.97	1.71	2.29	0.91	0.84
Non-DAC aid	-0.08	-0.09	-0.19	-0.27	0.02	0.02	0.02	0.04
	1.96	1.97	1.64	1.79	0.98	0.91	1.14	1.40
Governance	-0.04	-0.72	-0.14	-0.97	-0.03	-0.18	-0.05	-0.21
	2.22	1.85	2.46	1.97	0.54	1.53	2.39	1.66
DAC aid* governance		-0.34		-0.42		-0.21		-0.25
		1.87		1.95		1.53		2.08
Non-DAC aid*governance		-0.81		-0.84		-0.67		-0.69
		2.08		4.12		2.58		2.63
<i>N of observations</i>	356				240			
<i>AR2 test (Prob>z)</i>	0.566	0.293	0.843	0.352	0.619	0.428	0.684	0.371
<i>Hansen test (Prob>χ²)</i>	0.933	0.875	0.959	0.902	0.963	0.895	0.912	0.878

Regressions were run with robust standard errors, time dummies, and the same control variables as regressions in Table 2. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

On its own, multilateral aid is uniformly negative (aka, reducing food insecurity) and significant, more consistently so than bilateral aid. On the other hand, the interaction of governance with

⁴¹ In the end I do not examine private aid as the QWIDS database contains virtually no relevant data.

bilateral aid appears negative and significant more frequently than the interaction with multilateral aid.

One can thus deduce that while multilateral aid confers a more consistently positive effect on food security than bilateral aid, the quality of governance matters more in ensuring the positive impact of bilateral aid. The probable underlying reasons are that bilateral donors distribute aid for more political reasons than multilateral donors and that multilateral donors practice greater supervision of their aid implementation, and therefore a higher quality of institutions and policies is required to guarantee a positive effect of bilateral aid.

Turning attention to the division of bilateral aid into that provided by DAC donors and that by non-DAC donors (while still controlling for multilateral aid), the lower part of Table 5 demonstrates that both types of aid influence food security positively but only DAC aid is consistently significant in this effect. The finding on DAC aid is not surprising as bilateral aid – predominantly constituted by DAC donors – had a generally positive effect. Non-DAC donors were theoretically expected to be less responsible in their aid giving than DAC donors and thus by extension I expected their aid to also have a less positive impact on recipients' food security. While the lower significance of the non-DAC aid term might be a validation of this hypothesis, it could also be caused by the current paucity of data on non-DAC donors. Non-DAC aid also appears to be conditioned more consistently on governance than DAC aid. This result is again not too surprising given that in general, aid provided by non-DAC donors faces fewer conditions in how and to whom it can be disbursed and hence is likely to be used more efficiently by countries with a better quality of institutions and policies in place.

Aid divided by how it is disbursed

Table 6 displays the results of regressions examining how the way in which aid is disbursed affects its impact on food security. The upper left part of the table looks at aid disbursed in grants versus in concessional loans. Aid in grants is negative and significant – aka, supportive of food security - in all regressions while aid in loans is negative and significant in fewer than half the regressions. Conversely, the loans-governance interaction term is significant more frequently than the grants-governance term. These findings suggest that grants have a more consistently positive effect on food security than concessional loans, at least in the relatively short run (three to six years) examined. Furthermore, confirming one of my original hypotheses, the quality of governance plays a larger role in ensuring the positive effect of loan aid than that of grant aid.

Table 6. The impact of *how* aid is provided on recipients' food security

	Undernourished				Hunger				Underweight				Stunted			
	Undernourished		Hunger		Underweight		Stunted		Undernourished		Hunger		Underweight		Stunted	
Grants/Financial aid	-3.32	-2.64	-5.99	-9.98	-0.15	-0.31	-0.26	-0.85	-0.71	-0.42	-1.71	-1.42	-0.25	-0.73	-1.10	-0.59
	3.29	2.38	2.34	2.41	1.95	2.08	2.12	3.09	1.91	1.73	2.21	2.48	2.41	3.27	3.28	2.54
Concessional loans/Food aid	0.12	0.68	1.25	3.32	-0.04	-0.17	-0.36	-0.38	0.06	-0.09	-0.63	-0.08	-0.15	0.05	-0.14	-0.02
	0.35	1.32	0.95	1.66	0.98	1.68	1.96	2.46	1.25	1.53	2.31	0.33	1.72	0.59	1.41	0.22
Governance	-0.39	-4.79	-0.88	-0.94	0.31	-0.51	-0.03	-0.08	-0.54	-0.84	-1.00	-2.73	-0.10	0.00	-0.07	-0.26
	3.81	1.67	1.78	1.69	1.72	0.84	0.01	1.82	0.94	2.31	2.29	3.09	1.18	0.01	1.06	0.21
Grants*gov./Fin. aid*gov.		-0.33		-1.39		0.01		-0.01		-0.08		-0.07		-0.09		-0.10
		1.71		1.61		0.23		1.16		1.72		1.11		1.59		1.84
Loans*gov./Food aid*gov.		-0.28		-1.45		-0.04		-0.02		-0.08		-0.14		0.01		-0.07
		1.91		1.68		2.10		1.72		1.96		2.88		0.58		1.98
<i>N of observations</i>	362				230				271				188			
<i>AR2 test (Prob>z)</i>	0.059	0.165	0.172	0.19	0.21	0.156	0.984	0.994	0.107	0.096	0.152	0.126	0.09	0.137	0.825	0.598
<i>Hansen test (Prob>χ²)</i>	0.262	0.919	0.899	0.951	0.963	0.935	0.985	0.982	0.341	0.508	0.954	0.819	0.948	0.935	0.968	0.994
	Undernourished				Hunger				Underweight				Stunted			
	Undernourished		Hunger		Underweight		Stunted		Undernourished		Hunger		Underweight		Stunted	
ODA per GDP	-0.72	-0.69	-3.57	-3.80	-0.21	-0.20	-0.08	-0.09	-1.16	-1.13	-4.15	-4.73	-0.37	-0.28	-0.04	-0.02
	1.80	1.72	2.18	2.26	1.79	1.75	1.09	1.14	1.98	1.95	2.75	3.29	1.76	1.70	0.27	0.14
GBS (share)/Volatility	5.29	8.87	25.33	48.63	5.73	5.83	-1.73	7.34	2.07	1.07	9.39	3.69	0.26	0.96	10.54	15.22
	1.48	1.82	1.96	2.65	1.53	1.59	0.93	1.41	1.82	1.71	2.58	1.99	0.02	0.38	3.29	4.15
Governance	-0.20	-0.16	-0.71	-0.40	0.12	0.11	-0.03	-0.03	-0.41	-0.51	-0.75	-1.67	-0.11	-0.10	-0.06	-0.11
	0.29	0.09	0.00	0.04	0.58	0.58	0.67	0.94	0.48	0.35	1.78	2.75	0.40	0.35	1.01	2.03
GBS*gov./Volatility*gov.		-1.76		-14.40		-0.22		-0.02		1.11		0.75		-0.16		-2.55
		1.78		3.29		1.67		0.90		3.09		2.81		2.54		3.85
<i>N of observations</i>	340				230				336				230			
<i>AR2 test (Prob>z)</i>	0.101	0.216	0.145	0.158	0.15	0.148	0.908	0.939	0.161	0.142	0.133	0.079	0.132	0.156	0.839	0.908
<i>Hansen test (Prob>χ²)</i>	0.319	0.306	0.190	0.959	0.957	0.960	0.986	0.987	0.181	0.814	0.889	0.889	0.928	0.941	0.963	0.951

Regressions were run with robust standard errors, time dummies, and the same control variables as regressions in Table 2. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

The upper right part of Table 6 presents results vis-à-vis the different impact of financial versus food aid. Financial aid seems to confer a considerably more positive effect on food security than food aid, with negative coefficients and significant p-values in all eight regressions as compared to food aid's significance in two out of eight. The aid-governance interaction terms are not particularly informative in this case, significant for financial aid in two out of four regressions and for food aid in three. One can hence conclude that while better governance most likely improves the impact on food security of both financial and food aid, only financial aid strengthens recipients' overall food security, at least in the short run⁴².

The lower left part of Table 6 focuses on the impact of budget support as opposed to that of programme/project aid and displays the ratio of aid disbursed as budget support as largely positive but insignificant. Nevertheless, the interaction variable of the budget-support ratio and governance is negative and significant in most regressions where it is included. The results thus imply that while food security is not widely affected by whether aid is implemented through projects or transferred to the recipient governments' accounts, in countries with better institutions budget support has the ability to bolster food security more than in countries with worse institutions.

Finally, the lower right part of Table 6 explores the effect of aid volatility on food security and its interaction with the quality of governance. The results show that aid volatility, not unexpectedly, has a negative impact on food security, as its coefficients appear negative and significant in three quarters of the regressions. The findings on the interaction term between volatility and governance are more confusing. In all four regressions, they are significant – however, in two they are positive (aka, with a negative impact on food security) while in two they are negative (with a positive impact on food security). This outcome indicates most likely that the influence of governance on the impact of aid volatility on food security is not singular but could go in both directions. Countries with better governance could be in a better position to deal with aid volatility but they are perhaps simultaneously those countries that are more deeply involved in development partnerships with their donors and thus aid volatility could have a more detrimental effect on their economy (and in turn on their food security).

Aid divided by where it flows

Table 7 looks at the heterogeneous effects of aid on food security when classified by the sector to which it is provided. The upper part of the table presents results of regressions that compare the impact of aid divided into long-term, short-term, and humanitarian. Unexpectedly,

⁴² That is not to say that food aid does not have an important role to play in famines and other emergency situations.

long-term aid is uniformly significant and negative, while emergency aid only sometimes and short-term aid not at all.

Table 7. The impact of where aid is provided on recipients' food security

	Undernourished		Hunger		Underweight		Stunted	
Longterm aid	-3.39	-2.61	-0.35	-1.23	-3.48	-1.38	-0.39	-1.05
	2.81	2.24	2.18	3.28	3.15	1.74	1.92	2.27
Shortterm aid	0.10	0.96	-0.12	-0.17	0.08	-0.38	-0.15	0.13
	1.36	1.42	1.28	1.49	0.89	0.85	1.18	0.84
Humanitarian aid	0.09	-0.32	0.05	-0.19	0.09	-1.17	0.10	-0.13
	1.55	1.38	0.95	1.74	1.19	2.24	1.12	1.58
Governance	-0.40	-0.70	-0.14	-0.11	-2.93	-1.35	-0.53	-1.06
	0.70	1.68	1.77	1.91	3.31	3.32	2.33	1.82
Longterm aid*governance		-0.12		-0.52		0.00		-0.07
		2.30		2.97		0.08		2.11
Shortterm aid*governance		-0.12		-0.68		-0.01		-0.07
		2.29		3.29		0.42		2.06
Humanitarian aid*governance		-0.09		-0.14		0.02		-0.01
		1.71		2.09		1.13		0.57
<i>N of observations</i>	325				325			
<i>AR2 test (Prob>z)</i>	0.172	0.151	0.169	0.830	0.167	0.177	0.158	0.808
<i>Hansen test (Prob>χ2)</i>	0.979	0.808	0.976	0.970	0.987	0.656	0.940	0.961
	Undernourished		Hunger		Underweight		Stunted	
Agri aid	0.09	0.09	0.38	0.04	0.07	-0.16	0.34	0.29
	1.48	1.21	0.99	0.40	0.76	1.27	1.63	1.52
Social aid	-1.77	-0.70	-1.98	-1.80	-0.26	-0.15	-0.36	-0.27
	2.88	1.37	2.97	2.65	1.90	0.86	1.85	1.69
Econ aid	-1.67	-1.17	-0.98	-0.35	-0.31	-0.82	-0.20	-0.19
	2.35	2.11	1.09	0.65	0.59	1.27	1.69	1.55
Other aid	0.06	-0.07	0.40	-1.09	-0.30	-0.01	-0.11	-0.51
	0.15	0.74	0.90	1.70	2.70	0.06	0.77	1.61
Governance	-0.43	-1.96	-0.93	-7.46	-0.08	-0.28	-0.04	-0.73
	1.97	2.48	2.39	2.08	2.17	0.41	1.15	0.91
Agri aid*governance		-0.04		-0.35		-0.06		0.03
		1.70		3.29		2.18		0.54
Social aid*governance		0.02		-0.04		0.01		-0.10
		1.14		0.61		1.07		1.06
Econ aid*governance		0.01		-0.63		-0.16		-0.05
		0.14		2.81		2.29		3.32
Other aid*governance		-0.19		-0.51		0.08		-0.06
		2.88		2.54		1.37		0.87
<i>N of observations</i>	325				228			
<i>AR2 test (Prob>z)</i>	0.08	0.232	0.19	0.163	0.134	0.167	0.959	0.977
<i>Hansen test (Prob>χ2)</i>	0.83	0.844	0.883	0.902	0.976	0.988	0.979	0.982

Regressions were run with robust standard errors, time dummies, and the same control variables as regressions in Table 2. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

The aid-governance interaction term is similarly significant for both long-term and short-term aid. These results suggest that long-term aid strengthens food security generally whereas short-term aid only in countries with better governance, at least in the three-to-six-year window after the aid's disbursement. Clemens *et al.* (2004), who used this aid typology, found only short-term aid to have a discernibly positive effect on growth in this time horizon. Thus, the impact of aid on food security differs from that on growth in this regard, suggesting that the positive effect of short-term aid on growth fails to reach the most vulnerable, food insecure sections of the society in the timeframe examined.

On the other hand, the positive impact of humanitarian aid should be felt immediately, especially with regard to certain types of food insecurity. Indeed, emergency aid seems to reduce the depth of hunger and the percentage of underweight children, the two most immediate measures of food insecurity in my study. The fact that it does not strengthen the other two dependent variables – the prevalence of undernourishment and stunting - indicates that, unsurprisingly, humanitarian aid cannot serve as an effective long-term tool for combating food insecurity.

Turning attention to the lower part of Table 7, one that compares the effects of agricultural, social, economic, and other aid, social aid is most consistently significant while agricultural aid, despite expectations, is not significant in any regression. The first finding, that social aid bolsters food security, is interesting yet not completely unforeseen. This category includes aid intended to improve health services, encourage population control, and improve water and sanitation and as such was anticipated to strengthen food security at least to some extent. The more surprising finding is with regard to agricultural aid, which I expected to have the most significant positive effect of the four types of aid and discovered none. This lack of significance does not imply that agricultural aid cannot play a meaningful role in strengthening food security, given that the contrary has often been proven on the micro level (e.g. IYCN, 2011). Instead, the more likely explanation is that not *all* aid to agriculture strengthens food security, a suspicion reinforced by the fact that agricultural aid is also the type of aid whose influence is most significantly conditioned on governance.

Moving to a slightly different topic, all the results presented offer an insight also into the different measurements of food security utilised. Throughout the tables, depth of hunger appears significant in its relationship with aid most consistently, followed by the prevalence of undernourishment, the rate of children that are underweight, and the rate of children that are stunted. Moreover, the depth of hunger and underweight variables appeared more frequently significant in relationship with food aid and other types of emergency aid. The greater overall significance of the FAO variables – depth of hunger and undernourishment – can probably be attributed to the fact that their observations are more numerous than of the other two

variables, and hence regressions that work with them are more powerful. Undernourishment and the percentage of stunted children exhibited lower significance with humanitarian aid most likely due to the fact that they measure more chronic than acute food insecurity, unlike the other two, more short-term, indicators.

Discussion of results

Much of the data available for quantitative cross-country studies are believed to be imperfect. This might be not be true regarding data on aid but is almost certainly true regarding data on food security and on governance, two of the main concepts that I examined here. I have done my best to overcome this problem, however, by providing a number of robustness checks on the results obtained. Consequently, the findings paint a picture that perhaps does not reflect but surely at least closely resembles the reality.

The most salient finding within this part of the study is that development assistance has a significant positive impact on recipient countries' food security, whether embodied by their prevalence of undernourishment, by their depth of hunger or by their percentage of children under five years old that are underweight or stunted. The results' coefficients are fragile to changing specifications and sample sizes in their magnitude but not in their direction or significance. The conclusion that development aid affects food security positively is further supported by the fact that there is likely to be a slight downward bias in the results as aid and food insecurity have a naturally positive association - given that more assistance goes to countries with higher food insecurity rates (e.g. Brückner, 2013).

Less encouragingly, the size of aid's positive effect on food security appears to be small. Raising the amount of aid per GDP by one logarithm – so, for example from 1 USD per GDP to 10 USD per GDP – would according to my results likely translate into less than 1 percentage-point reduction in the proportion of stunted and underweight children and less than 2 percentage-point reduction in countries' overall prevalence of undernourishment. As a comparison, the effect of aid is approximately seven times smaller than the impact of GDP per capita on the prevalence of undernourishment and on depth of hunger and ten times smaller than the impact of GDP per capita on children's stunting and low weight. Additionally, it is unfortunate that the positive influence of aid is less notable on children's nutritional status than on adults' since, as I already noted above, nutritional deficiencies in early childhood are considerably more detrimental to human development than later on in life. However, particularly in countries with low levels of per-capita incomes and large populations, even this small impact of aid could theoretically translate into improved food security for millions of people.

The second most salient result of the analysis is that the positive effect of aid on food security is often strengthened by the presence of better governance; i.e. that in countries with better institutions and policies aid bolsters food security more than in countries with worse institutions and policies. This finding appeared whether ‘governance’ was operationalised through the Worldwide Governance Indicators, *polity2*, or the economic policy index. In terms of the effects’ magnitude, visualised marginal effects of aid under different scores of the WGI suggested that while in countries with WGI scores lower than -1 aid had no positive effect on food security, in countries with WGO scores above 2 aid contributed to the reduction in child stunting by more than 1 percentage point and in undernourishment prevalence by more than 2 percentage points. The magnitude of the coefficients with *polity2* was similar; with the policy index the coefficients were smaller yet still significant. Another interesting finding on this topic that I discovered and have not yet mentioned here is that not only the positive effect of aid on food security is stronger in countries with better governance but that the positive conditioning effect of governance is also stronger in countries that receive higher volumes of aid per capita (as demonstrated by the graph in Figure 3 in the Appendix). This is not surprising perhaps, as countries that receive more aid relative to the size of their economies might understandably need increasingly better institutions and policies to be able to use all the aid productively; unfortunately, highly aid-dependent countries tend to have generally worse quality of governance. My data clearly show this – countries in the lowest quarter of the aid per GDP distribution have an average WGI score of -.23 while countries in the highest quarter of this distribution have an average WGI score of -.66. Both these findings – that aid has a greater positive effect on food security in the presence of good governance and that governance matters more in countries that receive relatively more aid - strongly underscore the need for donors to take individual country situation into consideration when making decisions about aid disbursements.

Turning to the specific type of governance that matters the most in the aid-food security relationship, I disaggregated the Worldwide Governance Indicators into its separate components – voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption – and found the control of corruption to have the largest positive conditioning effect, followed by regulatory quality and political stability. The effect of the other three aspects did not appear to be statistically important. This discovery, as interesting as it appears, should, however, be explored further in the following qualitative case-study chapter and not only to supply it with the colour of detail but also to explain its process and test it for plausibility. For the different WGI indicators have been accused by researchers including Al-Marhubi (2004), Bjørnskov (2006), and Langbein and Knack (2010) of being highly collinear and consequently not genuinely measuring different aspects of countries’ governance.

Kaufmann and Kraay (2008) countered this criticism but conceded the aggregate WGI score to have a higher external validity than its individual components.

Jointly, the findings discussed in the preceding paragraphs provide solid support to my first research hypothesis (H1), in which I predicted that aid had a significant positive effect on food security conditioned on the quality of governance. Should this confirmation lend support to the proponents of increasing aid flows or of conditioning aid on the quality of recipients' policies and institutions? On the first question, the answer perhaps leans to the positive, even though I have not explored through simulations what the effects of aid flows on food security and governance would be if they were to be significantly scaled up. On the second, however, the appropriate answer seems more ambiguous. Just like the effect of aid on food security, the magnitude of the conditioning effect of governance is small. A one-unit increase on the WGI scale, out of possible five, would reinforce the positive impact of aid on food security only by 10 to 20 additional per cent. Moreover, even in countries with worse governance aid might bolster food security and those countries are often ones with bigger food-security problems. The results on the heterogeneous impact of aid imply that the solution could be to condition only certain types of aid.

Conclusions concerning the heterogeneous impact of the various aid modalities on food security are not as robust as the previous two findings but some interesting discoveries emerged in this respect regardless. Both multilateral aid and bilateral aid bolster food security albeit multilateral aid, as was expected, seems to do so more consistently. When bilateral aid is further divided into aid provided by DAC and by non-DAC donors, DAC aid appears to affect food security more positively while the effect of non-DAC aid is more susceptible to the quality of governance. Moreover, bilateral aid overall appears to be more positively influenced by the quality of governance than multilateral aid. Together, these findings support my second hypothesis (H2.1). They also make sense in light of the existing literature, which suggested that aid provided by bilateral donors is often more political and less development-oriented than multilateral aid and that this is even more true of the aid provided by non-DAC donors.

When looking at the different mechanisms of aid delivery, grants seem to be better for food security than concessional loans and financial aid better than food aid. Budget support does not seem to have a very different impact on food security from programme and project aid and aid volatility predictably dampens aid's positive effect on food security. Taking the intervening role of governance into account, both concessional loans and budget support are more conditioned on governance than their counterpart instruments, suggesting that only countries with reasonably good institutions and policies should be receiving these aid modalities. The recent scandal over the misuse of US budget support provided to Afghanistan, used in large part for

'kickbacks and bribes' nicely, if only anecdotally, illustrated this point (NYT 2014)⁴³. It is also not surprising to see financial aid to be more supportive of food security than food aid, as the study uses three-year averaged data and consequently does not capture the very short-term fluctuations in food security that might be more positively affected by food aid. All of the conclusions in this section have aligned with my initially formulated research hypotheses, namely the third, fourth, fifth, and sixth one (H3.1, H4, H5, and H6).

However, that is not the case when it comes to examining the heterogeneous relationship between food security and aid divided according to the sector where it flows. Looking to Clemens *et al.* (2004), who found short-term aid to be more supportive of economic growth than long-term aid in the timeframe examined (five years in their case), I expected to find the same with respect to the impact of aid on food security. Nevertheless, I discovered just the opposite – long-term aid to be most consistently positive and significant, followed by humanitarian, and finally by short-term aid – and hence could not find support for my seventh hypothesis (H7). The underlying reasons for this divergent finding could be many but the most likely one is that, as I briefly mentioned above, short-term types of aid that encourage rapid growth such as aid to industry, to finance or to tourism are not directly beneficial to the most vulnerable strata of the society, who are simultaneously the ones most likely to be food insecure. On the other hand, long-term aid includes a lot of initiatives in the social sector (health, education, water and sanitation) which might strengthen recipients' food security quickly and directly without ever translating into higher rates of economic growth.

Results vis-à-vis the last aid classification, into agricultural, social, economic, and other aid, strongly support these conjectures. Formulated as my eighth hypothesis (H8) was my expectation to discover agricultural aid to have a more positive effect on food security than aid provided to any other sector, primarily due to the fact that agricultural aid is generally aimed at helping countries boost their agricultural production, which should in theory promptly translate into reinforced food security. Nevertheless, not only did I find social aid to have a more significant positive effect on food security than agricultural aid, I did not discover a significant relationship between agricultural aid and food security at all. Since most sectors that fall under social aid are also classified as long-term aid, the results are congruent with those discussed in the paragraph above. Aid to health, education, water and sanitation probably has a fast-acting positive impact on countries' food security levels. On the other hand, the impact of agricultural aid on food security might be more ambiguous, as is supported by the finding that agricultural aid is in its effect on food security highly conditioned on the quality of governance. However, it

⁴³http://www.nytimes.com/2014/01/30/world/asia/report-says-afghanistan-cant-be-trusted-to-prevent-misuse-of-usaid.html?hpw&rref=world&_r=0

is difficult to find out anything more specific about the underlying causes using cross-country quantitative data analysis alone.

Conclusion

This last point illustrates well the main weakness of this part of the study. While using quantitative methods of analysis to test on cross-country data my originally formulated hypotheses is perfectly valid, in the case of incongruent -and to lesser extent even in the case of congruent- findings, the data and methods are unable to yield more nuanced explanations.

This realisation leads me naturally to the chapter's concluding remarks. In this first empirical study, I have presented the reader with an analytical overview of the relationships existent between development aid in its various modalities and food security on the country level. Findings within the chapter have provided support to most of the hypotheses that I formulated in Chapter One, adding both credibility and validity to my thesis' theoretical underpinnings. On the other hand, the results illustrated that the relationship between aid and food security, with the intervening role of governance, is often non-linear and highly convoluted, and that in order to better understand its complexities it should be studied further using other data sources and other empirical methods. In the next chapter I do just that, examining the impact of aid on food security through a four-country case study, relying primarily on qualitative methods of analysis.

CHAPTER FOUR: FOUR-COUNTRY CASE STUDY

Introduction and explanation of case selection

After having examined the links between aid and food security, conditioned on the quality of governance, quantitatively using a large cross-country dataset, this chapter delves deeper into their qualitative aspects through a comparative case study of four developing countries: Peru, Ethiopia, India, and Vietnam. In order to probe the causal mechanisms underlying the relationships examined, I wanted to choose countries constituting typical/average cases from the point of view of the relationship between development aid and food security. A post-estimation from the basic fixed-effects model produced a range of residuals with values from -60 to 60; in order to select only the 'on-lying', average cases, I consequently narrowed down the list of eligible case-study countries to those falling between the residual values of -10 and 10. Left were 22 candidates: Algeria, Bangladesh, Chile, Colombia, Egypt, Ethiopia, India, Kazakhstan, Kenya, Malaysia, Morocco, Nigeria, Pakistan, Peru, Philippines, South Africa, Sudan, Thailand, Turkey, Ukraine, Venezuela, and Vietnam.

As cases, however, I wanted to further choose countries that would simultaneously reflect a wide range of contexts faced by developing countries globally, endowing the case study with sufficient variation to explore the aid-food security links in diverse conditions. Geographically, I wanted each country to come from a different region and desired some variation also along political and religious lines. Finally, I needed each case selected to have conducted between 1990 and 2010 a national household survey that would contain information on food security, external development assistance, and local governance.

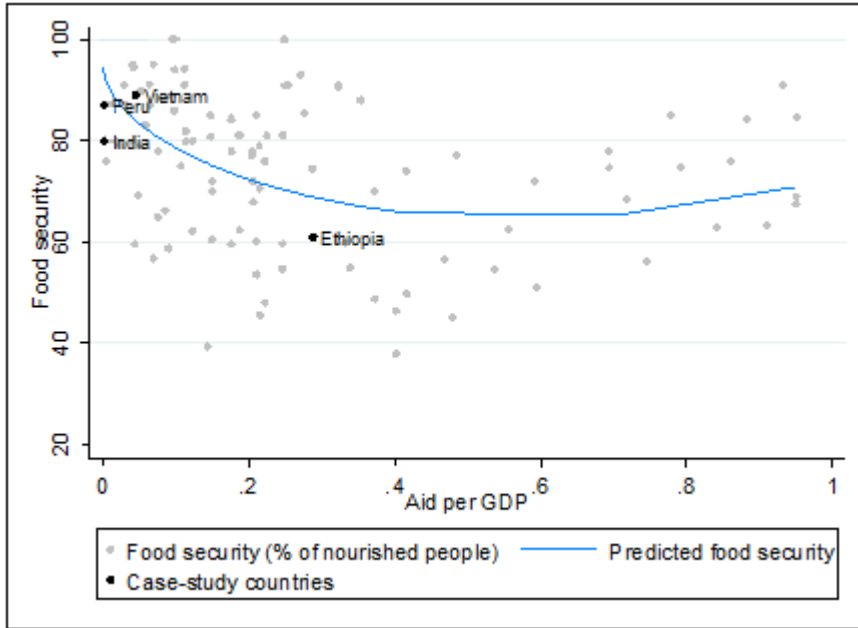
Keeping these considerations in mind, Peru, Ethiopia, India, and Vietnam seemed the most suitable choices. Geographically, the countries represent Latin America, Sub-Saharan Africa, South Asia, and East Asia – four of the six main global developing regions⁴⁴. Each of the countries has different cultural and religious traditions. Politically, Peru, Ethiopia, and India are nominal democracies but of varying degrees of liberalism, and Vietnam is one of only four remaining 'communist' countries in the world. Last, in each of the countries the Young Lives initiative gathered household-level data in three rounds – in 2002, 2006, and 2010 – containing all the information necessary to conduct a micro-level quantitative analysis approximately mirroring the macro analysis in Chapter Three.

Figure 1 and Figure 2 below graphically demonstrate that the four countries selected indeed appear typical from the aid-food security correlation perspective. Figure 1 plots the level of food security (the inverse of the FAO's undernourishment prevalence) against the amount of aid per

⁴⁴ Not included are North Africa/the Middle East and Eastern Europe/Central Asia. I did consider conducting a case study of six countries but eventually abandoned the idea due to a lack of time.

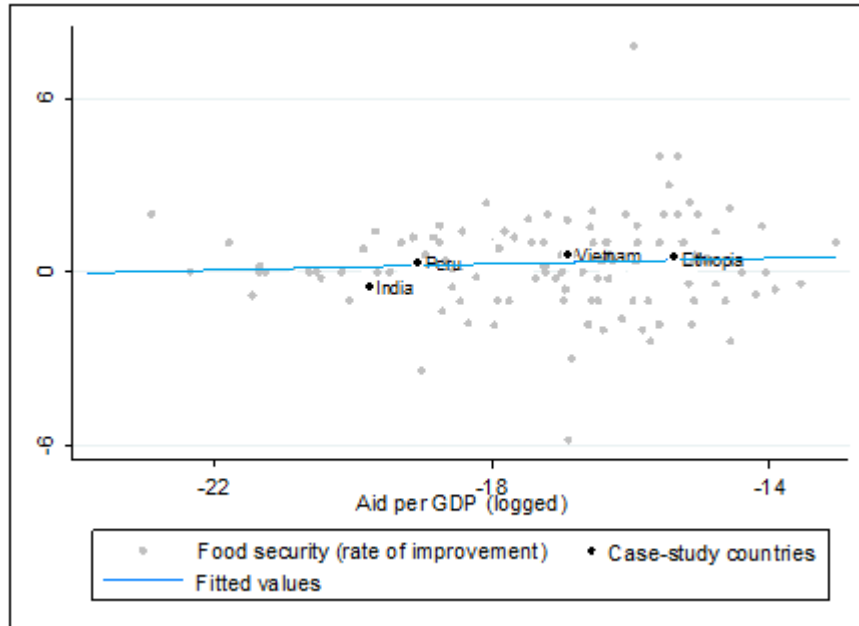
GDP received and shows that while Vietnam receives slightly more than its level of food security would predict and Peru, India, and Ethiopia receive slightly less, all four countries lie very close to the fitted line. Figure 2 displays the graphical relationship between the rate of food security improvement and aid per GDP. On this graph, Peru and Ethiopia lie almost precisely on the fitted regression line, with Vietnam having experienced slightly higher and India slightly lower than predicted food security improvement.

Figure 1. The relationship between aid and food security (2008-2010)



Source: Author's own graphic

Figure 2. The relationship between aid and food-security improvement



Source: Author's own graphic

There are other similarities among the countries aside from their relative 'averageness' with regard to the amount of aid received and their food-security status. In the past two decades, all

four experienced significant rates of economic growth although not in all of them has it been consistent. Moreover, despite the growth, in all four countries social and economic inequality not only persists but has intensified. Other commonalities include the countries' struggles with issues such as high debt burden, post-conflict reconstruction, minority rights, rural-urban divide, and adverse environmental conditions – issues that are currently widespread in most developing countries (WDI, 2014).

On the other hand, there are things that make each of the countries a unique case study of the effects of aid on food security. Peru is a resource-rich country that has always received a big part of its aid in support or tied to the mining sector (Brown, 2014). Ethiopia was one of the world's largest recipients of food aid between 1990 and 2010 (FAO, 2014). India is home to the largest number of malnourished children in the world despite recent high levels of economic growth (WHO, 2009). Finally, Vietnam is one of the world's greatest recent successes in poverty reduction, not least in response to a successful agricultural 'Green Revolution' (Hazell, 2009). As such, aside from allowing me to test the relationships between various aid modalities, food security, and governance, each country case study can contribute a distinct perspective on some of the relationships' aspects – Peru on the influence of mining companies on the provision of foreign aid, Ethiopia on food aid, India on unrelenting food insecurity despite economic growth, and Vietnam on the development of the agricultural sector and its connections with development aid.

Through an exploration of the links between aid and food security in each of the four countries, this chapter aims to contribute to the thesis in three following manners. First, with a view to the four countries constituting 'typical' cases on the aid-food security spectrum, it tests whether the trends in food security observed in the countries under study can be at least partially attributed to the amount of aid received in the past two decades, thus potentially providing stronger evidence to the conclusions reached in the previous chapter. Second, it allows for a closer examination of the processes and mechanisms through which aid, in general and in its various forms, influences food security and how this relationship is conditioned on the countries' quality of governance. The quantitative cross-country study outlined some of these processes but in this chapter I can describe them in greater detail. Furthermore, while for the purposes of a statistical analysis the quantitative study assumed the relationship between aid and food security to be log-linear, the reality is more complex. As mentioned previously in Chapter One, aid influences food security both directly and indirectly via different instruments, and a qualitative study is better equipped to delve into such complexities than a quantitative one. Third and finally, with its descriptive nature this part of the study provides background to the quantitative household-level study conducted and discussed in the subsequent chapter and as such facilitates and enriches the analysis of its findings.

In doing so, this chapter proceeds in the following manner. In the next section I introduce the methodological approach utilised, including the choice of data and methods of its analysis. Then I describe each country's food-security situation, experience with development assistance, performance in governance, and some of the key control variables that emerged in the previous chapter, including economic and trade performance, agricultural production, population and its growth, conflicts, and environmental factors. Finally, I analyse the information collected and summarised with the aim to establish if aid had a positive impact on food security in the countries examined, whether it was conditioned on the quality of governance, and whether certain types of aid had a more beneficial impact on food security than others.

Chapter methodology

Analytical approach

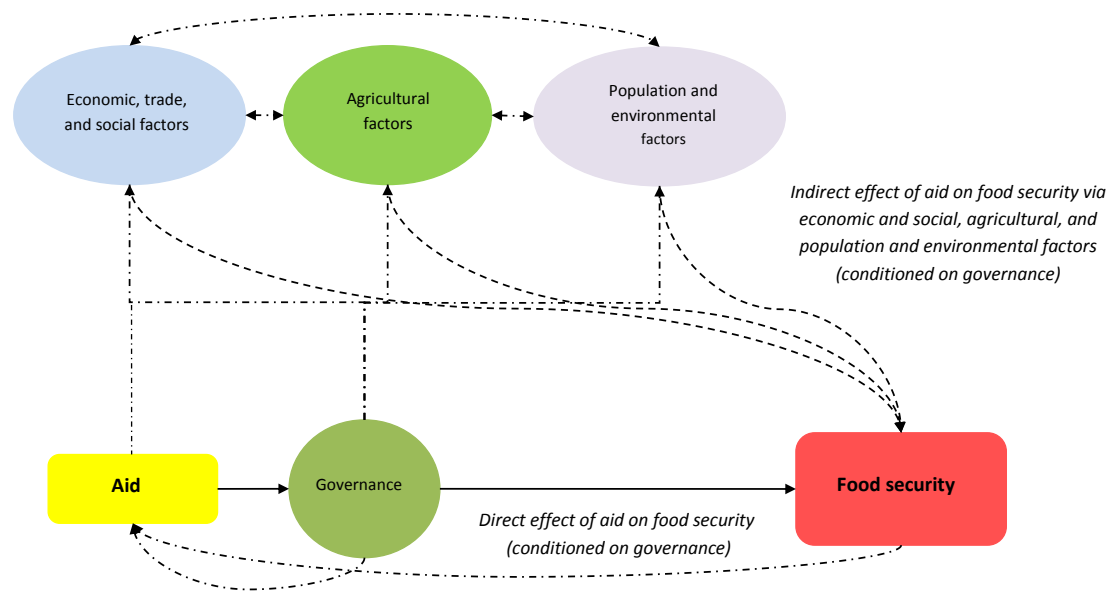
The main methodological tool used within this chapter is analytical country narrative, which combines the rigours of rational choice theory with the richness of detail of traditional historical narratives. The method takes as its foundation the basic aid-food security statistical model utilised in the previous chapter and enhances its complexity, using specific country experiences as a backdrop. The country narratives hence constitute a complementary tool to the cross-country empirics, on one hand verifying the claims made on the basis of the statistical models and on the other hand deepening our understanding of the relationships between the key variables examined (Rodrik, 2003).

The basic statistical model utilised in the cross-country study was the following:

$$f_{it} = \beta_0 + \beta_1 A_{it} + \beta_2 G_{it} + \beta_3 (A_{it} * G_{it}) + \beta_4 X_{it} + \gamma_t + \varepsilon_{it}$$

where f_{it} is the level of food insecurity observed for country i in year t , A_{it} are its aid receipts per GDP, G_{it} is the quality of governance, $A_{it} * G_{it}$ is the aid-governance interaction term (which represents the impact of aid on food insecurity that is conditional on governance), X_{it} are control variables (which can be generally divided into economic, trade, and social factors, agricultural factors, population factors, and environmental factors), γ_t is the unobserved time effect, and ε_{it} is the error term.

For the purposes of the statistical analysis, the equation strived for parsimony and assumed the effect of aid on food security to be mostly direct, conditioned only on the quality of governance. Nevertheless, the detailed discussion of the four different aspects of food security and its influents in Chapter One indicated that the relationship between aid and food security is in reality significantly more complex than the equation suggests. Aside from the direct effect that aid confers on food security, it can also affect food security indirectly, via various factors that were mostly used as control variables in the regressions. Figure 3 models this more complex version of the aid-food security relationship graphically.

Figure 3. The direct and indirect effects of aid on food security

Source: Author's own graphic

Translating the figure into words, aid can influence countries' food security directly as well as indirectly via other factors and in both cases the effect is likely conditioned on the quality of the countries' governance. Directly, aid can improve food availability, people's access to food and even food utilisation through activities/mechanisms such as budget support, food distribution, direct cash transfers, provision of nutritionally fortified foods and water-sanitising tablets, and building of toilets, just to name a few. Indirectly, aid can influence countries' economic, social, and trade factors, agricultural factors, and population and environmental factors, which can in turn affect food security. For example, aid can help raise growth or ameliorate social inequality, raise agricultural yields or contribute to undermining local food production and destroying local environment, curb or on the other hand encourage population growth – all results that can in turn impact food security. How strong these effects on food security end up being is undoubtedly also a function of - at least according to the results obtained in the cross-country study - how representative, responsive, and responsible institutions and policies are in place in any given country.

Data sources and methods of analysis

Data sources for this study range from primary data to secondary documents. The primary data used, on food security, aid, governance, and all the control variables, come from the same sources as the data used in the quantitative cross-country study– from the FAO, the WHO, the OECD's QWIDS and CRS databases, the Polity IV project, the WDI, the Uppsala University conflict database, and the EMDAT disaster database. These data, which in themselves provide no more

information than raw numbers, are then supplemented with information obtained from the WFP's and IFPRI's food security portals, the FAO's and IFAD's analysis papers and briefs, the World Bank's and other donor agencies' country reports, own country aid analyses, as well as from research articles and books. Most of the data examined come from the period between 1990 and 2010⁴⁵, as this is the time frame considered in the previous study.

Within the framework of analytical country narrative described above, I analyse the data collected using the specific empirical methods of process tracing, pattern matching, and explanation building, with a particular focus on examining and testing the relationships that were found to hold true in the previous chapter (modified versions of the original hypotheses). Hence, I first inspect whether in all four countries aid seems to have had a positive influence (whether direct or indirect) on food security and if so, if this positive relationship has been influenced by the countries' quality of governance (H1).

Second, I consider the heterogeneity of aid's impact on food security. Looking at *who* provides aid, I inspect whether there seems to be any difference between the aid disbursed by bilateral and by multilateral donors and whether the effect of bilateral aid seems more susceptible to the influence of governance (H2.1). Regarding the way *how* aid is provided I examine if loans have a less positive effect on food security than grants and are more conditioned on governance (H3.1), if budget support has a different influence as compared to programme and project aid (H4), if food aid differs from non-food aid (H5), and if aid volatility has had a negative impact (H6). Finally, I look at the sectors to which aid is provided, in order to find out whether long-term or short-term aid influenced food security more positively (H7a), whether aid to social infrastructure or aid to agriculture have been more useful (H8a), and whether governance has had a different conditioning impact in these relationships.

The state of food (in)security (the dependent variable)

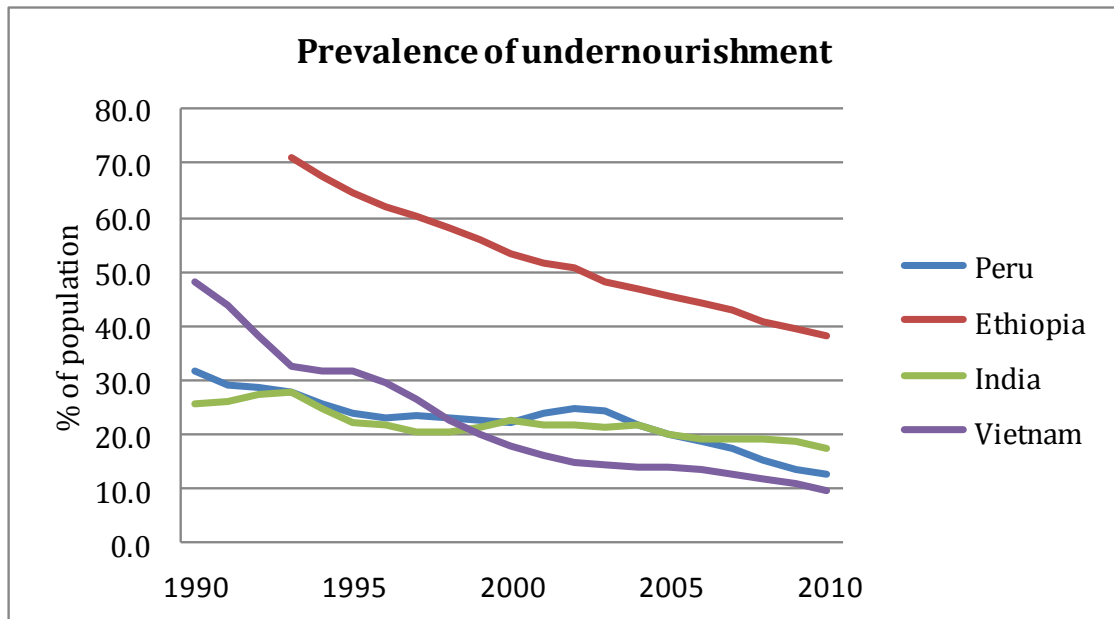
Overview of food security in case-study countries

In all four countries under study, food security improved between 1990 and 2010 albeit the rates of improvement differ. First, looking at the depiction of the FAO food insecurity data in Figure 2 and Figure 3, the graphs show that the prevalence of undernourishment and depth of hunger decreased significantly primarily in the case of Ethiopia. The prevalence of undernourishment - the proportion of people in a population believed to lack access to a sufficient amount of daily calories - declined there from more than 70 per cent in 1990 to less than 40 per cent in 2010. The reduction in Vietnam and Peru was also notable, from 47 to 10

⁴⁵ Most tables and figures in this chapter present five data points for each country, for years 1990, 1995, 2000, 2005, and 2010. However, each data point is an average of three annual observations; e.g. data point for 2010 is an average for 2009, 2010, and 2011.

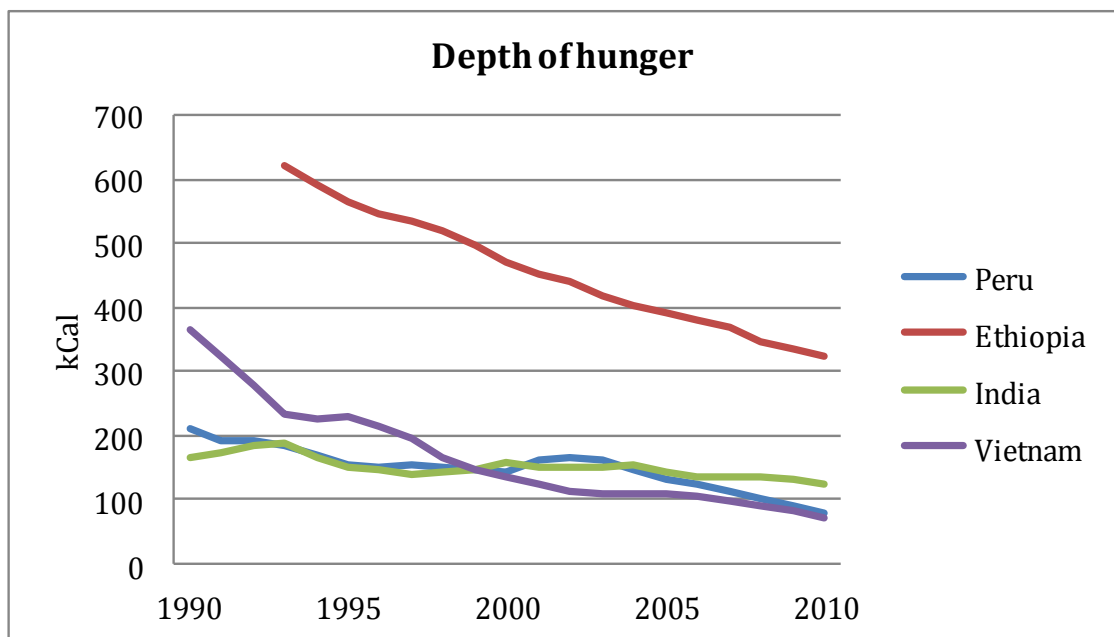
per cent in Vietnam and from 32 to 14 per cent in Peru. The slowest rate of change occurred in India, where undernourishment decreased by mere 7 percentage points, from 25 to 18 per cent.

Figure 4. Prevalence of undernourishment



Source: FAO

Figure 5. Depth of hunger



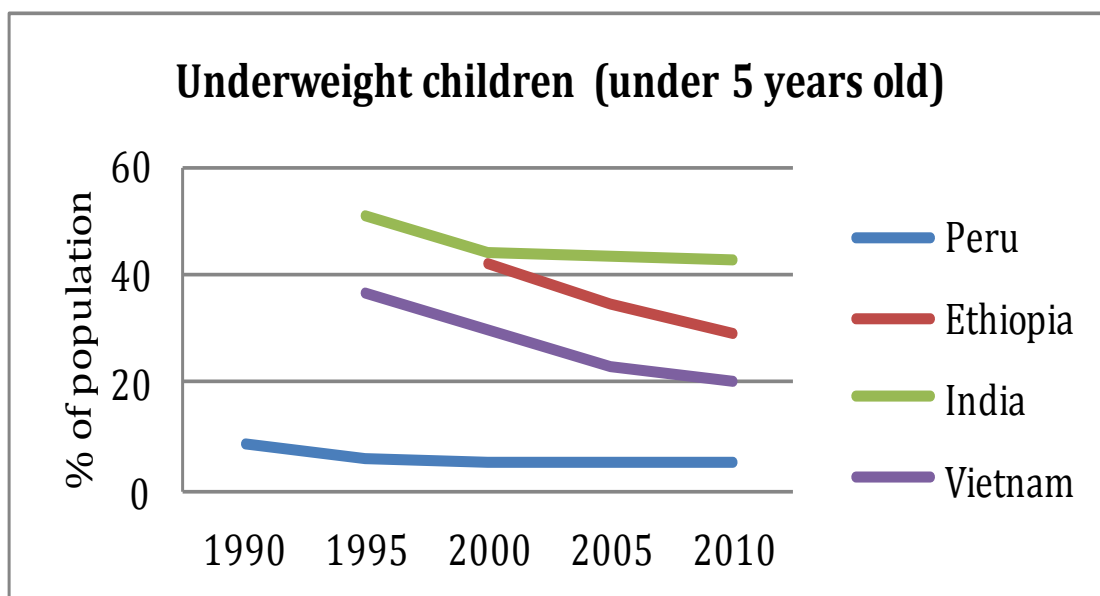
Source: FAO

Looking at the depth of hunger, Ethiopia again performed relatively the best, reducing the index of caloric inequality from more than 600 kilo calories (kCal) prior to 1995 to 335 kCal in 2010. The reductions in Vietnam and Peru were also quite noteworthy, from 357 in Vietnam and 212 in Peru in 1990 to less than 90 in 2010 in both countries. India managed to reduce the calorie gap as well but only by a small margin, from 167 kCal in 1990 to 124 in 2010. As a result, while

in 1990 India was the most food-secure country of the four from this point of view, by 2010 it became the second most food-insecure one.

Graphs on the basis of the WHO data, the prevalence of low weight and stunting in children younger than five years, tell a similar story (Figures 6 and 7). The reduction in underweight children in Ethiopia was proportionally the largest, from 42 per cent in 2000 (prior data not available) to 29 per cent in 2010. Peru started with a low number already, 9 per cent, and managed to decrease it to 5 per cent by 2010. In Vietnam, the rate of underweight children declined from 37 per cent in 1990 to 20 per cent in 2010. On the other hand, even in 2010 the rate in India still hovered above 40 per cent.

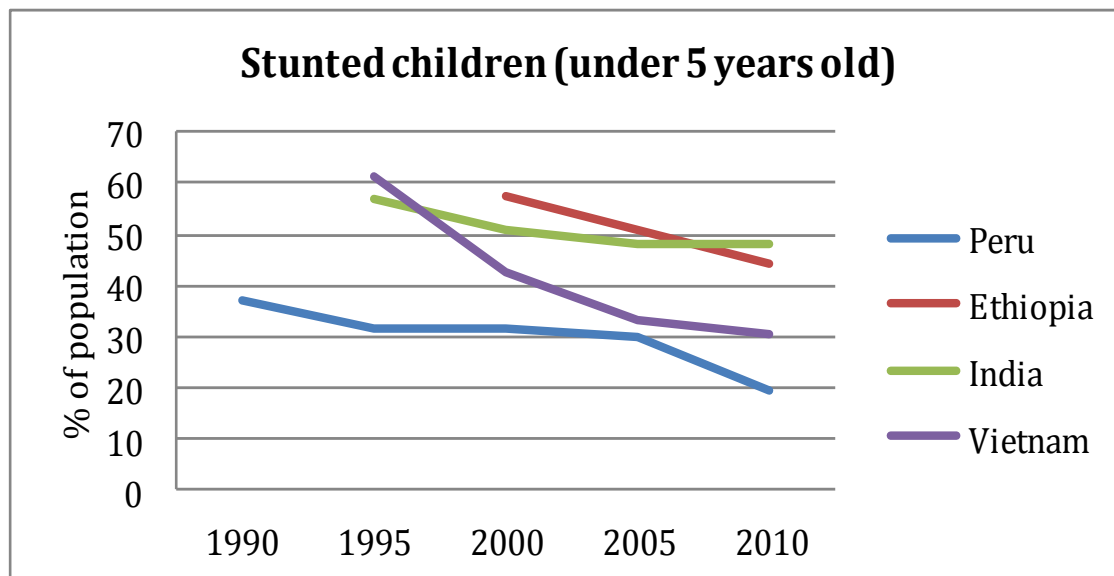
Figure 6. The prevalence of underweight children



Source: WHO

Stunting experienced the largest drops in Vietnam, from more than 61 per cent to 30 per cent, and in Peru, from 37 per cent in 1990 to less than 20 per cent two decades later. The decrease in Ethiopia and India was less momentous, from more than 50 per cent in both countries to 44 per cent in Ethiopia and to 48 per cent in India. It is interesting to note here that the 2010 stunting rate in India was the highest in the world, at least from countries with records available⁴⁶ (Drèze and Sen, 2013).

⁴⁶ Countries where records were not available include for example Somalia and Afghanistan.

Figure 7. The prevalence of stunted children

Source: WHO

Food-security narratives – What lies beneath the numbers?

Peruvian food-security narrative

Ranked 77th of 187 on the UNDP Human Development Index (HDI, 2011), 15th of 79 on the Global Hunger Index (GHI, 2012), and categorised as an upper middle-income country, Peru is currently considered a small economic miracle. From 2000 to 2010, its GDP per capita increased by more than 50 per cent (WDI, 2013). This high rate of growth was fuelled primarily by an increase in the exploitation of mining and extraction of other natural resources. Agriculture has conversely decreased in its relative importance to GDP and Peru now imports most of its staple agricultural commodities (IFPRI, 2014).

Despite the high level of recent economic success, however, poverty remains an indelible part of life for many Peruvians, particularly in the countryside. The national poverty rate is now at around 30 per cent but in rural areas it exceeds 50 per cent, with 20 per cent living in extreme poverty (IFAD, 2011b). The massive rural-urban income divide has fuelled the rate of urbanisation, with three out of four inhabitants now living in cities (WDI, 2013).

As a result, food insecurity remains a concern primarily in the rural areas, even though some people inhabiting slums in Peruvian cities also go to bed hungry every night. The WFP estimates that among smallholder farmers, 38 per cent lack access to minimum daily calorie intake and that 14 out of 25 Peruvian regions are extremely vulnerable to chronic child undernourishment (WFP, 2014c). As the main causes underlying the issue, IFAD cites high rates of rural illiteracy, primarily among women; the lack of essential services such as education and electricity; insecure land, forest, and water rights; inadequate agricultural research, training, and financial services; and poor transportation infrastructure and marketing systems (IFAD, 2011b).

The most affected by food insecurity in Peru are minority groups. The history of inequality and discrimination in Peru dates back to the Inca Empire, which encouraged social stratification (Gispert, 1999). The situation worsened after the arrival of Spanish colonisers, who institutionalised discrimination against the natives as well as against mestizos, whom they regarded as morally impure (De La Cadena, 1997). The arrival of African slaves, settled primarily in the mountainous areas, and of Asian indentured labourers added to the complexity of the Peruvian population composition as well as to its discriminatory nature. However, the indigenous populations, primarily the Quechua and Aymara Indians residing in remote Andean regions, still remain the most marginalised social groups and unsurprisingly then also the groups most vulnerable to food insecurity (IFAD, 2011b).

Ethiopian food-security narrative

Even though the economic growth in Ethiopia between 1995 and 2010 averaged over 5.5 per cent, Ethiopia remains one of the poorest countries in the world, 173rd of 187 on the HDI scale and 70th of 76 on the Global Hunger Index (WDI, 2013; HDI, 2011; GHI, 2012). The national poverty rate is currently estimated to be 'only' 30 per cent, but since the national poverty line is set at an extremely low level, from an international point of view the rate likely lies upwards of 50 per cent (IFAD, 2012). Moreover, as the food-security overview suggested, despite major recent progress the state of food insecurity in Ethiopia remains still highly unsatisfactory, at a level deemed by IFPRI to be 'alarming' (IFPRI, 2014).

The relatively steady rate of economic growth in the country after 1995 was achieved primarily thanks to the liberalising institutional and policy reforms set in place by Ethiopia's ruling party, Ethiopian People's Revolutionary Democratic Front (EPRDF) after overthrowing a Marxist regime led by Haile Marian Mengistu. The effect of the reforms has been strengthened to some extent by the government's poverty-reducing efforts and increased investments in agriculture, education, health, water, transport, and telecommunications, all fully or partially financed by foreign donors (IFAD, 2012). However, the more than 80 per cent of population that still live on and off small farms, accounting for 95 per cent of Ethiopia's agricultural production, are in spite of the recent economic growth still highly vulnerable to food insecurity and often seasonally dependent on free food-aid shipments (IFPRI, 2014). Ethiopia also holds the infamous first place as the country to experience famines most frequently in the past two decades (Devereux, 2009).

Only 25 per cent of Ethiopia's arable land is under cultivation at the moment, with subsistence rain-fed agriculture and low productivity the norm. Approximately half of the non-cultivated land is used by migrant tribes as pastures for their herds. Some researchers see the situation as one of opportunity to increase production through the introduction of irrigation,

high-yielding seed varieties, fertiliser, pesticides, and increasing cultivated land area (IFAD, 2012). Others, however, have warned against relying on large-scale agriculture to fuel further Ethiopian growth, as the currently non-cultivated land is environmentally fragile and highly susceptible to erosion (Devereux, 2000). Moreover, Ethiopia suffers from recurrent droughts and has a small amount of natural water aquifers, which could further complicate attempts at agricultural intensification (*ibid*).

Disregarding considerations about the correct way to proceed with agricultural policy in the future, however, currently Ethiopia produces a significantly lower amount of food per capita than it consumes and since it generally does not hold enough foreign currency to import the rest at market prices, it continuously relies on foreign food assistance. The availability of nationally produced food per capita has been declining ever since the 1960s, not due to total decline in production but due to a 3 per-cent population growth, through which the country's population increased from 48 million in 1990 to more than 90 million in 2012 (WDI, 2014). During the Horn of Africa drought of 2011, five million Ethiopians relied on food assistance. However, despite good rains and harvests in 2012, still more than three million Ethiopians needed assistance in the form of food (IFPRI, 2014).

Overall, Ethiopian persisting food insecurity can be traced partially to the lack of food availability on the country level, and due to inadequate infrastructure and restrictions on transporting food from one district to another, also on the local level. Nevertheless, not always have bad drought and harvests translated into famines and not all famines were triggered by complete harvest failures, suggesting that insufficient food access is also a factor to blame (Webb and Von Braun, 1994). Finally, poor sanitation conditions and scarcity of health services add poor food utilisation as another major driving cause of Ethiopia's lacking food security (IFAD, 2012).

Vietnamese food-security narrative

The overview of food-insecurity statistics suggested that Vietnam is quite a success story when it comes to reducing food insecurity. The reduction can be at least partially attributed to a steady rate of economic growth ever since the Vietnamese communist government abandoned the ship of centrally planned economy and launched a set of liberal market reforms under the name of 'doi moi'⁴⁷. Between 1990 and 2010, GDP growth in Vietnam averaged more than 7 per cent (WDI, 2013). National poverty rate decreased as a result, from 58 per cent in 1993 to less than 15 per cent in 2010 (*ibid*). Nonetheless, food insecurity did not fully disappear; it continues to be a problem particularly for the rural poor, female-headed households, children, and ethnic minorities (IFPRI, 2014).

⁴⁷ 'Doi moi' can loosely be translated as 'creating a socialist-oriented market economy.'

Vietnamese economic growth has to a large extent been fuelled by growth in agricultural productivity. Vietnamese economy remains quite closely tied to agricultural production, which constitutes 22 per cent of the country's GDP, 30 per cent of exports, and 52 per cent of employment (WDI, 2013). The initial agricultural growth was based largely on increasing the area of land under use, irrigation, labour, and new technologies. A further increase in productivity was engendered through institutional restructuring including agricultural price liberalisation and land titling. Consequently, Vietnam went from being a net food-importing country in the 1980s to one of the largest net rice exporters in the world by 2010 (IFAD, 2011c).

However, smallholder farmers in rural areas have not always benefitted from the enhanced agricultural productivity on large industrialised farms. Lacking adequate access to basic financial services and infrastructure and faced with the effects of frequent natural disasters, many have remained vulnerable to seasonal variation in food availability and often find themselves in highly food-insecure situations (Imai *et al.*, 2011). Some researchers have also argued that the increase in Vietnamese food availability through higher levels of production failed to translate into an improved access or quality of food, the other two pillars of food security, and in turn deepened the existing income inequalities (Trang, 2012). Nevertheless, the government has made a conscientious effort to combat poverty with the National Targeted Programme for Poverty Reduction (NTP-PR), a large-scale 'safety net' that provides poor people with various support ranging from land, agricultural extension, credit, and vocational training to education and health (WB, 2010), and as a result the overall state of food security in the country continues to improve.

As in Peru, minorities in Vietnam are among those worst affected by poverty and food insecurity. Even though the 53 ethnic minorities represent only 13 per cent of Vietnam's total population, they make up 30 per cent of the country's poor (IFAD, 2011c). The national government has tried to encourage smallholding ethnic farmers (primarily the Hmong and the Yao) to switch away from growing traditional rice varieties to higher-yielding hybrid rice. Nonetheless, the hybrid varieties are also less resilient, exposing farmers to greater seasonal vulnerability and subsequently making them more food insecure in bad-weather years than they would have been otherwise (Bonnin and Turner, 2012).

Indian food –security narrative

Similar to the other three countries, India experienced a significant rate of economic growth between 1990 and 2010, averaging at more than 6 per cent. Its development indicators improved, with India in 2012 scoring 0.55 on the HDI scale as compared to 0.41 in 1990 (HDI, 2012) and the national poverty rate declining from 37 per cent in 2005 to 30 per cent in 2010 (IFPRI, 2014). However, as the overview of food-insecurity data shows, despite the substantial economic growth, undernourishment among adults and even more among children has

remained high. On the Global Hunger Index, India occupies the 62nd out of 77 places, with its poorer neighbours Sri Lanka, Nepal, and Bangladesh all scoring better (GHI, 2012).

The underlying reasons for India's sluggish improvement on the food-security front, even dubbed the 'South Asian enigma', are not clear (Ramalingaswami *et al.*, 1997). National food availability is certainly not an issue – for the past two decades, India has been a net exporter of major staple commodities including rice, wheat, maize, and soy beans. It is also the world's largest producer of milk, pulses, and spices (IFPRI, 2014). However, small subsistence farmers, who constitute the majority of India's rural population, generally lack access to basic financial services and productive resources and thus often fall prey to food insecurity due to unfavourable weather conditions or seasonal fluctuations in local food availability. In fact, most of the poorest areas, in the states of Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Jharkand, Orissa, Chattisgarh, and West Bengal, lie in semi-arid regions and coincide with areas most often plagued by droughts. There is also a high incidence of poverty and food insecurity in the flood-prone areas of Uttar Pradesh and Assam (IFAD, 2011a). Social stratification and ethnic discrimination are other very serious issues in India, with scheduled castes (the 'untouchables') and indigenous tribes suffering much higher rates of food insecurity than other groups.

Focusing purely on undernourishment trends among children, Pathak and Singh (2011) concluded that the improvement that did occur in the area has been quite uneven throughout the different Indian states, with southern states generally experiencing a much higher reduction than northern states. However, in those states where positive change occurred, it was predominantly in higher income brackets, thus simultaneously fuelling an increase in undernourishment inequality across different economic and social strata. The fact that even high-income groups in northern Indian states experience high rates of child undernourishment points to the fact that at least some portion of Indian food security problems is likely to be caused by deficient food utilisation rather than scarcity of food availability or inadequate food access. The problems with food utilisation can likely be traced to the poor quality of public health institutions as well as to lacking sanitation and hygiene infrastructure (IFAD, 2011a). As of 2013, more than half of the Indian population lacked access to toilets and almost a fifth to safe drinking water (Drèze and Sen, 2013).

Food-security narratives summarised

In the past two decades Vietnam and to a lesser extent Ethiopia experienced a dramatic improvement in domestic food security. Peru also underwent a major food-insecurity reduction, with the most relevant indicators now remaining only slightly elevated as compared to those in high-income industrialised countries (FAOSTAT, 2013). In India, food insecurity decreased as well but to a smaller degree than in the other three countries. While starting out as the most food

secure of the four countries examined in some aspects (e.g. in 1990, the prevalence of undernourishment in India was lower than in the other three countries), by 2010 India had the second highest levels of undernourishment and depth of hunger, after Ethiopia, and the highest rates of underweight and stunted children. When compared to developing countries in general, the four countries' food-security improvement has been slightly higher in average – significantly faster in Ethiopia, Peru, and Vietnam and slightly below average in India⁴⁸.

However, in all four countries, rural populations and ethnic minorities remain generally more vulnerable to food insecurity than the rest of the population. In Ethiopia, food insecurity appears to be caused by deficiencies in food availability along with inadequate access to food, deficient food utilisation, and future uncertainty. In the other three countries, inadequate access to food among the poor and in India and Ethiopia also problems with food utilisation seem to be the main culprits.

How much and what kind of aid the countries receive (the main independent variable)

Overview statistics – Aid in general

Ethiopia, India, Peru, and Vietnam all have a long history of receiving development assistance and all of them could at some point in their history be described as 'aid darlings'; i.e. countries where donors are fond of disbursing development assistance. Nevertheless, as Table 1 clearly shows, there are significant differences among the amount of aid disbursed to the four countries between 1990 and 2010, whether aid is considered in its total amount, per capita or per GDP.

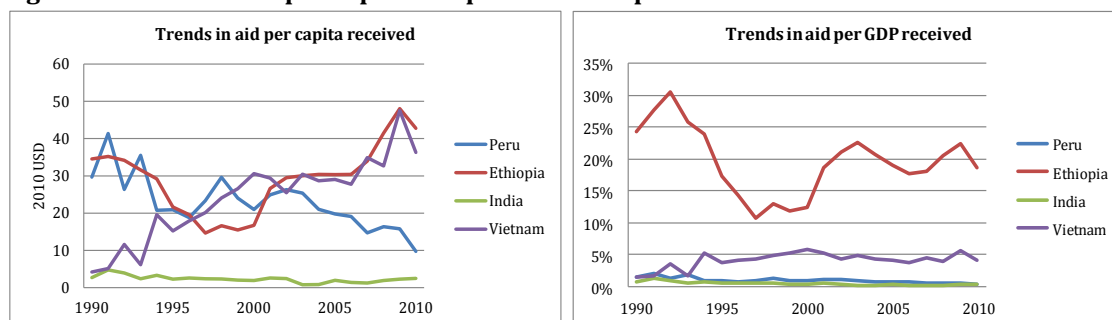
Looking at aid disbursements in their total amount, in 1990 India was a clear leader, receiving more than three billion US dollars annually, followed by Ethiopia with half that amount, by Peru with one fourth, and by Vietnam with less than one tenth. Throughout the two decades under examination, this order changed significantly. By 2010, Ethiopia came first, having received more than three and a half billion dollars, followed by Vietnam with almost the same amount, India with three billion, and Peru with 250 million. Between 1990 and 2010, the amount of annual aid to Ethiopia roughly doubled and to Vietnam increased by more than ten times. On the other hand, India received approximately the same amount as before and aid to Peru declined to one third of the 1990 amount.

⁴⁸ Comparison between data in Figures 4 through 7 in this Chapter and Table 1 in Chapter Three.

Table 1. General trends in aid provision between 1990 and 2010⁴⁹

<i>ODA total (mill 2011 USD)</i>	1990	1995	2000	2005	2010
Ethiopia	1595.48	1332.27	1301.40	2314.75	3777.72
India	3260.99	2612.30	2259.46	1567.62	2976.35
Peru	713.68	482.11	605.70	553.04	257.14
Vietnam	276.13	1264.35	2241.06	2345.88	3613.42
<i>ODA per GDP (*10)</i>	1990	1995	2000	2005	2010
Ethiopia	2.32	1.85	1.44	1.88	1.88
India	0.09	0.06	0.04	0.02	0.02
Peru	0.16	0.08	0.09	0.07	0.02
Vietnam	0.16	0.48	0.61	0.44	0.49
<i>ODA per capita</i>	1990	1995	2000	2005	2010
Ethiopia	33.21	23.36	19.71	30.39	43.37
India	3.75	2.73	2.17	1.39	2.47
Peru	32.78	20.14	23.30	19.95	8.79
Vietnam	4.18	17.56	28.87	28.47	41.57

Source: QWIDS, WDI

Figure 8. Trends in aid per capita and per GDP receipts between 1990 and 2010

Source: QWIDS, WDI

The aid figures expressed as a percentage of the countries' GDP and population are perhaps more informative, however, since the countries' GDP and population levels differ significantly. In per-GDP terms, Ethiopia in 2010 received the highest amount of aid, with Vietnam second, and Peru and India sharing the last place. Given the high rate of economic growth between 1990 and 2010 in all four countries, the per-GDP amount of aid disbursed in the two decades declined in all the countries except for Vietnam, where apparently the growth of aid disbursements was three times faster than the rate of the country's economic growth.

In terms of per-capita aid, Ethiopia started with Peru in 1990 as the largest receiver and finished as the largest receiver in 2010 with Vietnam as a very close second. India was receiving around 3.7 dollars per person in 1990, the lowest amount of the four countries, and finished

⁴⁹ A technical side note: most raw aid data used in this section comes from the QWIDS database of the Development Assistance Committee (DAC) of the OECD and represents aid disbursements in constant 2010 US dollars by all donors that submitted data to the OECD. The data point for each year is an average of a three-year aid flow; for example, the amount indicated for 1990 is really the average amount disbursed between 1989 and 1991. However, data on aid when disaggregated into distinct sectors (for example, into budget support and program and project aid or into food and non-food aid) was obtained from DAC's CRS database; it is available only from 1995 and represents aid commitments in constant 2010 US dollars (data on aid disbursements disaggregated into sectors is not reliable and available only after 2002).

with 2.5 dollars per person in 2010, still last. The largest reduction throughout the decades occurred in Peru, from 33 dollars to 9 dollars per person and the largest increase in Vietnam, from 4 to 42 dollars. In 2010, Ethiopia received slightly more than 43 US dollars per each of its inhabitants.

Overview statistics – Aid heterogeneity

Figure 9 in the Appendix demonstrates *who* provided aid to the four countries under study between 1990 and 2010. Looking at the division of aid into multilateral and bilateral, while India was once upon a time (in 1990) the largest recipient of multilateral aid proportionally, currently it is Ethiopia followed closely by Vietnam. Peru always received majority of its aid from bilateral donors, even though as Figure 9 suggests this trend might be changing. The figure also looks at the division of bilateral aid into that provided by DAC and by non-DAC donors and indicates that only Ethiopia receives a sizeable portion of its aid from non-DAC countries. The graph likely underestimates the reality given that many non-DAC donors, most notably China, do not share data on their aid giving with the OECD. Available information on China's development activity suggests, however, that out of the four case-study countries even China is most active in Ethiopia.

Figure 10 shows *how* aid to Peru, Ethiopia, India, and Vietnam has been provided. Considering the division of aid into concessional loans and grants, the pattern of their provision appears rather erratic. For example, while India receives often about half of its aid in loans, in the 2004-2006 years it received virtually none. Albeit also volatile, the proportion of loans in aid to Ethiopia is generally low and in aid to Peru almost non-existent. Given Ethiopia's persistent reliance on emergency assistance, providing most aid in grants makes sense as the government would have a hard time repaying loans. However, in the case of Peru the low amount of loans is surprising since it is now classified as an upper middle-income country and hence more likely able to shoulder the burden of loan repayments. Economic growth in Vietnam *has*, on the other hand, been accompanied by an increasing loan portion of aid, which by 2010 constituted more than 70 per cent of all their aid received.

Budget support, an aid instrument through which donors provide funds to governments in recipient countries directly, became particularly popular in the aid community after 2000 (Lawson *et al.*, 2005) and the graph depicting the budget-support portion of aid mirrors this rise in popularity. In Vietnam, budget support in 2000 constituted 10 per cent of all aid receipts; India and Ethiopia collected around 7 per cent of their aid as budget support in 2005. However, as with many development 'panaceas', the budget-support hype died down as donors realised the instrument's drawbacks, particularly its high susceptibility to 'bad' governance, and in 2010 only Ethiopia still received any money as budget support.

Looking at the division of aid into food and financial and at aid volatility, no clear trends or unforeseen findings emerged. Not surprisingly, Ethiopia receives a significantly higher portion of its aid in food donations than the other countries, by a factor of four. Aid volatility is high in all four countries but, as calculated coefficients of variation indicate, it is highest in Vietnam and lowest in India.

Finally, Figures 11 and 12 display trends *vis-à-vis where* aid goes. One of the most salient observations is that the amount of aid provided to social infrastructure has been on the rise in all four countries. Aid to agriculture constitutes a small portion of total aid in all four countries but everywhere except for in India it has also recently increased. Long-term aid has exhibited an upward trend as well, certainly partially driven by the rise in aid to social infrastructure, which is all classified as long-term. Humanitarian assistance has steadily intensified in Ethiopia and experienced a bump in Vietnam after 2005, in response to several severe floods and typhoons between 2006 and 2009.

Aid narratives - What lies beneath the numbers?

Peruvian aid narrative

Peru has an extensive history of receiving Western development aid, primarily from the United States. Prior to 1990, during the government of Alan García, Peru experienced a dramatic economic meltdown with very high inflation rates, decline in GDP, enormous increase in external debt, and a violent civil war between the government forces and the rebel movement Shining Path. Furthermore, since García was not a favourite of the United States, aid to the country was at a historic low (Muller, 1995). With the 1990 election of Alberto Fujimori, who promised a return to neoliberal economic policies and serious government restructuring, aid flows rose above 700 million USD annually and remained at levels above 500 million until 2005 (Hudson, 1992; Table 1). As the Peruvian economy grew and poverty rates declined, however, many donors began to close their aid projects in the country and hence the annual aid flows in 2010 constituted less than half of those in 1990 (Table 1).

It is hard to evaluate the nature of the partnership between the Peruvian government and donors as little scholarship has been published on the topic. Given that aid represents currently only 0.2 per cent of the country's GDP, at first sight it seems unlikely that donors have a strong negotiating power when it comes to deciding major public policies. However, throughout the two decades under study (1990 – 2010) Peru received majority of its aid from bilateral donors in project grants, which is the type of aid most often used by donors to attain political rather than developmental goals. Two pieces of recent news indirectly confirm the conjecture that donors continue to exercise influence over Peru in some ways. First, since Peru recently

surpassed Colombia as the largest global grower of coca, used to produce cocaine for exports, the US pledged up to 100 million US dollars annually to help the country with anti-drug efforts, primarily with destruction of the crops and with offering the growers alternative development routes (Fox News Latino, 2013)⁵⁰. Second, Canada announced a large aid package to the Peruvian mining sector in 2013, seen by most as really intended to help private Canadian mining companies expand their operations in Peru (Associated Press, 2013)⁵¹. In both cases, development aid appears to have been used by donors to encourage the Peruvian government to formulate its policies in line with the donors' own goals and strategies.

Regarding the specific types of activities supported by donors in Peru recently, project-level data available from QWIDS indicate that a lot of funds go into the government and civil-society area, ranging from assistance to the office of the ombudsman through training of civil servants to support for the decentralisation process. Environmental protection, particularly in the area of water flows, has also received significant assistance, as have the education and health sectors (primarily women's reproductive health, TB and HIV patients). Some funds were also disbursed to Peru's nation-wide conditional cash-transfer programme Juntos (cash transfers to mothers of poor children who go to school and for regular medical check-ups) and to the community kitchens (intended to bolster food security).

Ethiopian aid narrative

The history of aid flows to Ethiopia is full of dramatic changes. In the 1950s and 1960s, Ethiopia, the only country in sub-Saharan Africa never to have been truly colonised, received only small amounts of aid as it lacked the former colonial ties that would encourage a particular donor(s) to engage with it extensively (Furtado and Smith, 2007). This situation deteriorated further after 1974, when the Derg rebel movement led by Mengistu overthrew the royal Selassie family and established a Marxist regime. In spite of several famines that plagued Ethiopia between 1975 and 1990, aid to the country in that time period, due to Cold War considerations, was very scarce⁵². In 1991, after the EPRDF brought down the Derg regime and officially disavowed from socialism, the amount of aid dramatically increased and continued to rise throughout the next two decades with two dips, one following Ethiopia's war with Eritrea in 1998 and the other following the 2005 explosion of post-election violence. Regardless of the slight reductions, in 2010 Ethiopia was the recipient of the highest amount of total development aid in the world with the exception of Iraq and Afghanistan (Feyissa, 2011; Furtado and Smith, 2007; Hayman, 2011).

⁵⁰<http://latino.foxnews.com/latino/news/2013/09/25/us-ups-anti-drug-aid-as-peru-becomes-world-leader-in-coca-production/>

⁵¹<http://www.foxnews.com/world/2013/05/22/canada-government-announces-new-aid-package-for-peru-closely-linked-to-mining/>

⁵² There was some Soviet aid coming but it was insufficient to truly combat the effects of the famines (Patman, 1993).

Unlike in Peru or in India, aid in Ethiopia constitutes a very significant portion of the government's expenditures. Throughout the 2000s, annual aid flows accounted for more than 30 per cent of the government's budget (Feyissa, 2011). As Table 1 shows, aid also constitutes almost 19 per cent of the country's annual GDP.

Nevertheless, despite the high relative importance of aid to Ethiopia's economy, Ethiopian government can hold its own in its negotiations with donors (Feyissa, 2011). Although the EPRDF is no longer officially Marxist, it still believes in the supreme role of the state in the development process and is by all accounts authoritarian. 26 of Ethiopia's bilateral and multilateral donors, organised as the Development Assistance Group (DAG), have tried to push the government on issues such as privatising telecommunications and fertiliser distribution, centralising local government expenditure reporting, and increasing funding to primary education at the expense of university funding. Even though the government refused to agree to these conditions, the total amount of aid provided only increased (Furtado and Smith, 2007; Geberegiabher, 2006).

The reasons for the situation are multiple. First, Ethiopia has been for a long time praised for its lack of corruption and relative government efficiency, especially when compared to other Sub-Saharan African countries and the donor community is reluctant to sully this reputation by overt criticism, which would reflect badly on its own judgement. Second, Ethiopia's humanitarian and development needs are truly pressing and therefore decreasing the amount of aid provided could be regarded as highly immoral. More importantly, after 9/11 Ethiopia became a strategic Western ally in the War on Terror (thanks to its strategic location in the Horn of Africa) and reducing the amount of aid it receives could compromise this partnership. Finally, Ethiopia also receives a large amount of Chinese aid – though unclear how much exactly since China does not reveal the amount of its aid flows – and by decreasing the amount of aid disbursed, Western governments would risk losing even the little control that they have over the country to the Chinese (Feyissa, 2011; Hackenesch, 2013).

This increasing strategic importance of Ethiopia to its donors can be also observed in the reality that despite the country's worsening governance ratings and increase in violence, Ethiopia has continued to receive various forms of budget-support assistance (Geberegiabher, 2006) – an aid instrument preferred by the government due to its greater fungibility. In the same line, the government has started to prefer bilateral aid over multilateral aid, which tends to be more burdened with conditionality (Feyissa, 2011).

Vis-à-vis the specific activities financed by donors in the country, food shipments constitute a very significant portion of the portfolio. In fact, in the past ten years Ethiopia has been one of the largest recipients of food aid in the world (FAO, 2014). With a view to Ethiopia's often acutely dismal food-security situation, food aid to the country undeniably saved millions of lives in the short run. On the other hand, some research has suggested that its longer-term impact on food

security might not be equally positive, as food aid might have in places reduced local food prices and hence discouraged local food production (Gelan, 2007; Tadesse and Shively, 2009). Moreover, the food aid to Ethiopia has been described as deficient in targeting, often failing to reach the poorest and temporally intransient, annually flowing to traditional food-insecure areas and slow to respond to food insecurity in other localities (Jayne *et al.*, 2002, Clay *et al.*, 1999).

Likely in an attempt to make aid results more sustainable, a large portion of foreign funds to Ethiopia after 2005 has been spent on supporting large public poverty-reduction programmes: the Public Sector Capacity Building (PSCAP), the Productive Safety Net Programme (PSNP), and the Promotion of Basic Services (PBS). The objective of the PSCAP is to improve the scale, efficiency, and responsiveness of public service delivery at all levels, from federal through regional to local, and to strengthen good governance and public-sector accountability (WB, 2013). The PSNP provides food or cash to food insecure households in exchange for work at public projects or directly to people unable to work. Finally, the PBS transfers around one billion US dollars annually to regional and district governments for financing of services such as education, health, water, agricultural extension, and construction of roads (Feyissa, 2011). All three programmes are heavily sustained through foreign funds; for example, one third of the PBS is annually paid for by donors (*ibid*).

Indian aid narrative

Western donors have provided aid to India ever since its independence in 1947. However, while initially aid flows were significant enough to finance a large portion of India's public investment and imports, as the Indian economy grew, the size of aid flows became relatively much smaller (Lipton and Toye, 1991). This occurred despite the fact that after 1990, following a period of economic liberalisation, annual aid flows to the country roughly doubled to an average of three billion US dollars. In 1990 this number still constituted 1 per cent of Indian GDP but by 2010 it decreased to only 0.2 per cent (QWIDS, 2013).

The small relative importance of aid is undoubtedly one of the fundamental factors that have allowed the Government of India to be a truly strong aid-negotiating partner. All aid provided to India, even if earmarked for various states, has to go through the national government where the money is pooled and then disbursed to the different states according to a national plan, at a stable proportion of 70 per cent concessional loans and 30 per cent grants (Colclough and De, 2010; Lipton and Toye, 1991). The Indian government is generally clear about its policy objectives and not open to accepting aid conditioning (Colclough and De, 2010). One would hence expect Indian aid to be fully fungible. Initial studies contradicted this view, suggesting that aid to India funded only the projects that the donors were intending to support (Gang and Khan, 1990). However, later studies indicated the opposite - that development aid in India merely

substituted for spending that the government would have undertaken regardless (Jha and Swaroop, 1998; Swaroop *et al.*, 2000).

It is natural to hypothesise that with the decreasing relative importance of aid to the Indian economy, the Indian government could become ever more assertive in its negotiations with donors. One indicator supporting this hypothesis is that in 2003, when the nationalist Bharatiya Janata Party was in power, the Indian government terminated bilateral aid-provision agreements with all but six of its largest donors – the UK, Germany, Japan, the US, the EU, and the Russian Federation, citing excessively high transaction costs attached to bilateral aid received from the other donors. This ban on small bilateral donors was withdrawn the following year, when the Congress Party resumed power, but only three donors – Italy, France, and Canada –renewed their aid agreements (Colclough and De, 2010). Another indicator of India's growing assertiveness in its relationship with donors has been the gradual decline of the amount of multilateral aid received, which – even if less political – tends to be burdened with a greater amount of policy conditionality (Figure 5).

Nevertheless, the small relative importance of aid to the Indian economy means neither that aid has never had any positive impact on India's poor nor that donors have no more influence over the funds that they provide to India. Initially, through the 1960s and 1970s, foreign aid in India was used to fund primarily large infrastructural projects and foreign exchange reserves and as such did not directly translate into poverty reduction (Lipton and Teyo, 1991). Later, aid focused on support to agriculture, particularly on encouraging the cultivation of 'Green Revolution' crops, might have had some positive impacts on ameliorating poverty. Unfortunately, due to the lack of credit access, the poorest farmers in India were largely left out of the 'Green Revolution'.

Recent aid flows, however, have concentrated on providing support to social-infrastructure sectors such as education, health, and sanitation, which have the highest poverty reducing potential. Amis (2001) examined the impact of slum-upgrading projects on slum inhabitants in several Andhra and Madhya Pradesh cities and concluded that they significantly raised recipients' quality of life, an essential indicator of poverty amelioration. The same can be concluded about projects aiming at increasing primary-school enrolment rates, described by Colclough and De (2010). Moreover, while the enrolment efforts were largely coordinated by the Government of India, foreign donors designed several innovative pilot projects – e.g. small school desks for small children, radio utilisation for teaching, schooling for migrant children – which due to their highly positive impact were eventually adopted and scaled up by the government. In this manner, the donors retained their ability to shape concrete Indian policies despite their increasingly smaller clout in negotiations with the government.

Regarding specific aid activities recently financed by donors, the QWIDS micro-data indicate that the largest projects were ones in transportation (construction of roads, train tracks, and metro systems), health (programs against HIV, tuberculosis, polio and support for women's reproductive health), and education (primary and secondary). Donors also supported large-scale national poverty-reduction programmes including the provision of rural micro-credit, the National Rural Employment Guarantee Scheme (NREGS, guarantee of 100-day employment a year in exchange for food), the free mid-day meal provision to children in schools, and the Public Distribution System (PDS, distribution of subsidised food). The programmes are seen as often ineffective at poverty reduction, particularly due to very high levels of corruption in their implementation (Jha *et al.*, 2009, Jha *et al.*, 2011).

Vietnamese aid narrative

The causes underlying the changing aid flows to Vietnam are multiple, both economic and political. In 1990, the Cold War was only drawing to a close and Vietnam was still under the influence of the Soviet Union. At that time, the United States was not disbursing any except for humanitarian aid to the country. Other donors were also committing only small aid amounts, citing worries about human rights abuse (Nature, 1979). However, as the government at the beginning of the 1990s committed itself to a full market liberalisation *à la* China, Western donors started disbursing increasingly larger sums of money. Vietnam thus became a true 'donor darling', with aid programmes in 2003 administered by 25 official bilateral donors, 19 multilateral donors, and about 350 international NGOs (Acharya *et al.*, 2006). Together, these donors accounted for more than 8000 development projects or approximately one project per every 9000 inhabitants (*ibid*: 4).

This situation is naturally not completely beneficial to the country as donor proliferation and lack of donor coordination take a toll on the recipients. Countries dealing with too many donors at one time often focus too much on accommodating the myriad of different donor requirements and too little on identifying own development goals in line with true population needs (Morss, 1984). Donor proliferation also weakens countries' administrative capacity by drawing human capital away from public to the non-profit (donor) sector (Knack and Rahman, 2004). The list of related afflictions goes on, to high transaction costs, duplication or even worse, cross-purposes of project efforts, and a lack of project scale.

On the other hand, too much donor coordination could also be harmful to the recipient country, affording the donors with too much control over the recipient governments' policies. Van de Valle and Mu (2007) tested whether this was the case in Vietnam, assessing the degree of aid fungibility in Vietnamese transportation sector. If donors had no control over the recipient government's actions, one could expect all aid provided to be used for activities that the

recipient country was planning to carry out regardless, freeing up funds to be used in other areas as seen fit. The authors concluded that aid in Vietnam (in this particular case World Bank's funds for building roads) is partially fungible, with about half the roads that the donor planned built at the end of the project. However, much of the remaining funds were also used in the transportation sector, indicating that building roads was a priority not only for the World Bank but also for the Vietnamese government.

Another characteristic, noted by authors, of the aid to Vietnam is its generally unequivocal support for 'Green Revolution' agricultural methods focused on raising industrial agricultural productivity and increasing outputs, without due consideration for smallholding farmers and ethnic minorities (Bonnin and Turner, 2012). By supporting the government's major push for all farmers to grow hybrid rice at the expense of traditional rice varieties and other crops, the donors likely helped the country reduce overall food insecurity but might have simultaneously contributed to small farmers' increased vulnerability to crop failures due to drought or floods.

Aside from agricultural industrialisation projects, the largest amount of donor funds went recently into activities focused on strengthening the country's infrastructure – building roads and the electricity network – and supporting the country's economic liberalisation – financing credit facilities and facilitating the ease of accessing credit. Education and health, particularly projects dealing with HIV patients, also received funding. Significant foreign financing went also into supporting the National Targeted Program for Poverty Reduction (NTP-PR), the aforementioned safety-net program that provides poor people with support ranging from agricultural extension, credit, and vocational training to education and health subsidies (WB, 2010).

Aid narratives summarised

From 1990 to 2010, the amount of aid provided to Vietnam and Ethiopia rose significantly, to India it stayed approximately at the same level, and to Peru it declined three-fold. The reasons underlying the augmentation of aid to Ethiopia and Vietnam have to do with the countries embarking on liberal market reforms, highly encouraged by Western donors, as well as with the fall of the Soviet Union, under whose influence both countries were until the early 1990s. Aid to India doubled prior to 1990, when the country also adopted a package of liberalising economic policies but since stayed the same and in relative terms (per capita and per GDP) declined as both the countries' population and economy experienced significant growth. Finally, aid to Peru decreased as the country experienced high rates of economic growth and joined the World Bank-defined group of upper middle-income countries⁵³.

⁵³ When compared to other low- and middle-income countries, Peru, Ethiopia, and Viet Nam have received higher than average amounts of aid per GDP and per capita in the two decades examined while India has received slightly less.

When looking at aid not as a uniform but quite a heterogeneous flow of funding, several salient findings emerged. Multilateral aid remains an important source of funding in Ethiopia, India, and Vietnam but overall its importance appears to be fading. The emerging importance on ‘new’, non-DAC donors has affected particularly Ethiopia, which significantly increased its leverage in negotiations with DAC donors. Loan aid is particularly important and prevalent in Vietnam – where aid is also at its most volatile, while budget support and food aid are utilised most often in Ethiopia. All four countries receive increasingly large portions of aid to social infrastructure, while the amount flowing to the agricultural sector – of particular importance when talking about food security – is small in proportion and further decreasing in India. ‘Long-term’ aid dominates proportionally over both ‘short-term’ and humanitarian aid in all four countries.

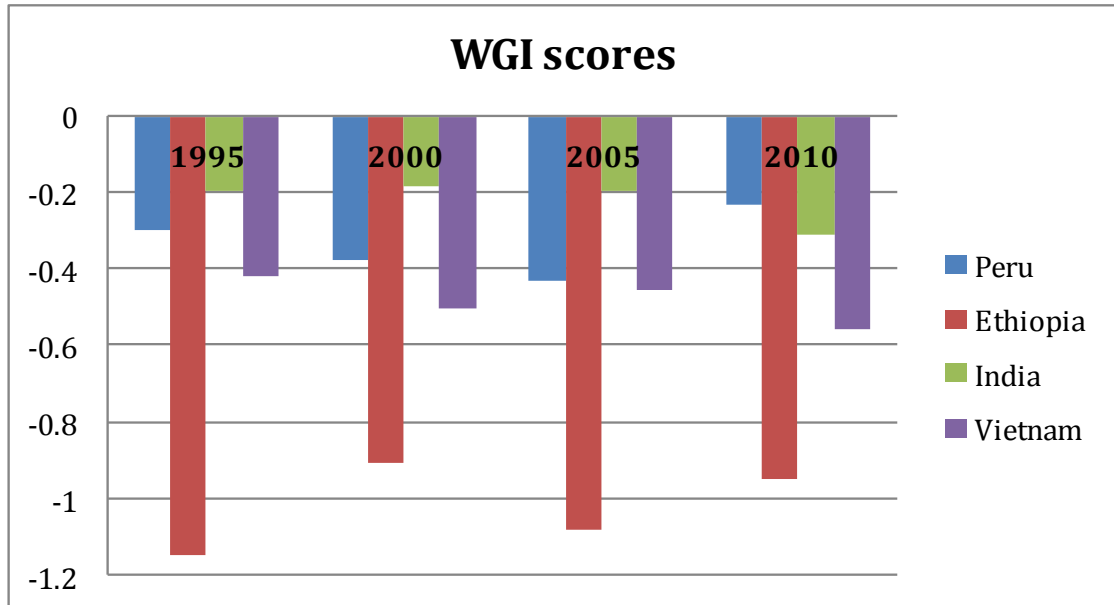
Governance – The main conditioning variable

Overview statistics

In the previous chapter, I discovered that the positive effect of aid on food security is conditioned on the quality of recipients’ governance. First, I look here at the three indicators used in the quantitative cross-country study – Worldwide Governance Indicators (WGI), the *polity2* measure of countries’ democracy, and the economic policy index comprised of budget balance, inflation, and trade openness – for the four case-study countries. Subsequently I supplement the numbers with some descriptive narrative.

As a reminder, the WGI is an index composed of six indicators – voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Voice and accountability expresses the extent to which country’s citizens can voice their opinions and elect their representatives, political stability and absence of violence depend on the likelihood that the government will be destabilised by conflict, government effectiveness rates the quality of public services and institutions, regulatory quality relates to the government’s ability to provide policies that promote development of the private sector, rule of law refers to the quality of law enforcement and likelihood of crime, and finally control of corruption indicates the extent to which public power is misused for private gain (WGI, 2013). The score varies from -2.5 to 2.5, with higher numbers denoting better quality of governance.

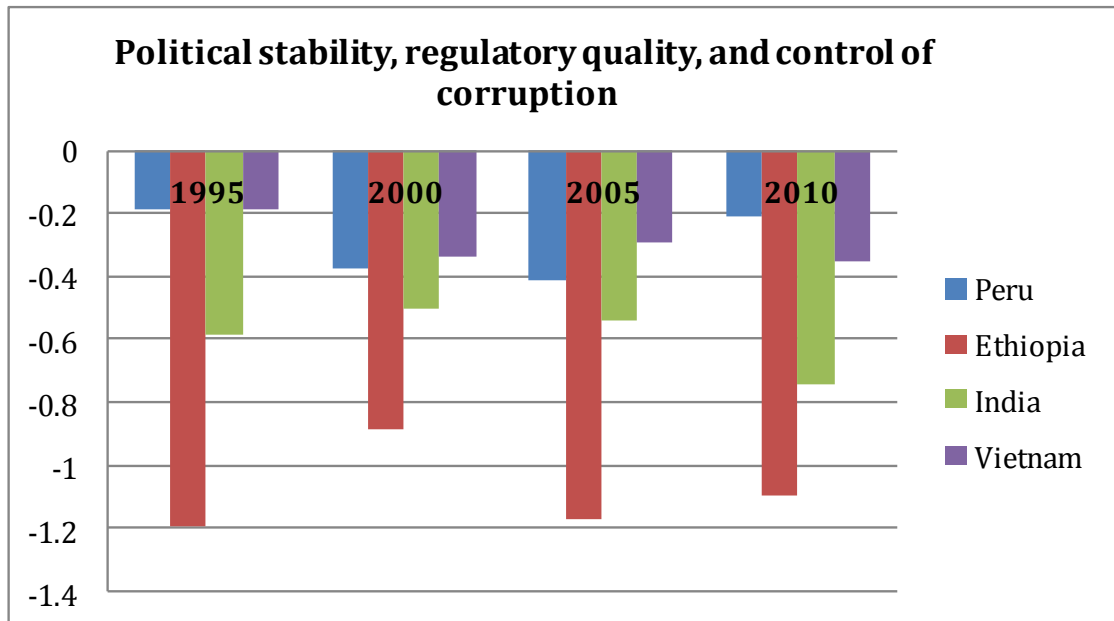
Figure 13. Trend in WGI scores between 1995 and 2010



Source: WGI

Figure 13 shows that from the four countries under study, Ethiopia always scored by far the worst on the WGI. In contrast, India used to be the best performer but was superseded by Peru after 2005. Vietnam’s performance has generally been quite dismal and deteriorated further after 2005, which is a little puzzling in view of Vietnam’s rapid and conversely India’s sluggish improvement on the food-security front. However, disaggregation of the WGI index in the quantitative study suggested that it is particularly the political stability, regulatory quality, and control of corruption components that reinforce the positive effect of aid on food security.

Figure 14. Trend in political stability, regulatory quality and control of corruption



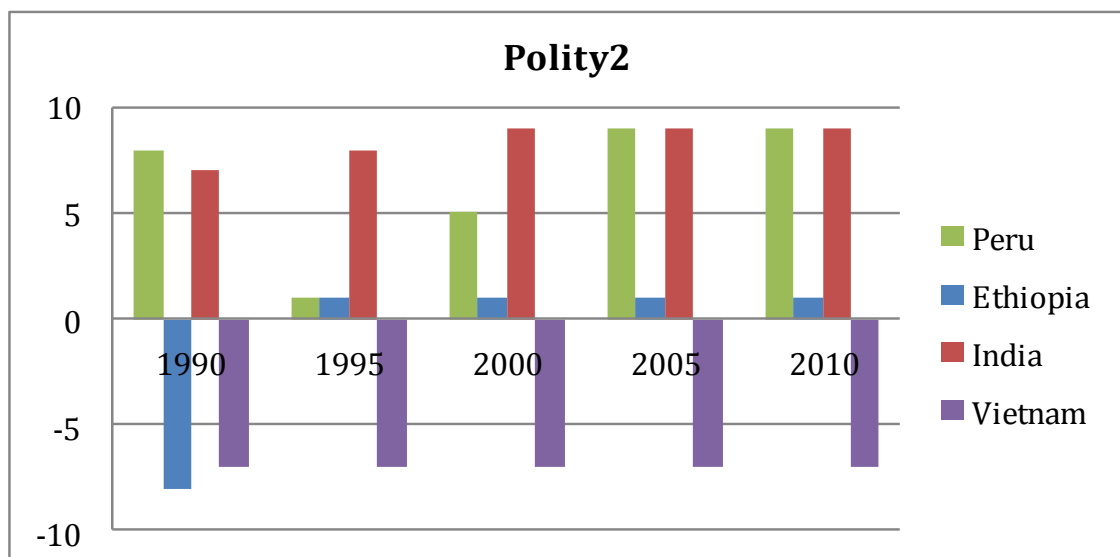
Source: WGI

Figure 14 displays the evolution of these three components only and the picture is quite different. While Ethiopia’s average score remains the worst, Vietnam swaps places with India and moves behind Peru as the second best performer. India’s relatively worse score in these three components is driven primarily by its very low mark in political stability and absence of violence and a declining mark in control of corruption.

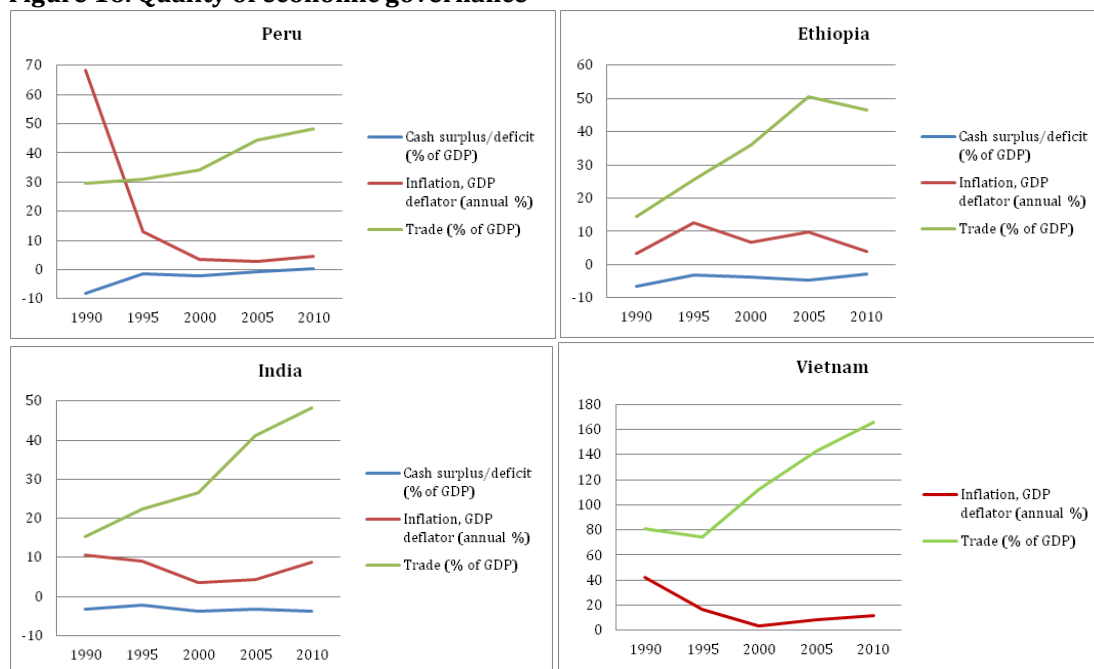
The *polity2* measure - compiled by the Polity IV project - rates countries on the basis of their observed democracy/authoritarianism. The score varies from -10 to 10, with higher numbers signifying a greater quality of democracy. As Figure 15 shows, the score is less temporally transient than the WGI, remaining flat for some countries for significant periods of time. In 2010, Peru and India scored the highest number – 9, with Ethiopia at 1 and Vietnam at -7. Since Vietnam has been officially ruled by one-party communist government ever since its reunification in the 1970s, it is easy to understand why its score has been consistently so low. Ethiopia’s score improved dramatically after 1991, when its communist dictatorship was overthrown by the EPRDF. India, as a multi-party democracy, scores consistently high while Peru’s score improved dramatically after the re-introduction of more democratic government in 2000.

Moving on to governance as measured by economic policies, Figure 16 shows the four countries’ scores on three economic indicators used to create the weighted policy index – budget balance (here operationalised by cash surplus/deficit), inflation rate, and trade openness. The graphs indicate that trade openness has been increasing in all the countries except for Ethiopia. Budget balance has improved in Ethiopia and Peru, while staying stable in India, and inflation rates experienced an upward trend in India whereas a downturn in Ethiopia and Peru.

Figure 15. Polity 2 scores between 1990 and 2010



Source: Polity IV project

Figure 16. Quality of economic governance

Source: WDI

Governance narratives – What lies beneath the numbers?

The overall conclusion based on the three variables can be that Ethiopia and Vietnam seem quite stable at their low quality of governance, India seems to have deteriorated somewhat, and Peru improved. Economically, the one country potentially in ‘danger’ is India, where inflation rates have been rising rapidly in the last few years, which some see as possibly leading to a serious economic downturn or even a crash (Greenberg, 2013)⁵⁴. One of the cited underlying reasons is India’s high and increasing level of corruption, which is partially to be blamed also for its worsening WGI score (TI, 2014). Other areas of India’s governance to have experienced a turn for the worse are political stability and rule of law, as evidenced for example by an increasing number of government-Maoist clashes or the increasingly medialised rape cases (Bahree, 2010).

Peru improved on all six indicators comprising the WGI index and its *polity2* score also increased after 2005, as its government relinquished formerly tight control over private media and civil society organisations (FH, 2013). The 2011 election in which power was handed peacefully over to the unexpected winner Ollanta Humala further raised the rating of Peruvian democracy.

On the other hand, although not captured here, Ethiopia’s *polity2* score was downgraded after the parliamentary elections of 2010, which were according to international observers clearly rigged by the EPRDF, which won all but two seats in the lower level of the national parliament (FH, 2013).

⁵⁴ <http://www.newyorker.com/online/blogs/currency/2013/09/why-indias-economy-is-still-in-trouble.html>

While the economic policies in Vietnam, particularly trade openness, are improving, its political freedom remains weak and recently experienced a negative trend as the government further restricted the functioning space of civil society (*ibid*). Nevertheless, publicly administered poverty-reduction programmes in Vietnam are not as renowned for corruption in their implementation as those in India and Ethiopia, and the country also remains politically stable and non-violent (Nguyen, 2011).

Control variables – Has aid influenced food security indirectly?

In this section, I present an overview of the mechanisms that might be influenced by aid and affect food security, thus acting as vehicles for aid indirectly impacting recipients' food security, and deliberate whether that has in fact occurred. These mechanisms are divided into economic and trade factors, agricultural factors, population factors, and conflict/disaster/environmental factors – division presented in Chapter One (Table 1)

Economic and trade factors

Literature reviewed in the previous chapters suggests that aid can positively impact countries' economic growth and GDP per capita. Aid can also influence trade flows but the direction of the relationship is more ambiguous (Lloyd *et al.*, 2000). The quantitative cross-country study indicated that GDP per capita and GDP growth have a positive impact on countries' food security quite consistently and that trade has a positive impact sometimes. The effect of aid on food security via economic factors is hence likely to range from neutral to positive.

Table 2. Overview of economic and trade control variables

	GDP growth	GDPpc, PPP	Trade (%GDP)	GDP growth	GDPpc, PPP	Trade (%GDP)
	Peru			Ethiopia		
1990	2.17	4465.18	27.14	-7.14	491.97	13.24
1995	7.98	5198.44	30.08	7.25	495.91	24.06
2000	1.36	5465.93	33.37	6.51	527.65	35.83
2005	6.51	6375.71	43.97	12.08	619.75	49.18
2010	5.50	8461.04	48.71	8.68	881.71	44.92
	India			Vietnam		
1990	1.06	1205.58	16.69	5.96	941.32	66.95
1995	7.26	1418.45	21.25	9.24	1232.40	81.63
2000	5.79	1747.31	25.56	6.15	1599.64	108.94
2005	8.80	2238.22	41.15	8.15	2163.66	144.56
2010	8.45	3086.39	49.31	6.02	2870.15	163.47

Source: WDI

Table 2 shows that all four countries experienced a steady and quite high rate of growth after 1995. Consequently, their GDP per capita doubled or even tripled in the 1990-2010 period. All four countries also became much more open to trade although from the trade-openness indicator (exports + imports/GDP) it is not clear whether this opening has been more due to an increase in exports or in imports. Nevertheless, Peru, India, and Ethiopia with trade openness still under 50 per cent remain significantly less engaged in the world economy than Vietnam with its trade openness of more than 160 per cent.

Has aid played a role in these developments and did they translate into improved food security? To respond to the latter part of the question first, the country narratives on food security suggest that indeed, higher rates of growth and trade openness might have strengthened food security in all four countries to at least some degree. Whether economic growth and trade openness had been bolstered by development aid receipts is harder to answer, however. Given the relative size of foreign aid to the four countries' economies, this case would be easy to argue only in Ethiopia and more recently perhaps in Vietnam. In India and in Peru, current aid flows are quite low compared to national GDP and therefore one cannot easily conjecture about the existence of a significant relationship.

Agricultural factors

Here, I focus on the impact of four agricultural variables – food production, cereal yield, the amount of GDP composed by agricultural production, and the proportional employment in agriculture. The first two variables – domestic food production and cereal yield - were found by the quantitative cross-country study to exert a significant positive impact on countries' food security; the latter two variables might not have a direct effect on food security but I discuss them here in order to paint a more complete picture of the countries' agricultural situation. Regarding the effect of aid on these four variables, aid might contribute positively to raising countries' cereal yield, through supporting agricultural research. Its effect on food production can vary from negative to positive, however; as for instance food aid might lower domestic production while support for agricultural extension might on the other hand boost it. The impact of aid on the proportional representation of agriculture in countries' GDP and employment is likely to be only indirect as both these indicators tend to decrease with increasing GDP⁵⁵. Summarising the postulations, aid can hence influence food security via agricultural factors in both a positive and a negative manner, depending on country's circumstances and the exact nature of the aid provided.

⁵⁵ If aid helped raise countries' GDP, it would also contribute to lowering the proportional constitution of agriculture in GDP and employment.

Table 3. Overview of agricultural control variables

	Food production	Cereal yield (kg per ha)	Agriculture (%GDP)	Employed in agr. (%)	Food production	Cereal yield (kg per ha)	Agriculture (%GDP)	Employed in agr. (%)
	Peru				Ethiopia			
1990	49.61	2603	8.54	1.20		1238	54.34	
1995	63.05	2639	8.78	1.10	57.27	1034	57.48	89.30
2000	85.43	3084	8.50	0.60	69.88	1116	48.69	
2005	99.84	3558	7.21	32.90	102.25	1361	45.59	79.30
2010	129.63	3898	6.77	25.70	124.42	1682	45.62	
	India				Vietnam			
1990	70.29	1891	29.02		49.21	3073	38.74	
1995	81.20	2112	26.26	60.50	61.26	3570	27.18	70.00
2000	91.67	2294	23.02	59.90	76.88	4112	22.73	65.30
2005	100.02	2412	18.81	55.80	100.42	4726	19.30	54.80
2010	123.39	2676	17.98	51.10	119.25	5177	18.89	48.40

Source: WDI

Table 3 displays the performance of Peru, Ethiopia, India, and Vietnam on the four agricultural indicators discussed. Food production, expressed as an index with 2004-2006 period as the basis year, rose from 1990 to 2010 in all four countries. However, population also increased in the four countries in that time frame and hence per-capita food production has likely stayed roughly the same or even decreased (particularly in Ethiopia with its extremely high population growth). Cereal yield per hectare also increased in all four countries but stayed at very different level for the different countries in 2010. At less than 1700 kilograms per hectare, it was by far the lowest in Ethiopia, followed by India, Peru, and Vietnam with more than 5000 kilograms per hectare. The relative productivity increase between 1990 and 2010 was also the lowest in Ethiopia and in India.

In Ethiopia, agriculture is clearly the most important productive sector, accounting for almost half the annual GDP and more than 80 per cent of employment. In India, the importance of agriculture to GDP has declined by almost half in the past decade but more than half the population is still employed agriculturally. Vietnam has very similar numbers to India, with agriculture actually contributing more to the Vietnamese GDP – the major difference is the much higher productiveness of Vietnam’s industrialised agricultural sector (Bonnin and Turner, 2012). Finally, in Peru agriculture seems economically quite negligible, contributing mere 1 per cent to annual GDP and employing fewer than 7 per cent of the population.

The food-security and aid narratives suggested that aid had a particularly significant impact on agriculture in Vietnam, in India, and in Ethiopia. In both Vietnam and India, donors for several decades supported the countries’ efforts at modernising their agriculture through ‘Green Revolutions’, which helped them increase agricultural yields and food production in general. However, while in Vietnam this increase unequivocally translated into improved local food security, in India the link is less clear as the poorest farmers seem to have been left out of any improvements and food insecurity, particularly at the child level, improved only marginally

throughout the two decades under study (e.g. Drèze and Sen, 2013). Ethiopia has also received significant amounts of agricultural development aid but its cereal yields and agricultural productivity are yet to experience a significant improvement and the aid has recently been accused of lending support to human rights' abuse, by enabling the government to enforce resettlements of certain social groups (HRW, 2012)⁵⁶. At the same time, the country has been for many years a consistent recipient of food aid, which is suspected to have depressed the levels of domestic food production (Gelan, 2007). Consequently, only in Vietnam aid unequivocally appears to have bolstered food security via the agricultural route.

Population and environmental factors

Regarding the population variables, the quantitative cross-country study concluded that countries with larger populations were generally better at ensuring their populations' food security although the impact was neither very significant nor strong. Increasing population density as a result of population growth is, on the other hand, associated with lower food security particularly in poor countries (Ezra, 1997). Both the percentage of people annually affected by natural disasters and the degree of environmental degradation, the two environmental variables considered here, are likely to impact food security negatively, even though my quantitative cross-country study failed to find a significant relationship between disaster occurrence and countries' food security.

While aid probably has some impact on these four variables, at least in some countries, it is not likely to be often significant or evident. It seems improbable that aid would be able to significantly affect population levels in the short run but aid initiatives in education and reproductive health might in the long run contribute to decreasing the rate of population growth. *Vis-à-vis* environmental factors, aid is naturally unable to directly affect the occurrence of natural disasters, but it can counteract its negative impacts on food security via the provision of humanitarian assistance. Aid might also influence countries' level of environmental degradation. This influence can be either positive or negative – a lot of aid has recently been earmarked in support of projects aimed at improving environmental conditions but at the same time, projects focused on agricultural mechanisation or large infrastructure projects can have major harmful effects on the environment.

⁵⁶ <http://www.theguardian.com/world/2014/jul/06/britain-supporting-dictatorship-in-ethiopia>

Table 4. Overview of population and environmental control variables

	Population (millions)	Population growth %	Disaster affected %	Population (millions)	Population growth %	Disaster affected %
	Peru			Ethiopia		
1990	21.8	2.01		48.0	3.48	
1995	23.9	1.80		57.0	3.25	
2000	26.0	1.51	1.95	66.0	2.87	3.26
2005	27.7	1.16		76.2	2.80	
2010	29.3	1.13		87.1	2.63	
	India			Vietnam		
1990	868.9	1.99		66.0	1.84	
1995	955.8	1.83		72.0	1.64	
2000	1042.3	1.67	4.36	77.6	1.37	1.60
2005	1127.1	1.48		82.4	1.16	
2010	1205.6	1.29		86.9	1.05	

Source: WDI

As Table 4 shows, between 1990 and 2010 the number of inhabitants in Ethiopia, India, Peru, and Vietnam increased, though by quite different amounts. In 1990, Ethiopia had a population of 48 million; by 2010 the number increased to 87 million, and by 2013 it was more than 92 million. This population jump occurred due to the very high rate of population growth in the country, which was almost 3.5 per cent in 1990 and stayed above 2.5 per cent in 2010. India also experienced a very large increase in population in the two decades under study, from less than 870 million in 1990 to more than 1.2 billion in 2010 but its recent population growth slowed down significantly, to 1.3 per cent in 2010. Peru and Vietnam started out the 1990s decade also with high rates of growth but slowed down to 1 per cent by 2010.

Regarding disasters and conflicts, all four countries experienced a disaster most of the twenty years examined. Ethiopia suffers a drought virtually every single year, only its intensity varies, while India annually goes through both droughts and floods, and usually also cyclones, landslides, earthquakes, and other disasters. Vietnamese coastal areas are annually affected by cyclones and floods, while Peru is particularly prone to earthquakes and landslides. The highest proportion of population annually affected is in India and in Ethiopia, followed by Peru and by Vietnam.

In terms of conflicts, only Ethiopia was involved in a full-on international war in the time period examined although most of the remaining countries experienced some internal conflict as well. Between 1998 and 2000, Ethiopia fought a 'border' war against Eritrea; in addition, the Ethiopian military was involved in a conflict with forces in Somalia towards the end of the 2000s and the country experienced also domestic unrest from various terrorist groups. In that time frame, Indian army had been deployed to fight Maoist and other insurgents throughout the country and cross-border skirmishes with Pakistan also occurred several times. Peruvian army

waged a protracted war against the Shining Path guerrilla, which was finally brought to a close in the middle of 1990s. Only in Vietnam the situation was rather peaceful.

Finally, vis-à-vis environmental degradation, all four countries have been faring quite poorly. Ethiopia experienced a steady growth in land and water degradation, deforestation, and a loss of biodiversity brought about among other factors by low agricultural productivity and high dependence on fuel wood (Teketay, 2001). The country is estimated to lose 400 tons/hectare of topsoil every year and enough grain from land degradation to feed four million people (Asefa, 2003). The largest environmental problems in India are estimated to be air pollution (one of the worst in the world) and the degradation of crop lands, pastures, and forests, harmful to food security (Mallet, 2013)⁵⁷. An environmental problem posing serious threat to India's food security is the depletion of deep water aquifers, which is likely to leave almost one-tenth of the Indian population without access to water in the next few years to come (Rodell *et al.*, 2009). Peru's main environmental challenges are deforestation and soil degradation due to logging and mining (Hance, 2014). Moreover, Peruvian highlands have experienced significant soil degradation that challenges the food security of highland subsistence, primarily indigenous, farmers (Swinton and Quiroz, 2003). Finally, Vietnam has also experienced significant environmental degradation throughout the past few decades, with deforestation, air and water pollution, soil degradation, and river sedimentation on top of the list of major issues. However, the degradation has so far not translated into significant challenges for population's poverty and food security (Dasgupta *et al.*, 2005).

Has development aid affected the four countries' food security through any of these mechanisms? The evidence fleshed out here does not suggest that it could have happened via the population variables, not because they had no impact on food security but because aid had at best a very marginal impact on the countries' population growth. Turning to the case of natural disasters and conflicts, humanitarian aid provided in their wake certainly helped to compensate for the damage to countries' food security but the measures have generally been short-term, involving primarily deliveries of food aid, without a long-term positive effect on food security. On the other hand, the evidence available indicates that aid might have to a small degree indirectly influenced the four countries' food security negatively, via reinforcing environmental degradation through projects aimed at the mechanisation and intensification of agriculture. While raising cereal yields, these initiatives generally contributed to worsening soil conditions and increasing the rate of water-aquifer depletion, both factors with harmful effect on food security particularly in the long run. However, it is unlikely that in any of the four countries this negative effect was significant enough to offset the positive impacts of aid.

⁵⁷ <http://www.ft.com/intl/cms/s/0/0a89f3a8-eeca-11e2-98dd-00144feabdc0.html#axzz2jmRPaDR>

Summary analysis: Has aid bolstered food security in Peru, Ethiopia, India, and Vietnam and if so, how?

Taking into account all the information and its analysis presented above, this section summarises answers to the three central questions of my thesis: 1. Has aid influenced food security positively? 2. Has its positive impact been affected by governance? And lastly 3. Have different types of aid had different impact? In this way, this section tests the relationships found to hold true in the quantitative cross-country study and either bolsters their validity through the same findings or amends and modifies them, helping in the process of formulating new propositions. More importantly, it recounts the processes underlying the relationships found to hold true.

Aid in general

The strongest conclusion of the previous chapter was that development aid has a positive impact on food security and that this positive effect is strengthened by the quality of the recipients' governance. The size of the effect discovered was relatively small but it was unequivocally present. The case studies do not disprove that the relationship might be positive but neither do they confirm it very emphatically. As data discussed in the passages above implied, in Ethiopia aid played a direct and in Vietnam likely an indirect role in bolstering food security. It is harder to say whether such a relationship holds also for India and Peru although equally there is no direct evidence suggesting that the aid disbursed had no positive effect on food security.

Between 1990 and 2010, Ethiopia received annually a significant portion, frequently more than 50 per cent, of its budget as aid (Oakland Institute, 2013). Aid has financed most of the food-aid shipments from abroad on which millions of Ethiopians have relied for their year-to-year survival as well as large parts of public safety-net and transfer programmes. Thus, it is quite indisputable that aid has had a direct positive short-term impact on the country's food security, particularly on the reduction of acute undernourishment among both adults and children. However, a few important caveats need to be highlighted here.

First, the Ethiopian government has been reluctant to accept donors' suggestions on certain policies, for example on reducing the firm territorial division of the country, which does not allow for large amounts of food to be transported from one section of the country to another, even in famine situations (Feyissa 2012, Webb and von Braun 1994). Moreover, according to the Human Rights Watch, the Ethiopian government has commonly used aid as a tool for the repression of political dissent, refusing to provide food aid to civil-society activists and opponents and using donor money for

indoctrination in schools (HRW, 2010). Donors have also indirectly provided financial support to Ethiopia's 'villagisation' scheme, under which farming and nomadic populations have been resettled to different regions within Ethiopia under the guise of improving agricultural productivity (HRW, 2012). Hence, it is clear that if the government were more democratic and its institutions and policies more responsive and less corrupt, the impact of aid on food security would have been stronger.

Second, one third of all aid provided to Ethiopia annually is generally made up by food, which—as many researchers have pointed out – might not motivate the country to adopt a more sustainable and long-term-oriented vision of future development. Claims about Ethiopians becoming 'addicted' to food aid have been largely refuted by researchers on the individual level, on the basis that food-aid delivery in Ethiopia was generally too unreliable and poorly timed for farmers to grow dependent on it and complacent in response (Little, 2008; Siyoum *et al.*, 2012). However, from a macro perspective researchers agree that the constant food-aid flows likely led to a depression in the levels of local agricultural production, hence indirectly harming the country's long-term food security. In cooperation with the Ethiopian government, foreign development agencies have recognised this reality, and have tried to tackle it through the provision of greater support to the agricultural sector. On the other hand, an indirect negative impact of aid could have also been produced by these foreign-funded agricultural mechanisation

Box 1: Aid, governance, and food security - Point-in-time illustration from Ethiopia

In 2011, a major drought in the Horn of Africa resulted in a poor harvest and major loss of livestock (Reta, 2015). However, thanks to the reaction of the international aid community, more than 13 million people in Ethiopia, Somalia, Kenya, and Djibouti received food aid that year, thus keeping the death toll down to 'tens of thousands' (Tisdall, 2012). In contrast, a similar drought in 1984 without an appropriate international response resulted in the deaths of more than 400,000 people in Ethiopia alone (BBC, 2000).

However, despite good rains and harvests in the following two years, even in 2014 almost three million Ethiopians had to rely on food aid to ensure survival (Ayyaantuu, 2014). According to most researchers, Ethiopia has become chronically dependent on food aid (Gelan, 2007; Tadesse and Shively, 2009), as evidenced by the fact that between 1990 and 2010, it received on average one million tonne of food-aid cereals annually.

Agriculture-development programmes, aimed at tackling this dependency and largely funded through external aid, have translated into some improvements as of late. The three million people dependent on food aid in 2014 actually constituted an improvement as compared to the average five million from previous years (Reta, 2015). Ethiopia's agricultural production in 2014 also increased 1.52 per cent compared to the year before.

Nevertheless, much of the increase in production has come from large commercial farms set up on lands 'grabbed' from small farmers by the Ethiopian government and leased to foreign countries including India and Saudi Arabia (IRIN, 2011). The former land occupants, such as the Kwegu tribe in Lower Omo valley, have often been forcefully moved to less fertile, dry lands, with no means of securing food other than through reliance on external assistance (HRW, 2012; Survival International, 2015). More grassroots-friendly, democratic policies by the EPRDF government would without a doubt ensure a more positive effect of Ethiopia's aid on its food security.

efforts, which might have contributed to worsening soil conditions and eventually collapsed yields in certain areas. Nevertheless, even when summed up, these negative indirect effects of aid on food security in Ethiopia are smaller in size than the aid's positive direct effects, at least when viewed through a short-term lens.

In the same 1990-2010 timeframe, aid to Vietnam increased from a relatively negligible

Box 2. Aid, governance, and food security - Point-in-time illustration from Vietnam

Vietnam is a major global success story in poverty reduction in the past few decades. The poverty rate declined from more than 60 per cent in 1990 to 15 per cent in 2010, with similar reduction in adult and child undernourishment rates (WDI, 2014; WHO, 2010). This success owes its due largely to the country's rapid agricultural growth in the past twenty years, propelled among other factors by technology of the 'Green Revolution'. The Western donor countries, who supported the 'Green Revolution' financially, take at least partial credit for the country's successful transformation (OECD, 2012). However, researchers agree that it would not have been possible without beneficial supportive policies.

Deviennes (2006) analysis of agricultural transformation in the Red River Delta aptly illustrates this reality. The delta underwent a successful agricultural transformation in the 1990s and 2000s, helping Vietnam become the second largest exporter of rice in the world. Part of this success was due to the high yielding, fast growing rice varieties provided with the help of donors such as the FAO (FAO, 2011c). Nevertheless, the achievement would not have been possible without further supporting factors, such as the government's land collectivisation in the 1980s, which allowed for the development of hydraulic irrigation systems, the subsequent land re-distribution by the government in the 1990s, and the government's continued support for domestic agricultural research (Deviennes, 2006; Thi Ut and Kajisa, 2006)

amount to almost as much annually as provided to Ethiopia, despite Vietnam's significantly higher GDP per capita. By 2010, Vietnam managed to significantly reduce the country's poverty and food-insecurity rates and one of the main underlying reasons has been a dramatic increase in agricultural productivity thanks to industrialisation and adoption of 'Green Revolution'

crop varieties with much higher yields than the ones used previously. Since foreign donors have invested quite heavily in Vietnamese agriculture, aid undoubtedly had an indirect positive impact on food security in Vietnam, via the mechanism of agricultural factors.

Vietnam's institutions and policies played a role in this impact as well, however. The quality of governance in Vietnam is generally rated low due to a very authoritarian nature of the regime (ruled by the Communist Party); nevertheless, Vietnam's economic policies are regarded to be solid and its level of corruption in project implementation, unlike its level of corruption in general, is not reputed to be very high. Moreover, the country is politically stable and non-violent as compared to Ethiopia or India, which according to the quantitative study is one of the major elements of governance that reinforces aid's positive effect on food security. One can thus ascertain that aid has had a positive impact on food security in Vietnam and that the country's performance in certain forms of governance further strengthened this effect. Similar to Ethiopia, aid to agricultural intensification in Vietnam also had a roundabout negative effect on local food security through environmental degradation but not sizeable enough – at least thus far - to counteract the positive influence.

The stories of India and Peru are quite different as aid to both countries declined throughout the two decades and became increasingly irrelevant economically due to the rapidly increasing size of the two economies. Aid to India moved from supporting large infrastructural projects in the 1960s and 1970s through support for ‘Green-Revolution’ agriculture in the 1980s and early 1990s to more support for social infrastructure, generally considered as a sector with the most poverty-reducing potential. Analyses of early Indian aid and its effects were quite positive (Lipton and Teyo, 1991) and hence it is likely that the later aid to India has had some positive impacts on poverty reduction and food security as well. However, unlike in Vietnam where aid appears to have bolstered food security primarily via the agricultural route, ‘Green Revolution’ in India did not have the same kind of positive effects as in Vietnam, most probably due to a lack of accompanying poverty-friendly policies and initiatives. Unlike in Vietnam, where the introduction of higher-yielding cereal varieties was accompanied by state support for irrigation and fertiliser and by land re-distribution, land in India remained concentrated in the hands of traditional landowners, with small farmers unable to afford the cost of fertiliser needed to grow the new crop varieties. Hence, aid cannot be considered an unequivocally positive factor for India’s food security from the agricultural point of view.

Bpx 3. Aid, governance, and food security - Point-in-time illustration from India

Between 1990 and 2010, PPP per capita increased in India from less than 2000 USD to more than 4,500 USD (WDI). This increase, however, translated into little improvement in food security among Indian children, whose rates of stunting still hovered close to 50 per cent in 2010 (WHO). Researchers explained this reality, showing that social disparities in Indian child undernourishment widened or stayed the same between 1992 and 2005 and that there was very little if any association between average per-capita growth and improvement in child undernutrition in developing countries (Subramanyam *et al.*, 2010; Vollmer *et al.*, 2014). Social welfare initiatives were recommended as necessary to ensure that growth led to stronger food security, with a particular emphasis on sanitation interventions in India (Subramanian *et al.*, 2014).

One of India’s main problems in sanitation has been open defecation, practiced by more than half the Indian population (Drèze and Sen, 2013). The resultant high levels of areal pollutants lead to frequent bouts of diarrhoea among children and over time reduce their ability to uptake nutrients from food (Keusch *et al.*, 2013). Nevertheless, a randomised-control trial conducted by the London School of Tropical Medicine and the Xavier Institute of Management recently suggested that toilet-construction is not a panacea to India’s food security problem either (Clasen *et al.*, 2014).

In cooperation with the Indian government, EU-funded NGOs Water Aid, United Artists Association, and SHARE constructed toilets in 50 randomly chosen villages in Odisha, with 50 non-intervention villages acting as controls. During the 30-month intervention period, the proportion of households with toilet access increased from 9 to 63 per cent in treatment households as opposed to the 8-to-12-per-cent increase in control households. However, the rate of diarrhoea among children under five years remained the same in both groups. The underlying explanation for the non-effect of toilets lie in people’s reluctance to use the toilets (RICE, 2014), which could be remedied through more active support for their use by the local government (Reilly and Louis, 2014). In this way, this case illustrates how the quality of local governance plays a role in ensuring the success of aid interventions.

Moreover, by now the proportion of aid to the Indian economy and population as a whole has become so small that claiming that aid has had any nation-wide impact is difficult. Lastly, food security situation in India has improved only little in the last two decades, despite quite persistently high rates of economic growth. Thus, it is hard to conclusively assert whether aid had bolstered food security in India as a whole. However, in view of the lack of functioning redistributive public policies and the amount of corruption plaguing India’s large public safety net programmes that have received also significant foreign funding, it is easier to convincingly

maintain that aid would have had an undoubtedly more positive impact on the country's food security in the presence of better governance.

Peru was a very large recipient of foreign aid, primarily from the US and the World Bank, in

Box 4. Aid, governance, and food security - Point-in-time illustration from Peru

In 2013, under the leadership of the conservative Prime Minister Stephen Harper, Canada doubled its aid commitments to Peru, becoming hence its third largest donor after the United States and Spain (QWIDS, 2015). Many researchers and development practitioners in Canada questioned this move, wondering why at a time when other DAC donors were reducing their aid programmes in Peru due to the country's rapid economic growth, Canada was significantly increasing its commitments, while simultaneously slashing its aid commitments to other developing countries (Oved, 2014). The explanation for the increase in Canadian aid to Peru was its intent to reduce the amount of civil strife against Canadian mining companies in the country and thereby facilitate their further growth (Arnold, 2012). The Peruvian government under the leadership of Ollanta Humala has been willing to 'play along', as mining constitutes the country's main growth engine (Oved, 2014).

In Quiruvilca, a Toronto-based company Barrick Gold started mining gold in 2004. At first sight, it appears that the operation might have brought about economic development, since with the help of the companies' taxes, the local government built new electric lines, roads, schools, and a hospital (Oved, 2014). However, the mine has not fuelled the promised growth of new jobs and caused environmental damage, primarily to water sources. Consequently, local farmers began to protest, culminating in a 2012 National March for Water (Arnold, 2012). In order to appease the locals, Barrick Gold launched a development project in cooperation with Canadian World Vision, aimed at reducing local poverty and social exclusion (Barrick beyond Borders, 2012). The project has spurred some growth of micro-enterprises in the region; nevertheless, many people who were initially displaced to make space for the mine and promised jobs in return remain jobless, food insecure, and bitter about foreign intervention (Alonso, 2014; Oved, 2014).

the 1980s and 1990s but by 2010, this amount declined to one third of its previous annual levels. The underlying reasons have included the rapid economic growth of the country, rising GDP per capita, and decreasing poverty and food-insecurity levels (El País, 2012). Aid might have initially - in the 1950s through 1970s - contributed significantly to higher economic growth in the country but the exploration of new mining sites and exports of

metals have certainly constituted a more robust driver in the recent decades. The same can be said with regard to poverty and food-insecurity reduction – while aid projects have likely had a positive impact in some places, the effect of nation-wide safety nets and transfer programmes such as Juntos, community kitchens, and Vaso de Leche were more significant. Hence, similar to the Indian case, I can conclude that aid projects might have had a positive impact on food security in some areas of the country but it is hard to claim the existence of a significant relationship on the country level. Additionally, in Peru as well as in India, aid likely had a small indirect negative effect on food security via promoting environmental degradation through certain aid projects but in neither country has it been evident or glaring enough to be able to claim that relationship as significant.

Overall, the study hence provides at least mild support to the hypothesis that aid tends to have a positive impact on countries' food security and that this relationship is positively conditioned on the quality of recipient country's governance. Moreover, the study nicely illustrates the process and mechanisms through which the positive effect of aid on food security can occur, painting a more nuanced picture of the aid-food security relationship in which aid might affect food security directly or indirectly, in which the effects are conditioned on the character of countries' institutions and policies, and in which aid's effect is more evident in countries where it still constitutes a sizeable contribution to the economy.

Who gives aid?

The results of the cross-country quantitative study suggested that while both multilateral and bilateral aid strengthens food security, the effect of bilateral aid is more conditioned on good governance, particularly if the aid is provided by non-DAC donors. This conclusion is easy to rationalise as bilateral aid is known for being provided for more political reasons but with less conditionality, and hence countries with better institutions and policies are likely able to utilise this type of aid more productively than countries with worse institutions and governance.

Out of the four countries studied, Ethiopia and India have historically received the largest proportion of multilateral aid, although as compared to the year 2000, by 2010 the amount declined in both countries. According to existing analyses of the two countries' relationships with donors, both India and Ethiopia have become relatively keen on receiving more bilateral aid as it comes with fewer policy conditions and recommendations that neither government is happy to accept. In both countries, however, corruption in project implementation is rampant and pro-poor government policies often ineffective, and hence more conditioning on aid could likely improve the positive impact of the aid disbursed.

The only one of the four countries that receives a large portion of its aid from non-DAC countries is Ethiopia. The large amount of aid provided to Ethiopia by China has helped the government negotiate with more leverage with the DAC donors and thus evade more conditionality on aid implementation. Given the above-cited possibility of greater aid effectiveness in the case of stronger aid conditions, Chinese aid might have thus had the unintended impact of weakening the overall positive effect of aid on food security in Ethiopia.

How is aid given?

The main findings regarding the way in which aid is provided from the cross-country study were that grants had a more positive effect than loans but that loans were more conditioned on governance, that budget support was more conditioned on governance than programme/project aid, that food aid was generally less useful for food security than non-food aid, and that aid volatility dampened the positive effect of aid on food security. I do not discuss every one of the four countries with regard to every category but only focus on the main conclusions.

With regard to the division into grants and concessional loans, Vietnam followed by India received the largest proportion of its aid in loans between 1990 and 2010. Neither one of the countries has been rated very high on governance and quality of institutions as measured by the WGI but they both have performed relatively well when it comes to the quality of their economic policies. Thus, while it is possible that aid in Vietnam and in India would have had a more notable impact on food security had it been provided with grants, there is no concrete evidence to

support this claim. Ethiopia obtained little of its aid in loans and that undoubtedly had a positive impact on its food security given the country's very poor record of governance as well as the high poverty and food-insecurity rates.

On the other hand, Ethiopia has out of the four countries been the largest recipient of budget support, even after it became clear following the 2005 election that the EPRDF wanted to maintain an absolute control over power in the country. Coupled with the strong will that the government exhibits in its negotiations with donors and high levels of corruption, budget support – money given directly to the government to spend on development activities – is probably not the best aid instrument to be used in Ethiopia. The case of the 'villagisation' programme indirectly financed by foreign donors and discussed earlier clearly supports this claim. On the other hand, Peru, India, and Vietnam all have better governance records than Ethiopia and yet in 2010 they received none of their aid disbursements in the form of budget support. This is most surprising in the case of Peru, which has the best governance and economic indicators of the four countries.

Regarding the division of aid into food and non-food, between 1990 and 2010 food aid constituted a significant portion of aid only in Ethiopia. As I mentioned above, in many cases, particularly in famine situations, shipments of foreign food played an undeniably positive role in rescuing people from the brink of starvation or preserving their asset base. Nevertheless, Ethiopia has throughout the past decades come to consistently rely on foreign food aid, to the extent that local production suffered in consequence. Redirecting some of the food aid into aid aimed at increasing local production through raising agricultural productivity, as the Productive Safety Net Programme has recently attempted, should constitute a better long-term food-security strategy, at least in theory. However, for the implementation to truly work in practice, the government needs to ensure that even the marginalised, most food-insecure groups are included – which might be hard to achieve in a country with as low governance scores as Ethiopia.

Finally, aid volatility seems to be a large problem particularly in Vietnam, where it is connected also to the issues of donor proliferation and lack of donor coordination. It is quite possible that the volatility has diminished the positive effects of aid on food security as it is hard to plan public policies several years ahead when the source of foreign support varies greatly from one year to the next. Nevertheless, as Vietnam becomes increasingly less dependent on aid for its development (thanks to economic growth and poverty reduction), aid volatility should also cease to be such a negative influence on its aid effectiveness.

Where does aid go?

The main findings vis-à-vis this question in the previous chapter were a) that aid to social and economic infrastructure had the most outright positive impact on food security whereas aid to agriculture was most conditioned on good governance and b) that primarily long-term aid bolstered food security.

Regarding the division of aid according to the sector where it is disbursed, in all four countries between 1990 and 2010 the amount of aid provided to social and economic infrastructure increased. Anecdotal and case-study evidence from Ethiopia, Vietnam, and India suggests that particularly aid to social infrastructure (health, sanitation) has had a positive effect, at least in places, on poverty and food-insecurity reduction.

In contrast and somewhat counter-intuitively, agricultural aid was found by the quantitative study to have a significant positive relationship with food security only in the presence of good governance. This study helped to explain, at least to some extent, this conundrum. In India, the 'Green Revolution' firmly supported by foreign donors contributed to raising cereal yields but this achievement never translated into evidently stronger food security on the national level, due to the absence of pro-poor policies and significant corruption on all levels of project implementation. At the same time, this study connected agricultural aid more strongly with bolstering food security, particularly through the case of Vietnam where increased yields thanks to agricultural aid in the presence of supportive policies did help bring about stronger food security.

With this argument in mind, it is quite discouraging to see that in all four countries, aid to agriculture constituted such a small portion of all the aid distributed, even in Ethiopia that has still very low agricultural productivity and very high levels of food insecurity. Providing more aid to the agricultural sector, in a way sensitive to the realities of life of the poorest farmers and to the environment, would likely improve the positive effect of aid on food security in agriculture-reliant developing countries, particularly those with at least some supportive institutions and policies in place.

Looking at the distribution of aid among long-term, short-term, and emergency, long-term aid has been increasing in all four countries. This is an encouraging finding given that the quantitative study identified this type of aid as more beneficial to food security than either short-term or emergency aid in the relatively short term – and likely still more so in the longer term⁵⁸. However, as the failure of the toilet project in India, discussed in Box 3, demonstrated, in ensuring the success of long-term aid initiatives, as in of all others if not more so, the quality of recipients' governance is of crucial importance.

⁵⁸ That is because long-term aid, as the name suggests, is expected to become more beneficial in a longer time span.

Conclusion

This chapter allowed me to test the findings from the quantitative cross-country study, to enrich them with description, and to delve deeper into the various aid-food security links. None of the findings here outright contradict the findings from the previous chapter and many have in fact become strengthened in the process.

Out of the four countries examined – Ethiopia, India, Peru, and Vietnam – in two of them, in Ethiopia and in Vietnam, aid had an apparently positive effect on national food security. Furthermore, this effect seems to have been conditioned on the quality of governance – while pro-poor policies in Vietnam strengthened aid’s impact on food security, corruption and coercive government tactics in Ethiopia correspondingly dampened it. In the remaining two countries, anecdotal data suggest that aid has had a positive impact on food security in some areas/instances, but there is not enough evidence to claim, on the basis of qualitative analysis alone, that the impact applies to the countries as a whole.

With regard to the different aid modalities, the conclusions were harder to make. India and Ethiopia have received historically the highest proportion of aid from multilateral institutions, which appears to have worked well for aid’s impact on food security as neither country has had very good governance records (though Ethiopia’s are significantly worse than India’s). In both countries the ratio has been changing to more bilateral aid, which could potentially have a negative effect on aid effectiveness in the future.

Vietnam has received the highest proportion of its aid in concessional loans but given its relatively good performance in economic policies, the country did not become unduly burdened with debt and the aid modality hence did not affect the country’s food security negatively. On the other hand, the fact that Ethiopia despite its dismal governance performance has been receiving significant amount of aid in budget support – more than any of the other three countries – might have translated into a diminishing positive effect of aid on food security. The question of food aid is also the most relevant in Ethiopia, which has received the most of it. This aid modality undoubtedly helped with relieving acute food insecurity at numerous points and places in Ethiopia; nonetheless, it might have also contributed to Ethiopia developing a chronic reliance on foreign food hand-outs. Investing some of the funds in increasing agricultural productivity instead might have produced a more sustainable impact. Aid volatility between 1990 and 2010 was the worst in Vietnam, where it also quite probably reduced the positive effect of aid.

Finally, regarding the sectors where aid flows, aid to social infrastructure - and hence also long-term aid - increased throughout the years in all four countries under examination and the evidence available suggests that it has had a positive impact on food security. The data collected also indicated the usefulness of some agricultural aid in this regard, which unfortunately is

proportionately very low in all four countries and its sensitive amplification particularly in Ethiopia and in India could produce significant positive effects on food security.

The findings from this part of the study constitute a good starting point and background for the analysis of household data from the same four countries in the next chapter, which starts examining the aid-food security link on the micro level. As a reminder, I have chosen to examine the aid-food security link on the micro level to complement the results from the macro-level analyses and thus find out whether the relationships between different forms of assistance and food security differed when viewed from the household as opposed to the country perspective. In this way, my thesis is able to offer insights into the afore-mentioned micro-macro paradox of aid effectiveness. Moreover, by examining also the micro perspective, my study can speak with authority not only on the global-level patterns but also on the local-level specificities within the aid-food security relationships and in turn formulate recommendations useful not only to the makers of macro-level development policies but also to micro-level implementers of development projects on the ground.

CHAPTER FIVE: FOUR-COUNTRY HOUSEHOLD STUDY

Introduction

This chapter marks the beginning of the micro part of my thesis where I examine the effects of aid and its different types on food security using household-level data. The data in question come from surveys conducted by the Young Lives research project in Peru, Ethiopia, India, and Vietnam, the same countries as those examined in the case study in the previous chapter. This study hence draws on some of the background information discussed already and provides a comparable micro-level counterpart to the macro-level study in the preceding chapter. If the findings within this study align with those from the previous ones, they will bolster the robustness of the conclusions reached when using country-level data. However, if they are at odds, they will indicate that the aid-food security relationships differ on the household as opposed to the country level and might provide further evidence to the existence of the micro-macro paradox in aid-effectiveness studies.

This chapter proceeds in the following manner. The next section offers a brief recap of relevant literature and the hypotheses to be examined. After that I introduce the data used and their descriptive statistics and discuss the empirical models utilised to analyse them. In the subsequent results section, I talk about the relationships discovered and conclude with a discussion and conclusions section.

Recap of relevant literature and main hypotheses

The main variables investigated

This part of the study considers the same basic questions as the previous ones – does aid influence food security positively? Do good governance and the type of aid provided make a difference in the relationship? – but this time it focuses on the micro level and aid recipients' individual perspectives. The dependent variable is still food security but measured on the household and individual rather than on the country level. The specific outcome indicators, discussed in more detail in the data section, are thus related to individual nutritional status and perception of food security rather than to the national percentages of people suffering from food insecurity.

Development aid remains the main independent variable but it also does not perfectly correspond to the development-aid measure utilised in the macro-level studies. First, as it is reported here by aid recipients rather than by donors, it automatically cannot include those types of aid that do not affect recipients individually, such as budget support. Furthermore, since aid disbursed through development projects is often combined with domestic government

support, it is possible – and even likely – that the amount reported as aid by households is inflated. Nevertheless, this reality should not constitute a major problem as the main objective of this study is to discover whether and how precisely funds disbursed to poor families help them improve their food-security situation, without too much regard for the precise origin of those funds. That is not to imply that it does not matter whether certain projects were funded primarily through development aid or through public recourses - after all, the core concern of my thesis relates to the effects of foreign development aid on food security – but rather that the more political aspects of the question have already been examined on the country level, while the micro/household-level part of the thesis focuses more on the actual mechanisms through which funds strengthen food security as well as on families' experience with receiving them.

Finally, governance is still the main conditioning variable but here it is measured only on the local level and hence constitutes a significantly different concept to the one used in the country-level studies. The quality of national-level policies and institutions certainly influences how development aid affects food security on the household level as well but in order to achieve a meaningful and measurable level of variation in examining governance in household-level studies, one can only focus on the quality of local policies and institutions. These are likely to be highly affected by the quality of their national-level counterparts, yet cannot be equated with them as local conditions undoubtedly also play a role in their influence.

Key existing findings

As I have mentioned in the initial literature review as well as in the quantitative cross-country study, very little research has been carried out vis-à-vis the effect of aid on food security on the country level. On the household level, the state of the matter is different - many researchers have tried to find out whether development projects, particularly in agriculture and less often in various social-infrastructure activities, helped recipients bolster their food security. Many of these studies discovered the relationship to be positive, particularly with regard to recipients' feelings of food security (Hoque *et al.*, 1996; Berti *et al.*, 2004; Bhutta *et al.*, 2008; IYCN, 2011). The results have been less encouraging in relation with actual nutritional indicators such as children's weight-for-age and height-for-age scores. Regarding the conditioning role of local governance quality on aid effectiveness, less literature exists but the existing works do see the role as generally positive (Blair, 2000; Rajkumar and Swaroop, 2002).

Turning now to the heterogeneous impact of different types of aid on food security, the amount of existing research differs greatly based on the type of aid classification. Concerning the type of donor *who*, in this case, implements the specific aid projects and programmes examined, NGOs have been generally considered to be more efficient and cost-effective than official bilateral and multilateral aid agencies or national government agencies (Hulme and

Edwards, 1997; Lewis and Opoku-Mensah, 2006). Several recent empirical studies indicated that the oft-promoted vision of NGOs as selfless entities might have been a bit too rosy since empirical evidence suggests that NGO aid often does not significantly differ from official aid in its patterns of giving (Koch *et al.*, 2009; Nunnenkamp *et al.*, 2009) and if so, only marginally (Masud and Yontcheva, 2005). Despite these misgivings, the general consensus still remains that NGOs tend to do a better job at implementing aid projects than other institutions.

Regarding the way *how* aid is implemented, on the micro level two different classifications are inspected – one into credit and non-credit aid (mirroring the country-level division into grant and loan aid) and one into food and non-food aid. *Vis-à-vis* the first division, the past decade saw a great rise in the popularity of microcredit projects, leading many a development expert to view the tool as a ‘panacea’ to poverty reduction. More recently this hype has died down as researchers found that while microcredit projects might have a positive effect on recipients’ access to cash, their effect on poverty reduction in the long run is questionable since the easy availability of loans can lead families into a state of excessive indebtedness while rarely translating into consistently higher incomes (Anelgelucci *et al.*, 2015; Attanasio *et al.*, 2015; Augsburg *et al.*, 2015; Banerjee *et al.*, 2015; Crépon *et al.*, 2015; Diagne, 1998; Karlan *et al.*, 2011; Khandker, 1998, 2001; Morduch, 1998; Mosley and Hulme, 1998; Schrieder and Pfaff, 1997; Tarozzi *et al.*, 2015; Wright, 2000). The discussion of food aid versus non-food aid when examined on the household level closely mirrors the discussion on the country level, with most authors considering food aid the appropriate aid-delivery tool only during emergencies, as otherwise it might act as a discouragement on local food production (e.g. Barrett, 2002; Gelan, 2006; Uvin, 1992).

The divisions of aid according to *where* it goes on the micro-level are the same as on the macro-level – into long-term, short-term, and humanitarian aid and into agricultural, social, economic, and other aid – with the exception that ‘other’ aid constitutes on this level primarily direct transfers of cash or food. Clemens *et al.* (2004) examined the heterogeneous impact of long-term, short-term, and emergency aid on growth and found only short-term aid to have a significantly positive effect in the time period examined (five years). However, my findings from the quantitative cross-country study *vis-à-vis* the effect of aid on food security suggested the contrary: that long-term aid was in fact the only type of aid with a discernibly positive effect. It remains to be seen whether this finding holds also on the household level.

Concerning the division into agricultural, social, economic, and other aid, very little literature has compared different projects side-by-side to determine which ones had the most positive effect on recipients’ food security. Nevertheless, from the existing literature one can deduce that the general expectation is that it is agricultural projects, followed by social projects, with the most beneficial impacts on food security (Berti *et al.*, 2004; Bhutta *et al.*, 2008, Hoque *et al.*,

1996; IYCN, 2011). Direct transfers of food are generally considered positive only as a humanitarian measure; cash transfers are viewed with more optimism but still cautiously since not always they are used productively and hence might not engender sustainable results (Chen *et al.*, 2009; Bailey and Hedlund, 2012).

The hypotheses to be tested

Bearing in mind the existing research discussed in detail in the literature review and now briefly recapped above, as well as the findings from the two previous sections, in this part of the study I test the following hypotheses. First, I examine whether aid appears to have a positive impact on food security even when tested on the household level and whether this positive relationship is strengthened by the quality of local governance (H1). Looking at the heterogeneous impact of aid, I examine whether aid implemented by NGOs is more effective at bolstering food security than other aid (H2.2), whether credit aid is less directly supportive of food security than non-credit aid but simultaneously more conditioned on the quality of governance (H3.2), and whether non-food aid has a more pronounced impact than food aid (H5). With the help of the findings from the previous two studies in re-formulating the last two original hypotheses, I also test whether long-term aid (H7a) and social-infrastructure aid (H8a), along with agricultural aid, have more positive influence on food security than their counterpart types of aid also on the household level as they appear to have on the country level.

Data, descriptive statistics, and empirical methods

In this section, I first discuss the source of the data used in this study to test the hypotheses reiterated above. Next, I present descriptive statistics of all the key variables utilised. Finally, I introduce the empirical methods used to analyse the data.

Data source

This study employs data from the Young Lives project, an international longitudinal analysis of childhood poverty funded by the UK Department for International Development (DFID) and the Netherlands' Ministry of Foreign Affairs. Information has been gathered on children and their families in four countries – India (Andhra Pradesh state), Vietnam, Ethiopia, and Peru – in three rounds. The first round was carried out in 2002, when a younger group of children examined was between six and eighteen months old and an older one between seven and eight years old. The subsequent rounds of data collection took place in 2006 and in 2010⁵⁹. This study focuses only on the data collected on the younger cohort, on approximately 2000 children from each country. The main underlying reason is that nutritional status variables are more precise in

⁵⁹ More information can be found at younglives.org.uk.

younger children (Moursi *et al.*, 2008) and by 2010 the older cohort reached its mid-teenage years already. Since the main subject of the surveys is the well-being of young children, the survey respondents are the children's primary caretakers, in absolute majority (about 97 per cent) their mothers. In every round, surveys were also carried out at the community level, where the questions posed were answered by people deemed by the project to be authorised to speak on behalf of the whole community.

Detailed data on the receipts of aid, essential for the investigation of the impact of different types of aid on recipients' food security, were collected in Ethiopia during the second and third rounds of data collection, in India and in Vietnam only during the third round of data collection, and in Peru not at all. As a result, while the analysis in Ethiopia can proceed using panel data (of two time periods), the analyses in India and Vietnam rely on cross-sectional data only and the analysis in Peru cannot answer any more refined questions beyond the general impact of project aid on recipients' food security. The first and second round of data were used to extract information about the children examined that are not available in the third round of data collected, including their birth size and whether they were born prematurely. The first round was also used to obtain data about households' wealth, in order not to introduce bias into the subsequent analysis, since households could have later acquired some wealth also through the aid programmes, in which they participated.

Descriptive statistics

Outcome variables

Table 1 presents the descriptive statistics on the outcome variables. I measure the primary outcome of interest in my study, food security, in two ways here. First, I use children's nutritional status variables to capture outward manifestations of food insecurity, using the incidence of children that are underweight (too light for their age), stunted (too short for their age), and under-BMI (with a BMI too low for their age). The rates were calculated by designating all children with weight-for-age Z-scores below 1.96 as underweight, children with height-for-age Z-scores below 1.96 as stunted, and children with BMI-for-age Z-scores below 1.96 as under-BMI⁶⁰ (WHO, 2006). While all three indicators capture some aspects of children's food insecurity, they are not identical. Rates of stunting are particularly relevant when looking at chronic undernourishment, underweight levels when examining the effects of sudden food crises, and under-BMI levels as children approach adulthood (WHO, 2006). It is also important to keep in mind that since parents tend to go to the greatest lengths to prevent their children from being

⁶⁰ This is common practice by the WHO – internationally, only 2.5 per cent of children are below 1.96 standard deviations on these measures and are officially designated as being underweight, stunted, and under-BMI. I do not use data on the proportion of wasted (too low weight for height) children because those data were missing in large numbers.

affected by food insecurity, no incidence of underweight, stunted or under-BMI children does not necessarily equal non-existence of food insecurity in general but rather of only the more severe kind.

The second measurement of food security, a food-insecurity index, is based on households' self-perceived food-security state. It is constructed from household responses to questions about the frequency with which the household was worried about not having enough to eat, could not eat the foods it wanted to, had to limit the variety of foods consumed or consume undesirable foods, had to limit portion sizes or frequency of meals, had to go to bed hungry or did not eat for 24 hours for lack of food. The responses varied from 'never' through 'rarely' and 'sometimes' to 'almost always'. As a large number of responses were missing from many of the categories – likely due to the questions' sensitive nature – I chose to take an average of all available responses to construct the final variable instead of adding the responses to construct a larger-range scale. The resulting measure is a 0 to 3 scale, with 0 indicating the lowest and 3 the highest level of food insecurity. While this index should in theory be more sensitive to capturing even milder forms of food insecurity than the nutritional indicators, it is by nature less objective and more susceptible to cultural preconceptions regarding one's appropriate public image⁶¹. Furthermore, unlike the nutritional indicators, it captures household-level rather than individual-level food security⁶².

Finally, given that some projects might have an impact on recipients' wellbeing without affecting their food security – whether because they already are food secure or because these benefits have not had time to translate into better food security just yet – as a tertiary measure of outcome, and a form of robustness check, I also look at self-reported monthly household consumption levels.

Table 1. Descriptive statistics of outcome indicators

Outcome Indicators	Peru				Ethiopia				India				Vietnam			
	Mean	StD	Min	Max	Mean	StD	Min	Max	Mean	StD	Min	Max	Mean	StD	Min	Max
Underweight children (prevalence)	0.06	0.23	0	1	0.32	0.47	0	1	0.44	0.50	0	1	0.24	0.43	0	1
Stunted children (prevalence)	0.21	0.40	0	1	0.20	0.40	0	1	0.28	0.45	0	1	0.19	0.40	0	1
Under-BMI children (prevalence)	0.01	0.09	0	1	0.20	0.40	0	1	0.27	0.44	0	1	0.11	0.32	0	1
Food insecurity index (self-perception)	0.49	0.48	0	3	0.73	0.49	0	3	0.35	0.41	0	2.56	0.47	0.46	0	2.7
Consumption levels (monthly, USD)	70.0	50.5	0	626	16.9	12.4	2.2	129	21.8	11.6	4.8	86.6	36.0	28.4	0.0	339
<i>N of observations</i>	1946				1853				1927				1935			

Source: Author's own calculations

Looking to Table 1, the descriptive statistics of outcome indicators suggest that when measured through children's nutritional status, the food-insecurity situation is at its most dire in India, with 44 per cent of children underweight, 28 per cent stunted, and 27 per cent with too

⁶¹ People might be ashamed to admit to suffering from insecurity or alternatively might exaggerate their misery in hopes of receiving more support.

⁶² Albeit one articulated by mothers of the children examined and hence likely more reflective of individual food security than had the questions been answered by male heads of household.

low BMIs. Second in line is Ethiopia, with a third of all the children surveyed underweight and one fifth stunted and under-BMI. The situation in Vietnam is better, with 24 per cent of children underweight, 19 per cent stunted, and 11 per cent under-BMI. Finally, in Peru, the prevalence of stunting is relatively high at 21 per cent, but ‘only’ 6 per cent of the children examined are underweight and 1 per cent has BMIs that are considered too low.

These findings do not deviate too far from the picture of under-five child undernourishment as painted by the WHO. As mentioned before, the latest data from the source put child stunting in Ethiopia and India at 44 and 48 per cent (37 per cent in Andhra Pradesh) and in Vietnam and Peru at around 30 and 20 per cent, respectively (WHO, 2010). Hence, children in the Young Lives sample appear to be somewhat less affected by stunting than children in their countries on average. The prevalence of underweight children younger than five years old has been last estimated by the WHO at 43 per cent in India (slightly below 40 per cent in Andhra Pradesh), 29 per cent in Ethiopia, 20 per cent in Vietnam, and slightly over 5 per cent in Peru. These numbers are quite similar to the Young Lives statistics. The fact that the undernourishment rates in India are the highest from the four countries even though GDP per capita is the lowest in Ethiopia – which is reflected also by the lowest mean consumption level – confirms the existence of the ‘South Asian enigma’ even in Andhra Pradesh villages and towns where the Young Lives data were collected. Children in Vietnam and in Peru appear to be more food secure, just as their household consumption levels are also higher.

Interestingly, however, the self-reported food-insecurity perception variable tells a different story. The lowest number, suggestive of most food-secure households, can be found in India. Vietnam and Peru follow, with Ethiopia being the most food insecure from this viewpoint. India’s number thus seems to be out of place, the lowest of all four countries’ when on the basis of the other outcome variables one would expect it to be the highest. There are several possible explanations. First, perhaps Indian children are more exposed to food insecurity by their parents than children in other countries, suffering more from lower levels of food insecurity than they would elsewhere. However, this is unlikely as a similar percentage of parents in India reported to allow their children to be affected by food insecurity as elsewhere. More likely explanations are that Indian parents feel too proud to admit the true scale of their food problems or that they have suffered from chronic food insecurity for so long that the situation does not seem at all out of the ordinary. The latter explanation appears to be corroborated by empirical evidence from the data – whereas in Vietnam and Peru, between 60 and 70 per cent of respondents expressed worry about having sufficient food to eat in the future, only 26 per cent of respondents did so in India, despite their generally lower incomes per capita. This line of reasoning – that Indian people report higher satisfaction levels than people in the other three countries - is further substantiated by data from the World Values Survey. When asked about satisfaction with their

financial situation, more than 12 per cent of Indians reported to be fully satisfied, with only 7.5 per cent of Peruvians, 6.2 per cent of Vietnamese, and 0.5 per cent Ethiopians saying so (Figure 1 in the Appendix).

Project and governance variables

The first aim of this study is to find out whether the receipt of any type of external assistance⁶³ has a positive impact on recipients' food security and whether this effect is conditioned in any way on the quality of local governance. Measuring the receipt of external assistance in all four countries was relatively straightforward, as households were asked in the questionnaire conducted whether that was the case at the moment.

Assessing the quality of local governance has been significantly trickier as no state- or regional-level data on this variable exist. In the end, I made the decision to use community-level data collected by the Young Lives, on the subjective quality of local government services including the police, the professional judge, the water supply, the electricity supply, public phones, public internet, and banks. The variable should not be endogenous as the 'affluence' of a particular community could certainly influence the number of aid projects within the community but should not influence their outcome other than by reinforcing their positive impact if the community is run well. Unfortunately, while questions relevant to constructing the local governance variable were meant to be asked in all four countries, this did not happen in Peru and hence the conditioning of project aid on governance can only be assessed in Ethiopia, India, and Vietnam.

The other task of this study is to examine how *who* gives aid, *how* aid is given, and *where* aid precisely flows, influence the impact of aid. In the first category – of *who* gives aid – the division was made into governmental organisations (GOs) and non-governmental ones (NGOs)⁶⁴. From the data available it is impossible to know the original source of the money used to run the projects in question and hence, as I alluded to above, the examination here has to do more with the influence of the organisation that implements the project than of the organisation that decided to finance the project in the first place⁶⁵. The two categorisations made in the section on *how* aid is provided are into credit and non-credit aid (CD versus NCD) and into food and non-food aid (FA versus NFA). Finally, the divisions in the last category, vis-à-vis where aid goes, are first into humanitarian assistance (HA), short-term aid (ST), and long-term aid (LT) and second into agricultural aid (AGR), social-infrastructure aid (SOC), economic-infrastructure aid (EC), and

⁶³ Unfortunately, data on aid receipts in the Young Lives dataset does not contain specific monetary figures and hence the only option is to treat all aid receipts as uniform from the perspective of their effect on food security. This certainly constitutes a limitation in the study but one that should be to some extent overcome with the disaggregation of aid into different types and their effects on food security.

⁶⁴ Both GOs and NGOs include both foreign and domestic organisations.

⁶⁵ Naturally, these might often be identical but many GOs and NGOs in developing countries implement projects designed and financed by other institutions.

other aid, which in this case constitutes direct transfers, of both food and cash (DIR). Agricultural aid includes primarily agricultural extension and irrigation development projects, social aid health and education services, and economic aid credit and business training. Following Clemens *et al.* (2004), who originally coined the first categorisation, HA includes primarily direct food and cash transfers, ST agricultural and business assistance, and LT education-based activities.

From the descriptive statistics of the project and governance variables, displayed in Table 2, it is apparent that there is quite a large discrepancy between the percentage of people receiving external assistance in the four countries, ranging from only 22 per cent in Peru through 40 per cent in Vietnam to more than 70 per cent in both India and Ethiopia. The different level of external assistance roughly mirrors the GDP per capita and food-insecurity differences among the four countries. In all four countries, governmental organisations (national and international)⁶⁶ were responsible for the bulk of aid distributed, with 20 per cent of respondents receiving aid from them in Peru, 54 per cent in Ethiopia, 32 per cent in Vietnam, and 73 per cent in India, whereas NGOs disbursed aid to only 5 per cent of respondents in Peru, 28 per cent in Ethiopia, 12 per cent in Vietnam, and 3 per cent in India.

Table 2. Descriptive statistics of project types and governance

Project Types	Peru				Ethiopia				India				Vietnam							
	Mean	StD	Min	Max	Mean	StD	Min	Max	Mean	StD	Min	Max	Mean	StD	Min	Max				
All	0.22	0.41	0	1	0.78	0.42	0	1	0.74	0.44	0	1	0.40	0.49	0	1				
GO	0.20	0.40	0	1	0.54	0.05	0	1	0.73	0.44	0	1	0.32	0.47	0	1				
NGO	0.05	0.23	0	1	0.28	0.43	0	1	0.03	0.18	0	1	0.12	0.33	0	1				
CD					0.16	0.36	0	1	0.35	0.48	0	1								
NCD					0.57	0.49	0	1	0.39	0.49	0	1								
FA					0.21	0.40	0	1	0.03	0.16	0	1	0.20	0.40	0	1				
NFA					0.56	0.50	0	1	0.72	0.45	0	1	0.19	0.40	0	1				
HA					0.26	0.44	0	1	0.25	0.43	0	1	0.20	0.40	0	1				
ST					0.41	0.49	0	1	0.58	0.49	0	1	0.14	0.34	0	1				
LT					0.52	0.50	0	1	0.39	0.49	0	1	0.11	0.32	0	1				
DIR					0.09	0.28	0	1	0.27	0.44	0	1	0.30	0.46	0	1				
AGR					0.14	0.35	0	1	0.05	0.22	0	1	0.02	0.15	0	1				
SOC					0.43	0.50	0	1	0.22	0.41	0	1	0.08	0.27	0	1				
EC					0.32	0.47	0	1	0.43	0.50	0	1	0.00	0.04	0	1				
Governance																				
Quality of local governance					2.37	0.57	1.5	3	2.58	0.36	1.67	3	2.44	0.39	1.5	3				
<i>N of observations</i>		1946					1853					1927					1935			

Source: Author's own calculations

Looking at the distribution of the different types of aid, 16 per cent of households in Ethiopia and 35 percent of households in India received microfinance loans, while 57 and 39 per cent received non-credit aid. 20 per cent of the households surveyed in Ethiopia and in Vietnam were beneficiaries of food aid – surprisingly, this was true about only 3 per cent of the Indian

⁶⁶ Initially, I considered examining also the difference between aid implemented by international versus national institutions but for lack of relevant data in three out of the four countries I did not do so in the end.

population. 72 per cent, 56 per cent, and 19 per cent of households received any non-food aid in India, Ethiopia, and in Vietnam, respectively.

Divisions based on the specific sector where aid flows reveal that whereas long-term aid is the most popular in Ethiopia (with 52 per cent recipients), short-term aid is in India (58 per cent recipients) and humanitarian assistance is in Vietnam (20 per cent recipients). Thus unsurprisingly, the highest percentage of direct-aid recipients is also in Vietnam (30 per cent). Agricultural and social-infrastructure aid is most popular in Ethiopia (with 14 and 42 per cent of recipients, respectively) while economic-infrastructure aid is in India (43 per cent)⁶⁷.

The sole governance variable, measured on a theoretical scale from 1 to 3, with 3 being the best, in reality only exhibits variation from 1.5 to 3 in Ethiopia and Vietnam and from 1.67 to 3 in India. India also has the highest average score in this category, 2.58, followed by Vietnam with 2.44 and Ethiopia with 2.37. It is very interesting to note here how optimistic respondents in these countries are about the quality of their local institutions, despite being internationally renowned for high corruption levels and often deficient institutions (WGI).

Control variables

Table 3 contains descriptive statistics for all the control variables utilised. Following Strauss and Thomas's (2008) health model, these encompass the following four categories: *children's health inputs*, their *socio-demographic characteristics*, *parental and household characteristics*, and *public health infrastructure*. When deciding on specific variables, I looked to already-existing analyses of children's health outcomes in the Young Lives data, primarily to Galab *et al.* (2006), Petrikova and Chadha (2013), and Tuan *et al.* (2006). When using consumption levels as the dependent variables, I dropped the children's health-input and public health-infrastructure variables and, following Chen *et al.* (2009) added several household and community-level variables. Finally, the last section in Table 3 contains data on ethnic, religious, and regional variables specific to each of the four countries.

The first category, *children's health inputs*, comprises each child's subjective birth size⁶⁸ and if the child was born prematurely. Children's *socio-demographic characteristics* include the age of the child in months and gender (male 1, female 0). *Parental and household characteristics* contain several variables that characterise the mother of the child in question – her age when the child was born, her highest level of education, and her cognitive social capital⁶⁹ – and then several household-level variables, including whether the household is female-headed, how

⁶⁷ As the numbers indicate, the percentages add up to generally higher numbers than the total amount of aid recipients, due to the fact that many households in the four countries examined receive more than one type of assistance at one time.

⁶⁸ Birth size ranges from 1 for a very small to 5 for a very large baby (subjective measure).

⁶⁹The measure is a combination of the responses to questions on whether the respondent feels part of the community, whether she feels that people in general can be trusted, whether she feels that people generally get along with each other, and whether she thinks that people would take advantage of her if they could. The resultant measure ranges from 0 to 4, with 4 denoting the highest level.

many members it has, and whether it resides in an urban area. Furthermore, this category includes a household wealth index, which was constructed using principal component analysis from the following factors: housing quality (average number of rooms per person; floor, roof, and wall type), ownership of consumer durables (fan, fridge, radio, TV, mobile phone, bike, motorcycle, and car), and access to services (drinking water, electricity, and toilet facilities). The resulting measure ranges from 0 to 1, with higher numbers signifying more wealth. The data on the wealth index, as I mentioned already, were taken from the first wave of data collection. The fourth category, *public health infrastructure*, inquires whether there is a public health centre/hospital available in the village.

Additional income and consumption controls ask whether the head of household has a primary-level education, how far the community where the household resides is from the nearest district capital, how many months a year it is accessible by road, whether it has an adult literacy programme, and whether more than 20 per cent of land within the community is owned by one household.

Finally, *country-specific variables* ask whether the respondent (child's mother) in Peru is of mestizo, indigenous, or white origin; whether the respondent in Ethiopia is of Oromo, Amhara, or Tigrian ethnicity and whether she is a Muslim; whether the respondent in India comes from Rayalaseema, Telangana or Coastal Andhra (regions within Andhra Pradesh), whether she is a Hindu, and whether she is from a scheduled caste/tribe; and whether the respondent in Vietnam is of no religious background and which Vietnamese region she comes from (Red River Delta, Northern Uplands, Central Coastal, or Mekong River Delta).

The results of the descriptive statistics, displayed in Table 3, do not expose any shocking revelations but they are interesting in their comparison across countries. The average subjective birth size in all four countries is approximately three (aka medium size), but it is the highest in India, which is interesting given the highest rates of child undernourishment there. Premature births occurred in 9 per cent of instances in India and Ethiopia, 12 per cent in Vietnam, and incredible 27 per cent in Peru. The result there is actually so high that it raises concerns about the question's external validity, where perhaps in Peru women consider any birth prior to their due date to be premature. The youngest mothers are in India, with the average age at birth 23 and a half, followed by Peru, Vietnam, and Ethiopia. The most educated mothers, in contrast, are those in Peru, having finished more than seven years of schooling on average, followed by Vietnam with almost seven, India with three and a half, and Ethiopia with fewer than three. Mothers in Peru, interestingly, have also the lowest reported levels of cognitive social capital, followed by Ethiopia, Vietnam, and India.

Table 3. Descriptive statistics of control variables

Control Variables	Peru				Ethiopia				India				Vietnam			
	Mean	StD	Min	Max	Mean	StD	Min	Max	Mean	StD	Min	Max	Mean	StD	Min	Max
Health Inputs																
Birth size	2.89	0.99	1	5	2.99	1.02	1	5	3.07	0.91	1	5	2.93	0.68	1	5
Premature	0.27	0.44	0	1	0.09	0.29	0	1	0.09	0.29	0	1	0.12	0.33	0	1
Socio-Demographic Characteristics																
Child's gender (male)	0.50	0.50	0	1	0.53	0.48	0	1	0.54	0.50	0	1	0.51	0.50	0	1
Child's age (in months)					97.49	3.93	86.30	138.4	96.02	3.93	86.20	106.4	97.07	3.76	0.96	112.8
Parental/Household Characteristics																
Mother's age when child born	26.83	6.76	14	49	27.45	6.30	15	55	23.65	4.32	12	48	27.16	5.78	15	50
Mother's highest education	7.68	4.36	0	17	2.81	3.80	0	14	3.51	4.40	0	14	6.75	3.81	0	14
Mother's cognitive social capital	1.49	0.61	0	2	1.87	0.36	0	2	1.92	0.27	0	2	1.90	0.3	0	2
Female-headed hh	0.12	0.33	0	1	0.14	0.35	0	1	0.08	0.28	0	1	0.16	0.36	0	1
HH size	5.71	2.33	2	18	6.19	1.92	2	14	5.43	2.37	2	22	4.90	1.84	2	14
Urban	0.66	0.48	0	1	0.37	0.48	0	1	0.24	0.43	0	1	0.21	0.41	0	1
Wealth index	0.54	0.21	0	0.93	0.33	0.17	0.01	0.86	0.51	0.18	0.01	0.95	0.59	0.2	0.79	1.00
Public Health Indicators																
Public health clinic in village	0.21	0.41	0	1	0.06	0.23	0	1	0.12	0.32	0	1	0.09	0.29	0	1
Additional Consumption Controls																
HH head primary education	0.94	0.25	0	1	0.27	0.44	0	1	0.41	0.49	0	1	0.68	0.47	0	1
Distance to closest town (in kms)	13.65	15.48	0	67	26.62	41.33	0	180	75.00	39.4	14	200	13.41	11.78	1	40
Village accessible by road (mnth/year)					11.34	0.99	8	12								
Village has an adult literacy course					0.47	0.50	0	1	0.92	0.27	0	1				
More than 20% land owned by one HH					0.17	0.37	0	1	0.15	0.35	0	1				
Country specifics																
Mestizo	0.92	0.26	0	1												
White	0.05	0.21	0	1												
Indigenous	0.03	0.17	0	1												
Oromo					0.21	0.41	0	1								
Amhara					0.29	0.45	0	1								
Tigrian					0.22	0.41	0	1								
Muslim					0.16	0.37	0	1								
Coastal Andhra Pradesh									0.35	0.48	0	1				
Rayalaseema									0.30	0.46	0	1				
Telangana									0.35	0.48	0	1				
Hindu									0.88	0.32	0	1				
Scheduled Caste/Tribe									0.33	0.47	0	1				
No religion													0.83	0.38	0	1
Red River Delta													0.20	0.40	0	1
Northern Uplands													0.20	0.40	0	1
Central Coastal													0.40	0.49	0	1
Mekong River Delta													0.20	0.40	0	1
<i>N of observations</i>	1946				1853				1927				1935			

Source: Author's own calculations

Female-headed households are most common in Vietnam (16 per cent) and least common in India (8 per cent). This is likely the result of women being relatively more empowered in Vietnam than in India to leave their husbands when necessary conditions arise, rather than Indian men being more pleasant to live with than the Vietnamese ones⁷⁰. Household size is the highest in Ethiopia (more than 6), followed by Peru, India, and Vietnam (4.9). 66 per cent of the sample in Peru lives in cities, 37 per cent in Ethiopia, 24 per cent in India, and only 21 per cent in Vietnam. Urbanisation rates for the countries as a whole are 77 per cent, 17 per cent, 31 per cent and 30 percent respectively, suggesting that the Young Lives data collection oversampled rural populations everywhere except for Ethiopia, where the urban population appears to have been oversampled (WDI, 2014). However, the diverging definitions about what constitutes an urban

⁷⁰I have failed to find any literature addressing this topic and hence my answer remains a supposition, albeit a plausible one.

area can also likely be blamed for this discrepancy (Young Lives). The wealth index indicates that on average, the most materially affluent families from the four countries reside in Vietnam and Peru, followed by India and Ethiopia. Ethiopian families seem to own significantly fewer possessions than families in the other three countries, bringing up yet again the conundrum that the undernourishment rates of children are highest actually in India, not in Ethiopia.

Regarding the public health indicators, 21 per cent of respondents have access to a local public hospital in Peru, 12 per cent in India, 9 per cent in Vietnam, and only 6 per cent in Ethiopia. However, the indicator does not speak about the quality of the public care provided, which might often be more crucial to further health outcomes than the time that it takes to reach it. From the additional consumption controls, the only two that were available for all four countries were the primary education of the head of household (a dummy) and the distance to the closest town. 94 per cent of heads of households finished primary school in Peru, 68 per cent in Vietnam, 41 per cent in India, and only 27 per cent in Ethiopia. Respondents in Peru and in Vietnam live on average 13 kilometres (kms) from the nearest town; the equivalent figure is 27 kms in Peru and 75 kms in India.

Looking at the country-specific variables, in Peru 95 per cent of respondents are of mestizo origin, 3 per cent are white, and 2 per cent are indigenous. The population in Ethiopia is split relatively equally into Amhara, Oromo, Tigrian, and Muslims, with Amharans constituting the relatively most populous group. In India, about one third of respondents live in each of the three regions surveyed – Telangana, Rayalaseem, and Coastal Andhra, almost 90 per cent are Hindus, and 33 per cent are of scheduled caste/tribe origin. Finally, more than 80 per cent of Vietnamese respondents have no religious background – undoubtedly thanks to the communist anti-religious propaganda- with 40 per cent residing in Central Coastal Vietnam and the rest equally distributed among the three remaining regions, Mekong Delta, Red River Delta, and Northern Uplands.

Empirical methods used

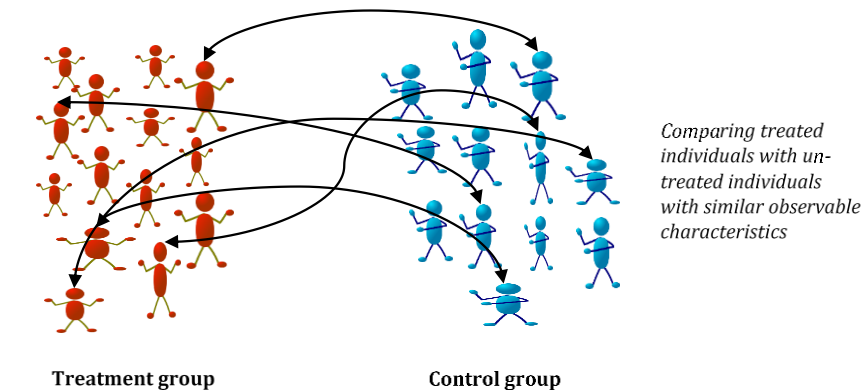
As the data on development assistance utilised here are not continuous but binary (a survey respondent either received or did not receive a certain type of assistance), my aim is to find the average treatment effect of each project type on the treated (ATET). My basic model can thus be expressed as the following:

$$FS_t^j = \alpha + \beta X_t^j + \gamma P_t^j + \vartheta^j + \varepsilon_t^j$$

where FS stands for the food security of household j for time t (FS is alternatively substituted with consumption levels), α is the constant, β is the coefficient of the control variables X, γ is the impact of the projects (P) on the treated, and finally, ϑ^j and ε_t^j are the time-invariant and time-variant components of the error term, respectively.

As for all evaluation researchers, my main challenge is to identify a counterfactual that would most closely resemble the treated group if it had not been treated. The best empirical method to do so, the double-difference approach, is not applicable to my case as the data for Peru, India, and Vietnam are only cross-sectional, while the Ethiopian data are panel but still do not contain baseline information (prior to the projects' beginning). An approach frequently utilised in similar cases is Propensity Score Matching (PSM), a quasi-experimental method that is based on the construction of a suitable control group to the treated one from untreated households on the basis of observable characteristics (e.g. Dehejia and Wahba, 2002; Ravallion, 2001). Figure 2 graphically depicts the simplest PSM approach - the 'nearest neighbour' - where the outcome variable of each treated individual is compared to the outcome variable of an untreated individual with the most similar observable characteristics.

Figure 1. Graphic illustration of the Propensity Score Matching method



Source: Author's own work

The two key assumptions of the model, expressed mathematically, are:

$$0 < P(X) < 1$$

where $P(X)$ are the propensity scores calculated based on observable variables X ,

which implies that valid matches on $P(X)$ can be found for all values of observable variables X and:

$$E(Y_{t0} | X, D = 1) = E(Y_{t0} | X, D = 0)$$

which presumes that conditional on X , households that did not receive any aid have the same outcomes in the analysed variables as the households that did receive aid would have had they not received it. I use the PSM approach in its simple form to analyse data from Peru, India, and Vietnam. For Ethiopia, I use a panel-data PSM approach described by Nguyen Viet (2012).

In order to elucidate this approach, let D_1 and D_2 denote the project intervention status within the first and the second time period in my dataset, respectively. Y_{1F} and Y_{0F} stand for outcomes with and without the intervention in the first period and Y_{1S} and Y_{0S} in the second time period. I am interested in the ATET in the second period, which can be expressed as the following:

$$ATT_X^S = E(Y_{1S}|X, D_2 = 1) - E(Y_{0S}|X, D_2 = 1) \quad (1)$$

Since I cannot observe the second term, the equation can be re-written as following:

$$ATT_X^S = Pr(D_1 = 1|X, D_2 = 1)[E(Y_{1S}|X, D_1 = 1, D_2 = 1) - E(Y_{0S}|X, D_1 = 1, D_2 = 1)] + Pr(D_0 = 1|X, D_2 = 1)[E(Y_{1S}|X, D_1 = 0, D_2 = 1) - E(Y_{0S}|X, D_1 = 0, D_2 = 1)] \quad (2)$$

Two additional assumptions added to this equation are that the difference in the non-intervention outcomes, conditional on X , between people who did not participate in the project in either period and those who participated only in the second period has remained constant overtime. The second assumption is that the difference between the non-intervention outcomes in the first period has been the same for people who participated in the intervention in both periods and those who participated in the project in the first period but not in the second one. With the addition of these assumptions, equation 2 can be re-written in the following manner:

$$ATT_X^S = Pr(D_1=1|X, D_2=1)\{[E(Y_{1S}|X, D_1=1, D_2=1) - E(Y_{0S}|X, D_1=1, D_2=0)] - [E(Y_{1F}|X, D_1=1, D_2=1) - E(Y_{1F}|X, D_1=1, D_2=0)]\} + Pr(D_1=0|X, D_2=1)\{[E(Y_{1S}|X, D_1=0, D_2=1) - E(Y_{0S}|X, D_1=0, D_2=0)] - [E(Y_{0F}|X, D_1=0, D_2=1) - E(Y_{0F}|X, D_1=0, D_2=0)]\} \quad (3)$$

where all terms can now be observed. Matching is then performed between: 1. the people who were project recipients in both periods and those who were recipients only in the first period and 2. the people who were project recipients only in the second period and those who did not receive project benefits at all, in either time period.

The PSM approach is first applied to aid in general and second to each type of aid separately, controlling for the other types of projects within that categorisation since some households are receiving several types concurrently. In each equation, as a form of robustness check I use three different types of matching – the nearest-neighbour, the five-nearest-neighbours, and the Kernel approach – but in order to minimise the amount of data presented to the reader I report only results of the Kernel matching⁷¹.

⁷¹ The other two approaches produced generally very similar results.

As another robustness test, and to assess the conditioning role of local governance, I employ regular cross-section and panel regressions. Their advantage is that they can fit all the different project variables within each category into one model⁷². The specific estimators used here are Probit and Ordered Probit regressions with robust standard errors, with fixed effects for panel, which have the added benefit of eliminating any potential bias arising from time-invariant unobservable characteristics. The obvious downside of the Probit estimators is that they do not belong among those standardly used in impact evaluation (because they are believed to be biased), which is also why they are only utilised to assess validity of the results obtained through the PSM.

Results

This section discusses the results attained, first regarding aid in general and second aid divided into different categories.

The impact of project aid in general on recipients' food security

Table 4 and Figure 2 display the results obtained when examining the impact of aid in general on household food security, first without and second with conditioning on governance. The results are predominantly insignificant, with some exceptions. In Peru, aid in general seems to have had a positive impact on the food-security index. In Ethiopia, while that variable appears unaffected, the prevalence of under-BMI children and to a less robust degree the prevalence of underweight children is reduced through aid. In Vietnam, the rate of stunted children is ameliorated through aid.

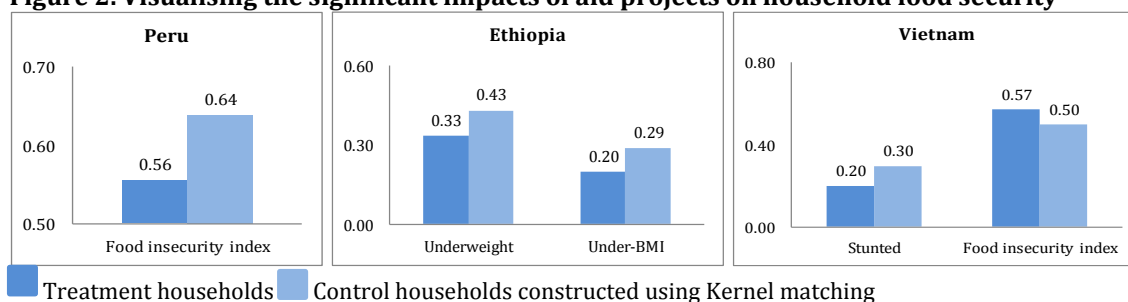
In India and in Vietnam, however, aid simultaneously appears to have an unintended negative impact. In India, it seems to actually raise the percentage of children that are stunted while in Vietnam it raises people's self-rated perception of food insecurity. The first finding is not robust as it does not appear in the PSM results and thus might be a fluke due to the inability of the logit regression to control for all the relevant differences between the treatment and the control group. In the least it suggests, however, that project aid in India does not have a significant positive impact on recipients' food security across board.

⁷² A VIF measure showed that there was no co-linearity present among the different project variables.

Table 4. The impact of project aid, conditioned on local governance, on recipients' food security

	Country	Underweight	Stunted	Under-BMI	FS	Cons	Country	Underweight	Stunted	Under-BMI	FS	Cons
	Peru						India					
Project	PSM	0.03	0.02	0.00	-0.08	-7.77	PSM	0.10	0.08	0.01	-0.04	-25.12
		0.97	1.18	1.25	1.68	0.63		1.03	1.05	0.23	0.96	0.44
	Regression	0.13	0.13	0.14	-0.09	-1.99	Regression	0.18	0.30	0.01	0.03	-10.98
		1.15	0.95	0.96	2.53	0.34		1.53	2.14	0.10	0.86	0.25
Project*gov	PSM	0.78	0.52	-0.39	-0.25	62.52	PSM	1.21	0.72	0.59	1.00	0.30
		-0.23	-0.09	0.15	0.11	-65.40		0.94	0.32	0.61	1.15	0.83
	Regression	0.41	0.41	1.05	1.45	1.35	Regression	0.09	-0.16	0.04	0.06	-0.61
		0.16	-0.09	-0.46	-0.04	0.09		1.17	1.72	0.50	2.19	0.04
PSM	-0.36	0.36	0.80	0.02	-0.32	PSM	-0.14	-0.18	-0.39	0.18	-2.85	
	0.42	0.23	1.68	0.49	1.27		0.30	1.38	0.71	2.58	0.12	
Regression	0.01	0.80	1.85	1.14	1.39	Regression	0.09	-0.20	0.18	-0.38	11.63	
	0.01	0.80	1.85	1.14	1.39		0.49	1.75	0.80	2.21	3.06	
	Ethiopia						Vietnam					
Project	PSM	-0.10	0.15	-0.09	0.12	-4.09	PSM	0.03	-0.10	0.00	0.07	-8.11
		1.88	1.26	1.77	1.20	0.22		0.83	2.35	0.06	2.10	0.32
	Regression	0.00	0.16	-0.42	0.01	-0.13	Regression	0.09	-0.16	0.04	0.06	-0.61
		0.01	0.80	1.85	1.14	1.39		1.17	1.72	0.50	2.19	0.04
Project*gov	PSM	-0.36	0.36	0.80	0.02	-0.32	PSM	-0.14	-0.18	-0.39	0.18	-2.85
		0.41	0.41	1.05	1.45	1.35		0.30	1.38	0.71	2.58	0.12
	Regression	0.16	-0.09	-0.46	-0.04	0.09	Regression	0.09	-0.20	0.18	-0.38	11.63
		0.01	0.80	1.85	1.14	1.39		0.49	1.75	0.80	2.21	3.06

The first statistic next to a variable is the ATET/coefficient, followed by the T Statistic/Z score below. Numbers in bold are significant at least at the 10% level. The PSM has been carried out using the Kernel approach.

Figure 2. Visualising the significant impacts of aid projects on household food security

The second finding regarding the negative impact of aid on the perception of food insecurity in Vietnam is more robust, holding throughout all specifications, and thus more likely reflective of reality. It is also more surprising, in view of the discovery that aid helps in the alleviation of child stunting in Vietnam. The underlying explanation could be that while aid in Vietnam does not actually make people less food secure, it makes them feel more vulnerable and worry more about their future food security, as aid receipts are generally quite volatile and not particularly reliable. This ties in well with findings from the last chapter, where I concluded that aid volatility was higher in Vietnam than in any of the other countries examined, and hence most potentially worrisome. Looking at the country-level data on food security, which has dramatically improved in the last two decades, I presumed that aid volatility had likely no significantly negative effect on people's food security in Vietnam. The micro-level data just proved me wrong on this account, however, by suggesting that even though aid might have some positive impact on recipients' food-security status in the present, its volatile nature makes people increasingly worried about their food security in the future.

Turning to the conditioning role played by local governance quality, in Ethiopia it apparently enhances the positive impact of aid on children's nutritional status. Similarly, in Vietnam it

enhances the positive effect of aid on stunting and can counteract the negative impact of aid on the perception of food insecurity and strengthen aid's positive effect on consumption levels. Lastly, in India 'good' local governance can improve the effect of aid on people's perceptions of food security.

From the un-displayed control variables, wealth, mothers' education, mother's cognitive social capital, and children's birth size all have a positive effect on children's nutritional status. In India, older mothers are also less likely to have underweight, under-BMI or stunted children than younger mothers. Conversely, living in a rural area, in a more populous household, being younger, and having been born prematurely are all associated with higher rates of undernourishment and stunting. In Ethiopia, female-headed households were also more frequently populated with children with nutritional deficiencies. Finally, in all four countries living in the capital district (in India, coastal Andhra Pradesh) had beneficial effects.

The impact of who gives aid on recipients' food security

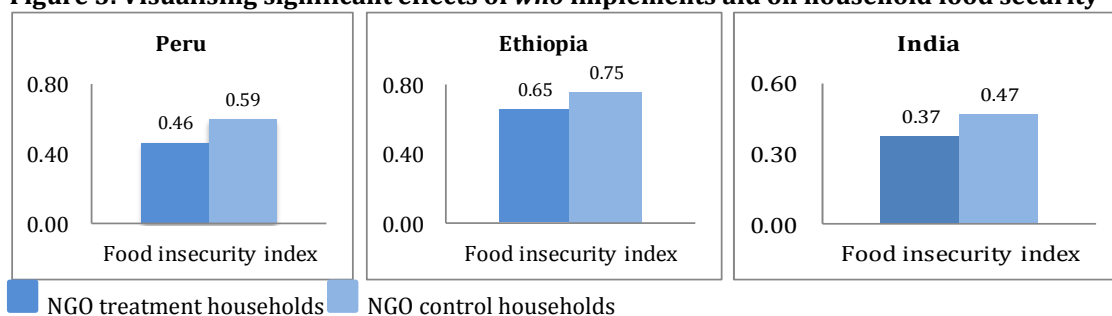
Table 5 and Figure 3 contain results on the aid-food security relationship when aid is divided according to the type of donor executing it. In all four countries, implementing organisations were divided into governmental (GOs) and non-governmental (NGOs). In Peru and in Ethiopia, both GOs and NGOs have a positive effect on the food-security index but the NGOs' effect is more consistent. In India, NGOs also appear to influence the food-security index more positively. In Vietnam, only NGOs strengthen recipients' food-security index and reduce stunting but both GO and NGO aid is conditioned on the quality of governance. Higher-quality local governance in Ethiopia strengthens the positive effect of GO aid projects on the feelings of food security and of NGO aid projects on reducing children's stunting rates.

The results suggest that there is not a highly notable difference between the impacts that the aid implemented by governmental donors and by nongovernmental donors has on recipients' food security. Yet, NGO aid does appear to be a little more beneficial. This finding provides mild support to the second part of my second hypothesis (H2.2). There, however, seems to be no significant difference between the way in which local governance conditions the effects of aid implemented by governmental and by non-governmental organisations.

Table 5. The impact of donor type, conditioned on local governance, on food security

	Country	Underweight	Stunted	Under-BMI	FS	Cons	Country	Underweight	Stunted	Under-BMI	FS	Cons
	Peru						India					
GO	PSM	0.03	0.05	0.01	0.00	-14.79	PSM	0.03	0.05	-0.02	-0.06	-1.55
		1.25	1.39	1.47	0.06	1.37		0.51	1.06	0.48	1.73	0.03
GO*gov	Regression	0.22	0.10	0.35	-0.09	-0.39	Regression	0.79	0.39	-0.16	-0.54	34.26
		1.55	1.08	1.19	2.44	0.06		1.25	0.57	0.25	1.66	0.17
NGO	PSM	0.03	0.03	0.03	-0.13	-6.25	PSM	-0.02	0.02	-0.02	0.02	-130.45
		0.84	0.53	1.46	1.79	0.56		0.18	0.19	0.22	0.25	1.47
NGO*gov	Regression	0.17	0.11	0.62	-0.14	-0.28	Regression	0.15	0.26	-0.12	0.06	-27.05
		0.35	0.45	0.85	2.85	0.03		0.91	1.57	0.69	0.97	0.58
								0.94	0.49	1.00	0.00	-69.90
								1.62	0.85	1.50	0.01	0.46
	Ethiopia						Vietnam					
GO	PSM	-0.09	-0.06	-0.07	0.03	-14.98	PSM	0.02	-0.05	-0.03	0.03	-41.76
		1.72	1.36	1.76	0.58	0.97		0.61	1.69	1.11	0.84	1.58
GO*gov	Regression	-0.14	-0.40	-0.17	-0.09	-1.13	Regression	-0.17	0.51	-0.75	-0.35	-21.05
		0.78	0.03	1.01	1.81	1.33		0.36	1.01	1.34	1.94	1.25
NGO	PSM	-0.23	0.06	-0.42	-0.09	0.39	PSM	0.12	-0.24	0.33	-0.16	73.90
		0.70	0.17	1.36	3.19	1.32		0.60	1.16	1.40	2.15	1.81
NGO*gov	Regression	0.01	0.01	0.04	-0.10	10.41	Regression	-0.02	-0.06	0.00	0.05	44.50
		0.19	0.31	1.45	-2.65	1.29		0.43	1.79	0.00	1.04	1.50
NGO*gov	PSM	0.98	0.11	0.26	-0.09	-0.86	PSM	-0.48	-2.27	1.69	-0.69	-31.24
		1.19	0.56	1.56	2.95	0.53		0.50	1.94	1.60	1.88	1.12
NGO*gov	Regression	-0.30	-0.95	-0.29	-0.04	0.50	Regression	0.19	-0.91	-0.65	-0.30	146.30
		0.86	2.64	0.97	0.75	0.51		0.50	2.00	1.55	2.09	2.46

The first statistic next to a variable is the ATET/coefficient, followed by the T Statistic/Z score below. Numbers in bold are significant at least at the 10% level. The PSM has been carried out using the Kernel approach.

Figure 3. Visualising significant effects of who implements aid on household food security

The impact of how aid is provided on recipients' food security

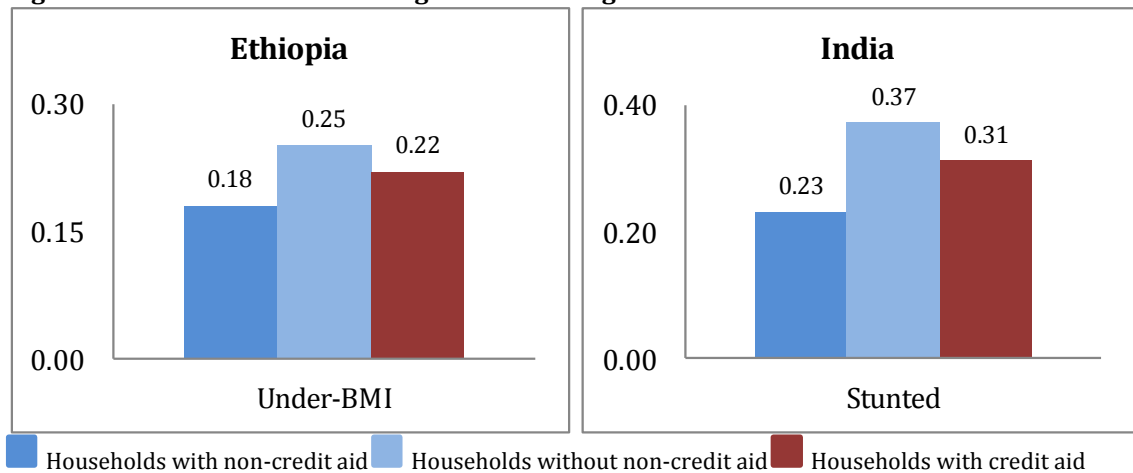
Here, I examine first the impact of aid when divided into credit and non-credit projects and second when divided into food and non-food aid. Table 6 and Figure 4 display the results obtained when examining the differential impact of credit and non-credit aid on recipients' food security. Since relevant data were not obtained for Peru and Vietnam (in Peru, the question was not asked, while in Vietnam only one household reported to have received aid in the form of credit), the analysis considered only Ethiopia and India.

Table 6. Impact of credit vs non-credit aid, conditioned on local governance, on food security

	Country	Underweight	Stunted	Under-BMI	FS	Cons	Country	Underweight	Stunted	Under-BMI	FS	Cons
	<i>Ethiopia</i>						<i>India</i>					
CD	PSM	-0.02	-0.02	0.04	-0.03	3.39	PSM	0.10	0.06	0.07	-0.05	-91.36
	Regression	0.42	0.35	0.85	0.34	0.28	Regression	1.43	1.33	1.22	0.94	1.48
CD*gov	PSM	-0.26	0.27	2.15	0.37	-1.48	PSM	0.42	0.03	0.13	0.69	-28.14
	Regression	0.23	0.23	2.25	2.15	0.69	Regression	0.63	0.04	0.19	2.65	0.13
NCD	PSM	0.17	-0.02	-1.00	-0.16	0.77	PSM	-0.11	0.06	-0.03	-0.24	-26.47
	Regression	0.34	0.05	2.41	2.10	0.61	Regression	0.44	0.21	0.12	2.48	0.33
NCD*gov	PSM	-0.05	0.05	-0.06	-0.10	-29.58	PSM	0.10	-0.13	0.01	-0.04	-81.71
	Regression	1.08	1.15	1.71	1.31	2.18	Regression	1.54	2.53	0.12	0.96	1.17
NCD*gov	PSM	-0.04	0.14	-0.26	-0.13	-0.26	PSM	-0.24	-0.41	-0.05	-0.12	-11.85
	Regression	0.19	0.69	1.48	3.87	0.89	Regression	2.63	4.03	0.50	3.50	0.09
NCD*gov	PSM	0.17	-0.11	-0.26	-0.01	-0.07	PSM	-0.35	-0.23	0.36	-0.01	-117.85
	Regression	0.42	0.27	0.75	0.15	0.27	Regression	0.34	0.80	1.35	0.09	1.37

The first statistic next to a variable is the ATET/coefficient, followed by the T Statistic/Z score below. Numbers in bold are significant at least at the 10% level. The PSM has been carried out using the Kernel approach.

Figure 4. Visualisation of select significant findings on credit versus non-credit aid



The table shows that in Ethiopia, credit aid apparently contributed to an increase in the rate of under-BMI children and deterioration in aid recipients’ food-security index. The underlying reason could be the over-indebtedness of households that received help in the form of credit. The negative impact seems to reverse in the presence of good-quality local governance, indicating that in better governed Ethiopian communities, microcredit projects might have a positive effect on recipients. In India, the results are similar. Credit aid without considering governance seems to worsen the perceptions of food security; nevertheless, good local governance appears to counteract the negative effect. Non-credit aid not only strengthens participants’ food-security index but also reduces the rate of underweight and stunted children. Its impact, however, does not seem to be significantly affected by the quality of local governance.

In Table 7, I show the difference between the effects of food and non-food aid on food security. In all three countries, food aid lowered recipients’ consumption levels. This seemingly counterintuitive finding can be explained by the fact that those who receive free food buy consequently less but at the same time do not report food aid when asked about consumption. In India and Ethiopia food aid also seems to increase the prevalence of stunting among children

although this effect is significant only in communities with relatively lower quality of governance. On the other hand, in Ethiopia it also strengthens people's food-security index and in India reduces the prevalence of underweight children. The results on non-food aid are not discussed here specifically as they are very similar to those on aid in general.

Table 7. The impact of food vs non-food aid, conditioned on local governance, on food security

	Country	Underweight	Stunted	Under-BMI	FS	Cons	Country	Underweight	Stunted	Under-BMI	FS	Cons
	<i>Ethiopia</i>						<i>India</i>					
FA	<i>PSM</i>	0.10	0.06	0.06	0.11	-37.60	<i>PSM</i>	0.22	0.31	-0.03	0.19	-443.48
		1.09	0.67	0.07	0.77	2.05		1.06	1.93	0.15	1.33	1.76
FA*gov	<i>Regression</i>	0.39	2.11	0.92	-0.48	-0.82	<i>Regression</i>	-0.42	0.40	-0.06	0.29	-116.78
		0.32	2.00	1.04	3.07	0.75		2.02	1.98	0.27	3.77	1.76
NFA	<i>PSM</i>	-0.08	-0.95	-0.37	-0.20	0.43	<i>PSM</i>	-1.52	-1.01	-0.66	0.20	-175.33
		0.18	2.05	0.98	2.90	0.59		1.89	1.34	0.89	0.74	0.82
NFA*gov	<i>Regression</i>	-0.02	-0.05	0.00	-0.16	-15.53	<i>Regression</i>	0.13	0.12	0.03	-0.04	-17.28
		0.45	1.26	0.13	2.17	1.15		2.63	2.92	0.70	0.94	0.30
NFA*gov	<i>PSM</i>	-0.07	0.23	-0.34	-0.12	-0.19	<i>PSM</i>	-0.18	-0.29	0.01	0.03	-10.64
		0.35	1.11	1.91	3.67	1.03		2.07	3.12	0.11	0.91	0.90
NFA*gov	<i>Regression</i>	0.31	0.34	-0.48	0.02	-0.07	<i>Regression</i>	-0.19	-0.06	0.16	0.12	-63.91
		0.78	0.82	1.37	0.29	0.23		0.79	0.23	0.66	1.31	0.81
	<i>Vietnam</i>											
FA	<i>PSM</i>	0.03	-0.01	0.04	0.07	-68.65						
		0.85	0.34	1.22	1.66	2.58						
FA*gov	<i>Regression</i>	-0.10	-0.02	-0.08	0.02	-25.62						
		1.15	0.16	0.75	0.72	1.75						
NFA	<i>PSM</i>	0.21	-0.03	0.26	-0.17	24.62						
		0.90	0.12	0.93	1.87	0.58						
NFA*gov	<i>Regression</i>	0.06	-0.01	-0.05	0.05	45.97						
		1.45	0.35	1.75	1.12	1.45						
NFA*gov	<i>PSM</i>	0.12	0.31	-0.23	-0.36	-14.21						
		0.21	0.51	0.35	1.68	1.03						
NFA*gov	<i>Regression</i>	-0.02	-0.17	0.10	-0.19	195.64						
		0.10	0.70	0.35	2.18	4.00						

The first statistic next to a variable is the ATET/coefficient, followed by the T Statistic/Z score below. Numbers in bold are significant at least at the 10% level. The PSM has been carried out using the Kernel approach.

In summary then, non-credit and non-food aid seem more beneficial to recipients' food security than credit and food aid. Credit aid actually appears to be potentially harmful, particularly if it is not used in communities with good local governance. Food aid has often positive impacts on short-term food security (strengthening people's feelings of food security, reducing the rate of underweight children) but in most countries it appears to worsen children's rate of stunting, which is a measure of chronic undernourishment. That is not to suggest that food aid is never the correct aid instrument to use – it often might be, in famines or other grave food-insecurity situations where immediate action is needed and local food markets are unable to satisfactorily fulfil that role. For example, in Ethiopia, where transporting food from one part of the country to another is severely restricted, responding to food crises with food instead of cash is generally more appropriate (Webb and Von Braun, 1994). However, donors should be careful not to use food aid as a long-term development tool as it clearly might have some negative impacts on long-term food security.

The impact of where aid goes on recipients' food security

In this section, I look at the different impacts of direct transfer aid, agricultural aid, social-infrastructure aid, and economic aid first, followed by an examination of the distinct effects of emergency, short-term, and long-term aid on food security.

Table 8 displays the results obtained with regard to the first of the two categorisations. In all three countries, agricultural aid has clearly the most positive effect on food security. It uniformly strengthens recipients' food-security index. Additionally, in Ethiopia the positive effect translated into a lower prevalence of stunting and underweight children. Social-infrastructure aid is the second in line in its positive impact on food security, reducing the rate of under-BMI children in Ethiopia, bolstering the food-security index in India, and decreasing the prevalence of stunting in Vietnam. Direct transfer aid is very similar to food aid vis-à-vis its effects, with some short-term benefits but a slightly negative impact on stunting in Ethiopia and India. Finally, the impact of economic aid, constituted primarily by microfinance and business training activities, is largely insignificant, particularly when looking at the propensity matching results.

Figure 5. Visualising the positive effects of agricultural and social aid on food security

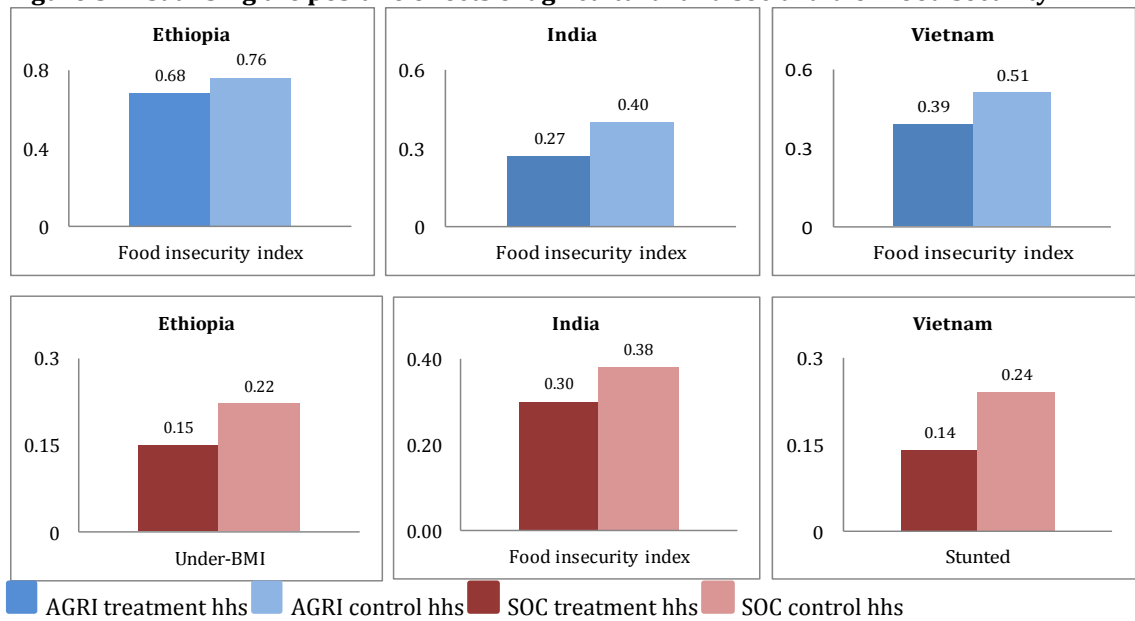


Table 8. The impact of aid to different sectors, conditioned on local governance, on food security

		Underweight	Stunted	Under-BMI	FS	Cons	Underweight	Stunted	Under-BMI	FS	Cons	Underweight	Stunted	Under-BMI	FS	Cons
	Country	Ethiopia					India					Vietnam				
DIR	PSM	0.02	0.13	0.02	0.10	-12.35	0.06	0.08	0.00	-0.02	-5.51	0.08	0.00	0.05	0.06	-22.30
		0.40	2.91	0.64	1.16	1.05	1.39	2.03	0.05	0.48	0.15	2.68	0.05	2.23	1.59	0.83
DIR*gov	OLS	-0.56	1.97	-0.71	-0.62	1.16	0.15	0.20	0.06	-0.02	-42.30	-0.46	0.21	-0.44	0.55	-276.42
		0.49	1.73	0.67	2.90	1.23	1.11	1.73	0.86	0.85	1.90	0.90	0.39	0.72	2.85	2.74
AGR	PSM	0.49	-0.58	0.24	-0.23	-0.49	0.01	0.02	-0.03	0.00	-37.47	0.22	-0.10	0.20	-0.24	113.87
		0.49	1.18	0.53	2.73	1.18	0.08	0.09	0.16	0.04	0.67	1.08	0.46	0.79	3.13	2.65
AGR*gov	OLS	-0.06	-0.06	-0.01	-0.08	13.88	0.07	0.05	0.03	-0.13	-10.12	0.05	-0.11	0.05	-0.12	-8.30
		1.80	1.71	0.54	1.75	2.30	0.85	0.68	0.40	2.28	0.15	0.42	1.03	0.61	1.81	0.59
SOC	PSM	-1.07	0.12	-0.41	-0.06	-0.29	-0.01	-0.04	0.09	-0.18	-29.41	0.02	-0.15	0.12	-0.18	46.83
		4.21	0.48	1.77	1.57	0.38	0.04	0.27	0.66	3.37	0.64	0.10	0.69	0.50	2.25	1.95
SOC*gov	OLS	0.47	-0.47	0.40	-0.08	0.28	-0.02	-0.02	-0.19	-0.01	57.14	-0.40	-0.53	1.62	0.12	65.25
		0.82	0.93	0.91	1.39	0.28	0.04	0.03	0.35	0.07	0.36	0.70	0.90	2.30	0.56	0.98
EC	PSM	0.06	-0.07	-0.07	0.02	-4.65	0.11	0.10	0.05	-0.08	-9.64	-0.01	-0.10	-0.01	0.00	120.38
		1.53	1.32	1.65	0.86	1.02	1.48	0.96	0.96	1.81	0.19	0.11	1.72	0.15	0.10	1.98
EC*gov	OLS	-0.60	-0.99	0.51	-0.11	0.24	0.81	0.85	-0.73	-0.18	41.14	0.33	0.15	0.80	-0.40	139.90
		0.71	1.15	0.70	0.96	0.26	1.08	1.10	1.24	1.84	1.46	0.38	0.18	0.68	1.31	1.77
EC*gov	PSM	0.36	0.35	-0.35	-0.11	-0.24	-0.61	-0.64	0.35	-0.05	-18.19	-0.18	-0.10	-0.49	0.16	58.71
		0.84	0.98	1.14	2.23	0.44	2.69	2.73	1.56	0.54	0.76	0.47	0.25	0.89	1.19	0.69
EC*gov	OLS	0.01	0.07	0.00	0.06	-20.09	0.07	0.01	0.07	-0.13	-15.85	-0.33	-0.33	0.00	0.07	125.78
		0.97	1.61	0.05	1.02	1.60	1.62	0.34	1.63	3.48	0.42	0.71	0.71	0.75	0.21	0.65
EC*gov	PSM	1.49	-0.04	1.76	0.48	-0.30	0.11	0.14	0.09	-0.10	-25.91	160.95	5.82		15.16	-28.11
		1.91	0.05	2.61	4.20	1.03	1.61	1.88	1.22	3.71	1.21	0.04	0.34		1.24	0.38
EC*gov	OLS	0.33	0.08	-0.76	-0.20	0.25	-0.07	0.08	-0.33	-0.15	-14.41	-58.48	-2.01		-5.50	103.09
		1.53	0.25	2.60	4.18	0.64	0.38	0.41	1.70	2.12	0.26	0.04	0.33		1.23	2.01

The first statistic next to a variable is the ATET/coefficient, with the T Statistic/Z score below. Numbers in bold are significant at least at the 10% level. The PSM has been carried out using the Kernel approach.

Table 9. The impact of emergency, short-, and long-term aid, conditioned on governance, on food security

		Underweight	Stunted	Under-BMI	FS	Cons	Underweight	Stunted	Under-BMI	FS	Cons	Underweight	Stunted	Under-BMI	FS	Cons
	<i>Country</i>	<i>Ethiopia</i>					<i>India</i>					<i>Vietnam</i>				
EA	<i>PSM</i>	0.04	0.03	0.05	0.06	-2.52	0.05	0.02	-0.07	0.10	-87.97	0.04	0.03	0.01	0.06	-31.59
		1.45	0.88	1.45	1.20	1.10	1.11	0.45	1.58	2.64	1.83	0.89	0.75	0.33	1.84	1.33
	<i>OLS</i>	1.14	1.48	0.62	-0.50	0.08	0.09	0.25	0.09	-0.07	-19.07	0.08	0.01	0.07	0.00	-33.03
		1.50	1.73	0.93	4.63	0.16	0.98	3.06	1.05	2.15	0.78	0.95	0.10	0.69	0.06	2.36
EA*gov		-0.47	-0.48	-0.24	-0.21	-0.16	-0.09	-0.32	-0.40	0.01	43.50	0.24	0.01	0.23	-0.12	-20.25
		1.46	1.51	0.85	4.69	0.42	0.48	1.69	2.06	0.18	0.80	1.02	0.03	0.84	1.41	0.50
ST	<i>PSM</i>	-0.03	0.01	-0.12	-0.10	2.92	-0.05	0.05	-0.03	-0.02	-60.45	0.00	-0.08	0.01	-0.07	61.49
		0.99	0.48	1.95	1.86	0.48	1.68	1.52	0.86	1.30	1.54	0.08	1.74	0.33	1.56	2.00
	<i>OLS</i>	0.15	0.38	0.43	-0.07	-1.23	-0.82	-0.54	0.15	-0.53	-278.38	0.10	-0.05	0.05	-0.07	56.17
		0.19	0.48	0.64	0.61	1.36	1.67	1.08	0.29	2.89	1.85	0.97	0.48	0.40	0.83	2.45
ST*gov		-0.05	-0.12	-0.21	-0.03	0.51	-0.29	0.22	-0.07	0.18	79.91	0.12	0.02	0.19	0.10	24.35
		0.15	0.34	0.76	0.68	1.24	1.57	1.13	0.35	1.49	1.40	0.47	0.08	0.60	0.96	0.89
LT	<i>PSM</i>	0.05	0.07	-0.07	-0.02	-3.69	0.09	0.07	0.02	-0.07	-27.38	0.00	0.00	0.03	-0.08	-29.54
		0.98	0.94	1.96	1.31	1.20	1.06	0.93	0.59	1.77	0.71	0.09	0.09	0.26	1.65	0.58
	<i>OLS</i>	1.09	-0.11	-1.38	-0.02	0.80	0.09	0.09	-1.14	0.32	185.21	0.46	0.89	0.82	-0.62	-63.66
		1.43	0.14	2.11	1.05	0.55	0.99	1.01	2.43	1.59	1.37	0.61	1.14	0.82	2.28	0.41
LT*gov		-0.50	-0.01	-0.60	-0.15	-0.47	-0.23	-0.26	-0.48	-0.13	86.68	-0.19	-0.40	-0.47	-0.24	23.90
		1.57	0.04	2.21	3.42	0.55	1.31	1.41	2.65	1.94	1.48	0.57	1.14	1.02	2.01	0.33

The first statistic next to a variable is the ATET/coefficient, with the T Statistic/Z score below. Numbers in bold are significant at least at the 10% level. The PSM has been carried out using the Kernel approach.

Turning to the discussion of the division of aid into humanitarian (emergency), short-term, and long-term (Table 9), short-term and long-term aid appear to be similarly beneficial. In Ethiopia, both types strengthen the food-security index and reduce the prevalence of under-BMI children. In India, both types bolster the food-security index and short-term aid also lowers the rate of underweight children whereas long-term aid the prevalence of under-BMI children. In Vietnam, short-term aid reduces stunting while long-term aid reinforces people's feelings of food security. The one major difference, however, is that only long-term aid appears to be significantly conditioned on the quality of local governance. The results vis-à-vis humanitarian/emergency aid are similar to those on food aid.

Overall, the results on the heterogeneous effects of aid on the basis of where it is provided offer several robust findings. First, agricultural aid has the most significantly positive effect on recipients' food security, which is the strongest in Ethiopia, followed by Vietnam and India. Since agricultural aid constitutes a major portion of short-term aid in this study, it is then natural that short-term aid also appears beneficial for food security. Direct-transfer aid and emergency aid both have an ambiguous effect on food security – they strengthen food security in the short-run but perhaps weaken it in the long run. However, both are positively conditioned on local governance, indicating that in well-governed communities they might foster or at least not harm food security even in the longer term.

The effects of economic and long-term aid also seem to be strongly positively conditioned on the quality of local governance. Finally, social infrastructure aid, which was found to have a very strong positive impact on food security in both previous chapters, here still appears to have a positive impact but perhaps not equally strong. One possible explanation is that it might take years for the positive effects of social-infrastructure projects to become evident (Petrikova, 2014) and some of the households surveyed here began to receive the treatments reported only a few years prior.

Discussion and conclusions

The main purpose of this chapter has been to examine whether the relationships between aid in its different forms, food security, and governance found to hold true on the country level can be detected also when examining the issue on the household level. Many findings from the previous empirical chapters have indeed been confirmed here. On the other hand, the results have also revealed that, not unexpectedly, the effects of aid observable on the micro level are not identical to those on the macro level.

Regarding the effect of aid in general, it was found to have a mildly positive impact on food-security indicators in three out of the four countries examined –in all except for in India. In Ethiopia, India and Vietnam, the effect also seemed to be conditioned on the quality of

governance. These findings fit well with those from the country-level studies and hence provide further support to my first hypothesis (H1). However, a few caveats need to be discussed here.

First, albeit positive, the impact of aid on the various measures of food security appeared less consistently significant here than in the quantitative cross-country study. In contrast, while in the previous chapter I could not conclude definitely that aid strengthened food security in Peru, the aid projects examined here do seem to have had a positive effect. Thus, the conclusion vis-à-vis the micro-macro paradox of aid, described first by Mosley (1986), is not straightforward. Mosley (1986), noting that macro studies of aid effectiveness were less successful at finding a statistically significant impact of aid than micro studies of development projects, argued that the likely culprits were aid fungibility, within which governments moved resources away from sectors where aid projects were being implemented, and indirect negative effects of aid on the private sector. While these two factors might have played a role in Peru, where I found aid to be successful on the micro but not on the macro level, a more likely explanation in my study is that on the macro level, aid has come to constitute a very small part of the Peruvian budget and hence detection of a significant effect has become difficult. On the other hand, aid data in the quantitative cross-country study exhibited a more consistent relationship with food security than aid data on the micro level. The potential explanations here are multiple, ranging from the inability to detect the full impact of aid projects from cross-sectional data to rising global inequality enabling aid benefits to accrue in larger proportion to the more affluent classes in developing countries. In the discussion chapter (Chapter Seven) I deliberate on this topic in greater detail.

Second, the discovery vis-à-vis the positive conditioning role of governance not only reinforces the validity of such findings from previous chapters but also contains a novelty value, since governance here is measured on the local rather than on the national level. The results hence imply that it is not only national or regional-level institutions and policies that can enhance aid effectiveness; the quality of local-level institutions including the police and the local judge can make a difference as well. The quality of the former and of the latter institutions is likely related but even in countries with 'bad' national governance scores some communities are better managed than others and vice versa.

Very little academic research to date has examined the role of local-governance quality in enhancing aid effectiveness but within the policy world, the situation has been different. The Accra Agenda for Action (OECD, 2008) and the Busan Partnership for Development Cooperation (OECD, 2011) both alluded to the importance of local government structures in improving the effectiveness of aid projects. Similarly, the United Cities and Local Governments (UCLG) and the Federation of Canadian Municipalities (FCM) posited that local governments played an important role in bringing together development stakeholders and in mobilising assets and

resources to complement donor funds and hence improve the sustainability of project achievements (UCLG, 2009; FCM, 2010). My study, which found the quality of governance as perceived by people to indeed contribute to more positive outcomes of development projects, is one of the first to provide empirical support to the argument extended by the above-cited policy agencies that local government structures matter in aid effectiveness.

Looking to the heterogeneous effects of aid, many findings again aligned with those from the country-level studies. Results from the first categorisation, according to *who* implements aid, suggested that non-governmental organisations are more efficient project implementers than governmental organisations but that the work of the latter is slightly more influenced by the quality of local governance (validating H2.2). Although this classification differs quite significantly from the one into multilateral and bilateral donors examined in the country-level studies, in some ways it conveys a similar message. NGOs, parallel to multilateral institutions, are less likely to be politically involved than governmental organisations and can therefore provide aid in a more beneficial manner. Consequently, the quality of local governance has a larger conditioning potential in the effectiveness of the work of governmental agencies. However, unlike in the case of the multilateral-bilateral division, NGOs generally work more cheaply than governmental organisations, which further enhances their project-implementing comparative advantage.

Analogous to the findings on the different effectiveness of loans and grants and of food aid and financial aid, in the categorisation of aid according to *how* it was disbursed I found non-credit and non-food aid to be more beneficial than their counterpart categories and credit and food aid to be more strongly conditioned on governance (validating H3.2 and H5). The division into food and non-food aid on the household level closely resembles such division on the country level and hence unsurprisingly the two sets of results are quite similar. Conversely, the division of aid into credit and non-credit is quite different from the division into concessional loans and grants yet the reasons underlying the lower positive impact of credit aid are frequently similar to those culpable for the lower effectiveness of country loans – excessive debt, an improper use of the loans, and a low quality of institutions. Surveys conducted in Andhra Pradesh in 2010 validated this view, showing that many poor families were simultaneously indebted to three or more microfinance institutions, taking out new loans just to repay interest on the old ones (Mader, 2013)⁷³. They also indicated that communities with better local administration were able to monitor the behaviour of microfinance institutions more closely, ensure that the correct procedures were followed, and in that way improve the impact of many micro loans (*ibid*).

⁷³ In 2010, the Andhra Pradesh government reacted to this unsustainable situation by placing strict regulations on all microfinance activity, which led to a significant decrease in the number of micro-finance institutions currently operating in India

This study's findings on aid classifications according to *where* it was provided differ the most from those in the country-level studies even though the divisions themselves are almost identical. First, vis-à-vis the sector division of aid, agricultural aid was found here to have the most consistently positive effect on household food security while its impact on the country level was surprisingly not evidently as beneficial, particularly when examined in a quantitative manner. The qualitative country case study illustrated why that might have been the case, showing that while agricultural aid failed to strengthen food security in India, because of an inability to reach the most food-insecure and marginalised members of the society due to the lack of adequate institutions and policies in place, it had a highly positive impact on food security in Vietnam. In this study, its impact appears even stronger, indicating that agricultural aid that actually manages to reach small-scale farmers -as are those surveyed by the Young Lives project - has a much more unambiguously positive impact on food security than agricultural aid in general, which also includes aid to large-scale commercial agriculture. The impact of the recent scaling-up of private agricultural investment in Africa via an alliance with G8 countries and companies, which failed to involve in its design small farmers, on poverty reduction and food security of the countries involved can hence be viewed only with suspicion (FIAN, 2014)⁷⁴.

In a somewhat reverse fashion, social-infrastructure aid, which was found to have the strongest impact on food security on the macro level, while still positive appears less consistently significant here. That is probably because some of the aid activities classified as social-infrastructure aid (e.g. health extension services, drinking water provision and development, provision of sanitation facilities) can have an observable effect on recipients' food security only some time after the beginning of their implementation and some of the households surveyed began to receive the treatment very recently relative to the survey collection. Findings from a study by Petrikova (2014) substantiate this claim, showing that whereas the impact of social projects in Ethiopia on children's health was barely discernible during the projects' implementation, it appeared significant and strong several years later. The overall conclusion hence is that both agricultural aid and social aid strengthen household food security, which validates both my original and my amended eighth hypotheses (H8 and H8a).

Turning to the division of aid into emergency, short- and long-term, while originally I hypothesised that short-term aid would appear to be most beneficial for food security, the previous two studies discovered long-term aid to have the largest positive impact. This study found both short- and long-term aid to be of value, thus providing some support to my original as well as to my amended seventh hypothesis (H7 and H7a). Consequently, the appropriate conclusion on this matter appears to be that both short-term and long-term aid have the

⁷⁴http://www.fian.org/fileadmin/media/publications/2014_G8NewAlliance_screen.pdf, also <http://www.theguardian.com/global-development/2014/feb/18/g8-new-alliance-condemned-new-colonialism>

potential to bolster food security, at least on the household level, as long as it is implemented through the right activities, inclusive of the most vulnerable households and individuals, and its impact is measured at the right time.

Two interesting country specificities also emerged in this study. First, in Vietnam, emergency aid, direct transfers, and food aid impaired recipients' perception of food-security situation even when the aid simultaneously improved their children's nutritional outcomes. This effect was further exacerbated by poor local-governance quality. The most likely underlying explanation is that the Vietnamese people are afraid to rely on external help, particularly on the very short-term/emergency kind, and even though it might alleviate their physical suffering, due to the insecurity and volatility of its flows it actually undermines their confidence about the future. This findings fits well with the literature that found the unpredictable nature of aid to have negative effects on development outcomes on the macro as well as on the micro level (Lensink and Morrissey, 2000; Bigdon and Korf, 2002). However, the negative effect of aid on people's perception of food security did not emerge in the other three countries examined, only in Vietnam. One possible reason is that out of the four countries, aid volatility is the highest in Vietnam (Chapter Four). Another reason could be a generally more worry-prone nature of the Vietnamese people, but cross-country comparisons of people's psychological predispositions in this regard failed to substantiate this conjecture (Ferrari *et al.*, 2013). More research in this direction would consequently be needed to be able to satisfactorily answer this question.

Second, aid in India appeared to have less of an overall impact on the recipients' food security than aid in the other three countries. Given India's persistently high levels of undernourishment, particularly among children, this finding is discouraging yet not unprecedented (e.g. Boshier, 2007; Sridhar, 2008). However, my data and their analysis from the three studies have thus far not offered a good explanation for this conundrum, aside from indicating that governance quality and deficient food utilisation due to sanitation problems are likely to play a role. I explore this question, along with others, in more detail in the next chapter.

Concluding remarks

The final empirical part of my thesis, an examination of data gathered during a small-scale field study in northern India that included extensive interviews with local villagers, might shed some light on the 'South Asian enigma'. At the same time, the following chapter provides a close-up, personalised look at the effects of aid on food security, which can help validate or amend some of the conclusions reached in this study. Finally, analogous to Chapter Four on the macro level, it provides a deeper level of understanding of the processes and mechanisms of the aid-food security-governance relationships on the household and individual levels.

Introduction

In this last empirical chapter, I tighten my lens of observation even further and examine the impact of aid on food security using personally collected household and individual data. I conducted the field research in north-western India, close to the Nepali border. My choice to conduct the study in India was driven by my desire to study in more depth the ‘South Asian enigma’, in which India’s food-insecurity levels have remained at record heights despite rapid economic growth in the past few decades. I selected the specific locality in response to finding an aid organisation implementing a multi-sector development project that allowed me access to its beneficiaries. The fact that this organisation works in Uttar Pradesh made my choice very suitable for the purpose of my study, as Uttar Pradesh is one of India’s most food-insecure states (IIPS, 2007) and hence highly appropriate for a detailed examination of the aid-food security links.

Since small-scale field research is generally not good at providing answers to broad social-science questions, I still use this study to test the hypotheses which I have either confirmed or modified in the previous chapters but its primary purpose is to offer deeper insight into the processes and mechanisms underlying the influence of aid on recipients’ food security. With this consideration in mind, I use quantitative analysis on the basis of survey-gathered data but heavily supplement it with qualitative analysis of information collected in longer interviews.

This chapter proceeds as follows. I first briefly re-state those of my hypotheses that can be plausibly tested in this study and remind the reader of the key literature pertinent to the relationships considered. Second, I talk more about the chapter’s conceptual and empirical approach, including the development initiatives examined, their Theory-of-Change strategies, and the methods of data collection and of data analysis utilised. After that, I present the results of my data analysis, discuss their significance, and finish the chapter with a few concluding remarks and observations.

Recap of relevant literature and hypotheses

The relationships considered

In the same vein as the previous chapters, this one also examines whether aid strengthens food security, whether governance conditions this relationship, and whether the impact differs based on the specific type of aid provided. Similar to the previous chapter and unlike the first two empirical ones, I rely here on micro-level data and hence consider as my main dependent

variable household- and individual-level food security and as my main independent variable development assistance as received and reported by individual families.

The multi-sector development project, which I chose to examine, is run by the Indian branch of the international NGO Grameen Development Services (GDS) and aims to bolster recipients' food security through four separate initiatives – agricultural help, livestock help, credit assistance, and water sanitation and hygiene (WASH) assistance. The different components are provided sometimes separately and other times in compound to different recipients. The financing provided by the NGO to each component has been approximately equal, which has enabled me to compare the effectiveness of the different project components in strengthening food security (related to *where* aid goes), reminiscent of a natural experiment. Given that one of the project parts consists of credit provision, I can also compare the credit portion of the aid provided with the non-credit portion (related to *how* aid is provided).

During the data collection I found that the people under study have not benefitted from almost any other external assistance, with the main exception being the national-government-operated Public Distribution System (PDS). Through this scheme, more than half of my survey respondents have acquired ration cards that enable them to purchase basic cereals (wheat and rice) at reduced prices. A few people have also received free laptops through the state government's laptop-distribution programme. Thus, aside from considering the effect of the GDS project on beneficiaries' food security, I also examine the effect of the government programmes and compare the NGO and governmental interventions to see how the aid provided by the government compares to the NGO-implemented aid (related to *who* provides/implements aid). Of course, given that the type of governmental aid considered here (direct transfer aid) in no way overlaps with the NGO aid, one has to be careful about drawing any firm conclusions with regard to the greater effectiveness of one implementer over the other. The differential impact of aid provided as budget support versus as project aid, as food aid versus non-food aid, and as long-term versus short-term and emergency aid cannot be investigated here due to the lack of relevant data. Aid volatility and its impact, on the other hand, can be assessed using information obtained through personal interviews (also related to *how* aid is given).

Third, as in the previous chapters, I am also interested in finding out whether the quality of governance affects in any way the aid-food security relationship. While national and district-level quality of governance might play a larger role here, I cannot examine their impact directly as all the people considered in this study live in a cluster of villages located next to each other and thus there is no variation in their measures. Instead, I use a measure of village-level governance quality. I explain in greater detail how it was obtained in the Data section.

Hypotheses re-stated, with references to key existing literature

First, I examine whether the aid provided has had a positive impact on the food security of its recipients and whether this impact has been conditioned on the quality of local governance (H1). The existing literature and findings from the previous levels of my study indicate that generally aid does have some even if only small positive effect in this regard (Berti *et al.*, 2004; Bhutta *et al.*, 2004; Hoque *et al.*, 1996; IYCN, 2011). Vis-à-vis the conditioning role of local governance, the few works that have addressed this question (e.g. Blair, 2000; Rajkumar and Swaroop, 2002) along with my own conclusions from the previous chapter also point in the direction of a positive relationship.

Then I consider the different types of the aid provided and whether they affect the impact of aid on food security. Regarding the question of *who* provides/implements the assistance under study, I can compare here the GDS development project with the governmental PDS scheme of ration cards (and perhaps also the government-run programme of laptop distribution). My initial hypothesis vis-à-vis this relationship (H2.2), formulated with a view to existing literature (e.g. Hulme and Edwards, 1997; Lewis and Opoku-Mensah, 2006) was that aid projects implemented by NGOs were more effective than the ones implemented by government-related organisations due to their greater flexibility and fewer bureaucratic restrictions. The findings in the previous chapter lent some support to this hypothesis.

Turning attention to the way *how* aid is disbursed, this study allows me to once again examine whether credit aid is less effective and more conditioned on governance than non-credit aid (H3.2) and whether aid volatility has a negative effect on recipients' food security (H6). Both existing literature (on credit versus non-credit aid e.g. Anelgelucci *et al.*, 2015; Attanasio *et al.*, 2015; Augsburg *et al.*, 2015; Banerjee *et al.*, 2015; Crépon *et al.*, 2015; Diagne, 1998; Khandker, 1998, 2001; Mosley and Hulme, 1998; Wright, 2000 and on aid volatility e.g. Bulíř and Hamann, 2008; Lensink and Morrissey, 2000; Rodrik, 1990) and my results from the previous chapters have substantiated these hypotheses.

Finally, I am going to compare the effectiveness of agricultural and livestock interventions as opposed to credit assistance, social-infrastructure (WASH) help, and the direct transfer aid provided by the government. My initial hypothesis in this regard, formulated with a view to existing findings (e.g. Berti *et al.*, 2004; IYCN, 2011, Bhutta *et al.* 2008, Hoque *et al.* 1996), was that agricultural aid would be the most impactful. In the course of the previous three studies, I modified the hypothesis to expect to find also social-infrastructure aid to be very beneficial in its effects on food security (H8a). Unlike in the previous chapters, here I further look at the compound effects of the different aid initiatives. Authors including Oxenham (2002), Walingo (2006), and Wenhold *et al.* (2007) indicated that multi-component projects were in general more

successful at strengthening food security and reducing poverty than projects focused on one activity only and I expect to discover something similar.

Conceptual framework and methodology

This section first briefly discusses the current state of food insecurity in India in general and in Uttar Pradesh specifically. Then it describes the project in Maharajganj, on the basis of which the empirical analysis is conducted, and discusses in detail each of its four main components, including their Theory of Change. A description of the Public Distribution System, the laptop scheme, and their Theory of Change follows. Proceeding, I talk about the quantitative and qualitative data collection. Finally, the last part of the section explains the most appropriate methods for analysing the data collected.

The state of food insecurity in India in general and in Uttar Pradesh specifically

In the two preceding chapters, I described the serious situation of food insecurity in India, which has improved slightly in the last few decades but not nearly as much as one would have expected on the basis of India's recent high economic growth. Some researchers have dubbed this phenomenon the 'South Asian enigma' and fierce debates have ensued vis-à-vis its main cause. As a reminder, the most recent figures available from the WHO at the time of writing indicated that about 18.5 per cent of the Indian population was undernourished (lacked access to sufficient daily calories), 43 per cent of children under five were underweight, and 48 per cent of children were stunted (WHO, 2014). India's National Family Health Survey (International Institute for Population Sciences [IIPS] and Macro International, 2007) helped complete the picture of India's food-insecurity state, suggesting that one third of all children in India were born with low weight (under 2500 kg), one third of all adult women were undernourished (BMI below 18.5), and 56 per cent of adult women and 71 per cent of children under five were anaemic⁷⁵ (iron-deficient).

The situation in Uttar Pradesh is in many respects even worse than in India in general. While 'only' 42 per cent of children under five in Uttar Pradesh as opposed to 43 nationally were underweight, a whopping 57 per cent were stunted (48 nationally) (IIPS, 2007). 15 per cent of children were wasted (low weight for height) and 74 per cent anaemic. Only one in ten children between one and three years of age received vitamin A supplementation – significantly less than the 25 per cent on the national level – and only one third of children ate iodised salt, which is essential to proper functioning of the thyroid gland. Furthermore, more than one third of all

⁷⁵ Anaemia leads to increased morbidity from infectious diseases and in children also to impaired cognitive performance, motor development, and lower scholastic achievement (WHO).

adults were considered too thin according to their BMI scores and out of those, more than half were severely thin (BMI less than 17.0) (*ibid*).

Multi-component project in north-western Uttar Pradesh (Maharajganj area)

The project examined here is being implemented among poor and marginalised households in 20 villages in north-western Uttar Pradesh, situated in four districts - Siddharthnagar, Maharajganj, Gorakhpur, and Sant Kabir Nagar (map on the right shows the general area). All the communities lie in the basin of the Rapti river, a tributary of the Ghaghra, and are subject to major close-to-annual flooding. Land-based activities - agriculture and animal husbandry - have traditionally been the main source of livelihoods among the poor people here. However, due to the heavy and ever-increasing population pressure, the average size of landholdings is consistently on the decline, to the extent that for some farmers, agriculture has purportedly become economically unviable. This perspective fits well with the opinion of some development scholars that small-scale agriculture in today's world constitutes for many an unsustainable way of life (Collier, 2008; Seavoy, 2000). Consequently, there is an emergent crisis of livelihoods along with serious and still rising food insecurity in the area.



This situation is further aggravated by a poor quality of governance and deeply entrenched class and gender inequalities. Corruption and discrimination against women, evident from birth, and against scheduled classes and castes have hindered the potential impact of state interventions aimed at reducing poverty and strengthening food security (GDS, 2013). Another serious problem in the area is an extremely poor level of sanitation and hygiene among the poor. GDS, the organisation implementing the project investigated, has tried to address these issues through a four-component development project consisting of agricultural, livestock, economic, and sanitation/hygiene interventions⁷⁶.

Agricultural intervention

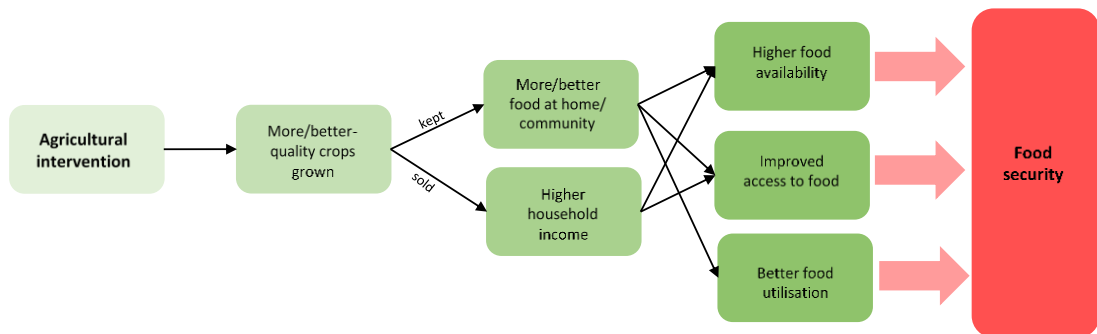
The main focus of this component of the development project has been on strengthening the agricultural production and productivity of small and marginalised farmers through the introduction of new crops, techniques, practices, and technologies. Since the Maharajganj area is very flood-prone, one of the main activities within this component has been the distribution

⁷⁶ This information was obtained from the implementing NGO.

of ‘pre-flood’ rice-cultivation packages, which allow farmers to harvest their crop before the onset of floods. Similarly, the project workers tried to introduce farmers to more flood-tolerant rice varieties and less expensive practices of vegetable cultivation. In flood-less years, they encourage farmers to produce three crops in two seasons. They have also supported participating farmers in setting up small vegetable gardens for their own consumption and in growing new types of vegetables.

According to the project’s intended Theory of Change, the agricultural intervention should bolster recipients’ food security via three pathways (Figure 1). First, by enabling farmers to produce more crops, the intervention should lead to higher food availability in both farmers’ households and in the community as a whole, since some of the extra produce was expected to be sold in the local markets. Second, the intervention was envisaged to strengthen recipients’ access to food, whether to the crops grown domestically or to other foods purchased through income earned from selling the extra crops. Third, the focus on new crops, particularly vegetables, could contribute to more nutritionally balanced meals among beneficiaries and hence to improvement in their food utilisation. The project designers agreed, however, that despite the predicted increase in farmers’ incomes, the intervention was not likely to significantly boost farmers’ future food-security outlook, the last of the four food-security aspects, as relying on agricultural production in as flood-prone area as the Maharajganj one was by nature relatively risky.

Figure 1. The envisioned effect of GDS agricultural intervention of recipients’ food security



Source: Author’s own work

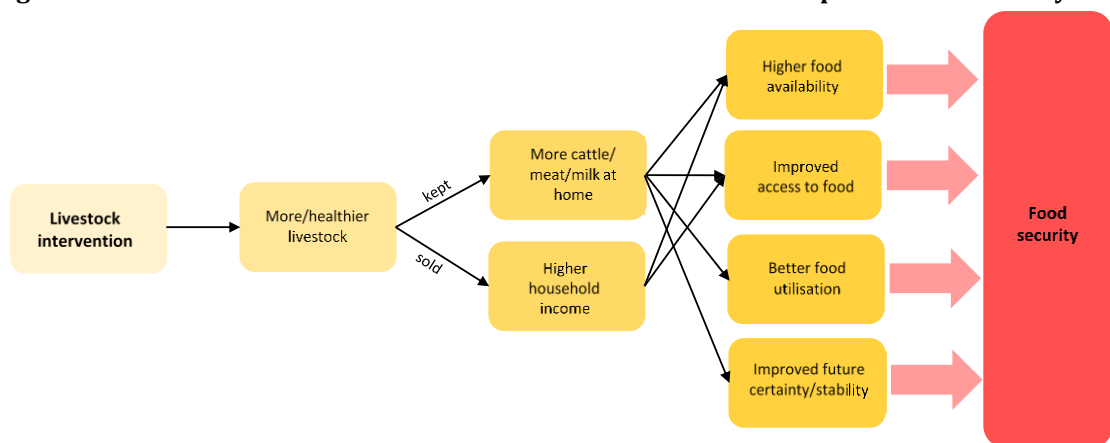
Livestock intervention

The aim of the livestock project component is to contribute to improving livestock breed, health, and overall productivity. The main activity within the intervention has been training a troupe of local veterinarians (‘para-vets’), who provide basic healthcare to domestic animals as well as artificial insemination services for breed improvement. Between 2012 and 2014, this project component managed to establish 16 ‘para-vet’ centres in the Maharajganj area, which

artificially inseminated close to 2000 cows and buffaloes, vaccinated over 9000 animals, and provided de-worming medication to 850 animals.

Figure 2 shows that the intervention has aimed to promote participants' food security in four ways. First, by enabling farmers to have healthier and more numerous livestock, it should contribute to a greater availability of milk and meat both in the farmers' households and in the communities more generally, as some of the extra food is expected to be sold for profit. Second, similar to the agricultural intervention above, farmers who sell the extra food are likely to have higher household incomes, which should strengthen their access to food more generally. Third, more dairy and meat in farmers' diets could lead to better food utilisation, by, for example, reducing their rates of anaemia, which are extremely high in India, as mentioned above (IIPS, 2007). Finally, farmers in developing countries often regard livestock as a risk-insurance mechanism (e.g. Fafchamps *et al.*, 1998), since it can be sold during lean times to ensure consumption smoothing, and hence the livestock intervention was envisioned to also contribute to higher participants' future certainty.

Figure 2. The envisioned effect of GDS livestock intervention on recipients' food security



Source: Author's own work

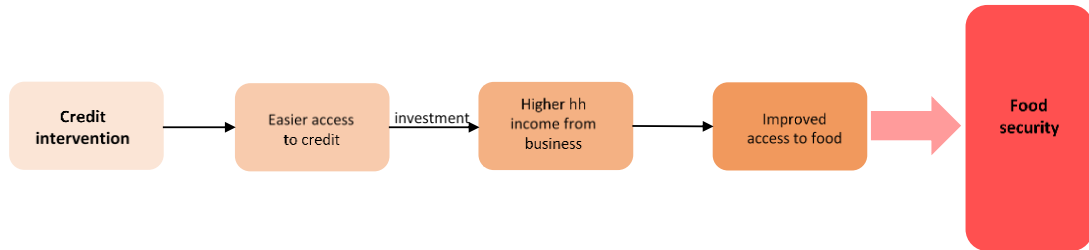
Credit intervention

Within this component, GDS has encouraged the establishment of self-help groups for micro-finance. Unlike many other non-governmental organisations, GDS has not created a microfinance institution itself but has rather tried to promote and capacitate the Maharajanj community to manage their own saving and lending operations. The available credit should ideally be used to set up and grow micro-enterprises, including tea stalls, barber shops, grocery shops, and shops with building materials.

According to the project's logic, the microcredit intervention should help increase recipients' food security by awarding them an easier access to loans, which could help them open or grow existing small businesses, thus facilitating them higher incomes and consequently improving

their access to food (Figure 3). Similar to the agricultural component of the GDS project, the higher incomes are unlikely to boost people’s perceptions of future food security due to the unpredictable nature of the business cycles.

Figure 3. The envisioned effect of GDS credit intervention on recipients’ food security

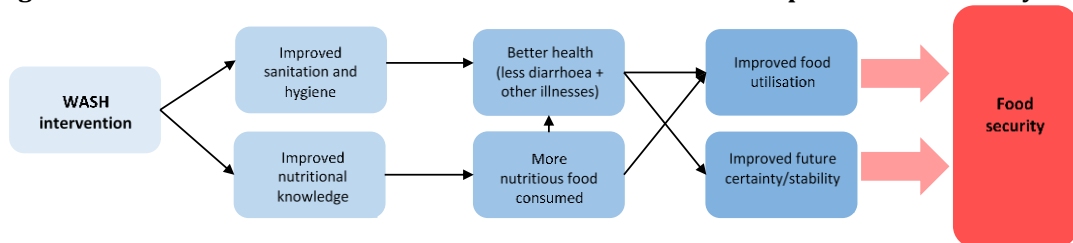


Source: Author’s own work

Water sanitation and hygiene (WASH) intervention

The objective of this project component has been to improve hygiene, sanitation, and nutrition practices and conditions among the Maharajganj communities. The main activities within this initiative have involved assistance with the construction of toilets in household premises and awareness-raising among participating households about the dangers of open defecation as well as about safe water drinking, sanitary handling of sewage, safe and sustainable waste-disposal management, and nutritious, balanced meal planning. GDS has also provided some new technology related to sanitary waste management to participating households and communities.

Figure 4. The envisioned effect of GDS WASH intervention on recipients’ food security



Source: Author’s own work

The envisioned effects of the WASH intervention on recipients’ food security, shown in Figure 4, have been through improved sanitation and hygiene as well as through improved nutritional knowledge. Better sanitation and hygiene and the consumption of more nutritious food should contribute to lower levels of diarrhoea and other health problems and thus to better food utilisation among participants. Eating more balanced meals strengthens food utilisation on its own as well. Furthermore, better health can bolster people’s future food-security outlook, through reduced predicted spending on healthcare and greater expected ability to work.

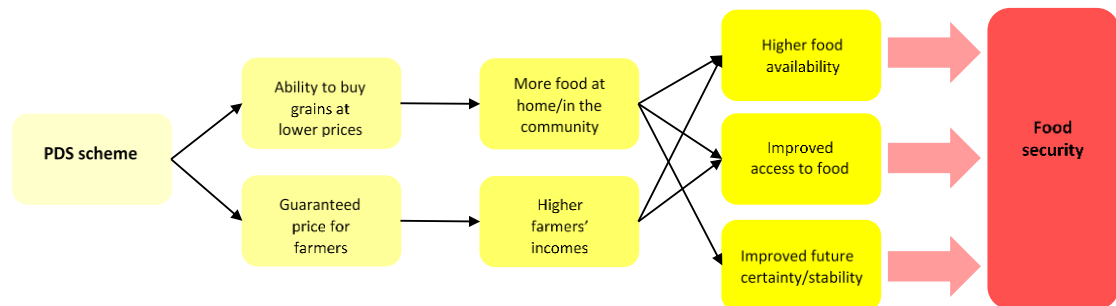
Government schemes

Public Distribution System (PDS) and ration cards

The Public Distribution System is India's largest national programme aimed at improving food security. It dates back to the 1940s and has been managed jointly by the national and state governments (Masiero, 2015). Its basic premise is to allow people to purchase basic commodities such as wheat and rice but in some states also sugar and kerosene at subsidised prices. Since 1992, it has been trying to target primarily the poor.

Three different types of ration cards are available. The first is the Antyodaya Anna Yojana (AAY) card, which should be in theory provided to the 25 million poorest people across India, with the discretion to whom to allocate them precisely left to local authorities. The Below Poverty Line (BPL) card is in theory available to all the people living below the official poverty line (currently set at 27 Indian rupees a day for rural areas and 33 in urban areas) and the Above Poverty Line (APL) card to everyone else interested. In 2013, Antyodaya card holders were entitled to purchase wheat for 2 IRS⁷⁷ per kg and rice for 3 IRS per kg, BPL holders wheat for 4.15 and rice for 5.65 IRS per kg, and APL holders wheat for 6.10 and rice for 8.30 IRS per kg, with the maximum purchase allowed usually set at 35 kgs per month per household (DFPD, 2014)⁷⁸.

Figure 5. The envisioned effect of PDS cards on beneficiaries' food security



Source: Author's own work

The Theory of Change, through which the PDS aims to bolster participants' food security, is displayed graphically in Figure 5. Under the first pathway, the ration cards allow their holders to purchase cereal grains at subsidised prices and hence improve their food access. The lower grain prices should also indirectly contribute to a larger amount of food available locally. Last, despite various changes to the scheme in the past decades, the PDS has been around in some form ever since the 1940s and consequently, the ration cards can be expected to be viewed by their

⁷⁷ IRS to USD exchange rate as of July 2014: 0.017:1

⁷⁸ In November 2013, the Government of India promulgated the *National Food Security Act (NFSA)*. The main mechanism, through which the NFSA is to be implemented, is an expanded PDS. The implementation has not begun yet, however, and due to the lack of political support for the initiative by the currently ruling Bharatiya Janata Party (BJP), it is unclear when and whether it ever will.

holders as a form of permanent safety net, contributing to a more positive outlook on future food security.

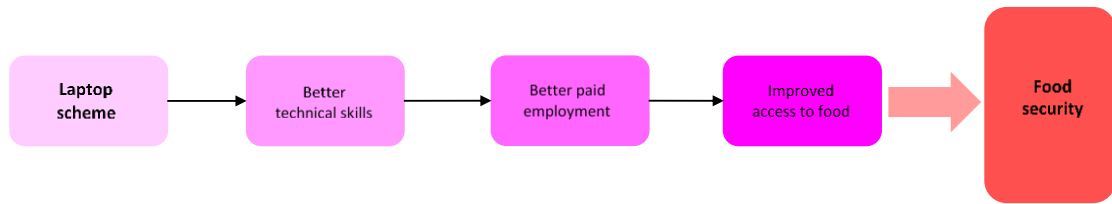
The PDS has aspired to bolster food security in India also through a second pathway, which is, however, not explored here analytically due to insufficient data. The grains sold through the scheme are purchased locally from farmers at stable prices, guaranteed by the government, which has throughout the PDS history encouraged Indian domestic production of grains. As a result, ever since 1995 India has been a major global exporter of rice and wheat (Parikh, 2013). The farmers selling their crops to the PDS should be assured of relatively stable household incomes. In this manner, the PDS should be contributing aside from higher national food availability also to better farmers' food access and improved future certainty. Nevertheless, existing empirical research has shown that absolute majority of PDS grains are procured from large commercialised farms, not from small, food-insecure farmers (Kishore *et al.*, 2014; Tanksale and Jha, 2015). Therefore, even without conducting my own analytical research on this matter, I can state with relative confidence that this latter potential pathway of the PDS to bolstering Indian food security is unlikely to be very effective.

Free laptop distribution

The second type of governmental assistance affecting the lives of the people surveyed in my study has been a free-laptop distribution scheme, initiated by the Samajwadi Party governing Uttar Pradesh between 2012 and 2017. Only qualitative data on this scheme are available as the people in my study received their first laptops only after the quantitative surveys were collected – in the spring of 2013.

According to the official rules of the scheme, secondary students with good academic progress were eligible to receive a free notebook computer each, in order to level the academic playing field between the rich and the poor and thus eventually help with reducing inequality and spurring development. The scheme has served, however, also as a massive propagation tool for the Samajwadi party as each computer comes with a pre-programmed Samajwadi start-up screen and screen saver. In addition, recipients were warned not to attempt to change these default settings since such attempts would allegedly lead to a crashing of the primary software (interview data). After frequent news that the computers could later be found offered by their owners for sale in local markets, the government of Uttar Pradesh decided to make the formerly publicly available data about the programme private⁷⁹.

⁷⁹ <http://timesofindia.indiatimes.com/india/Beneficiaries-selling-Samajwadi-Party-laptops-for-Rs-4000/articleshow/25908761.cms>

Figure 6. The potential pathway through which the laptop scheme could enhance food security

Source: Author's own work

The laptop scheme has never proclaimed its aim to strengthen food security among its recipients; nevertheless, it has stated a wish to eventually contribute to India's development, which would translate into better food security as well. The possible pathway, displayed in Figure 6, appears logically relatively straightforward albeit temporally long. Access to computers could help poor students acquire better technical skills, which could assist them in obtaining better paid employment in the future. Higher incomes can then translate into improved access to food and in turn into lower food-insecurity rates.

Data collection

I assess validity of the hypotheses and the envisaged pathways to food security discussed above through quantitative and qualitative data that I collected personally, with the help of an Indian research assistant Vatsalya Sharma. The quantitative data were gathered using household surveys administered to 146 households that benefitted from at least one of the GDS project's components and to 23 households in villages that did not participate in the project at all (data on 1257 individuals overall). First, eight villages from the project-participating ones and three from the non-participating ones in close geographical proximity were selected at random to be examined. Second, from each village five to 15 households (depending on the size of the community) were randomly selected and surveyed. The survey data were collected between December 2012 and January 2013.

The surveys, available in full in the Appendix, contained five main sections. The first one collected information about different project components - if any - that the households have benefitted from and about the households' location. The second section gathered data on all household members, their age, education levels, and religious affiliation. The third part attempted to gauge the households' wealth, based on both external observations about their dwelling and information about their income and asset ownership. The fourth section inquired whether the families under study were recipients of any other external assistance, whether governmental or private, and finally the fifth one asked about their food-security levels.

Qualitative data on the project were gathered between December 2013 and January 2014, through a series of longer interviews with household members from a few of the project-

participating and non-participating villages. The main objectives of this second round of data collection were to validate the preliminary results obtained through the quantitative analysis and to uncover details about the processes underlying the effects of the different interventions, which could not be obtained or understood by simply looking at numbers. The households to be interviewed were selected also randomly and in total, ten people from project participants and five from non-participants were interviewed. The interviews were conducted using a series of open-ended questions (full text is also included in the Appendix).

Empirical methods of analysis used

Methods for analysing the quantitative data

The first approach that I use to estimate the effects of the different external interventions on their recipients' food security is Propensity Score Matching (PSM), which allows for impact evaluation even in the absence of panel data (e.g. Ravallion, 2001). As I have already described in the previous chapter, this quasi-experimental approach is based on the construction of a suitable control group to the treated one (=households that received a certain form of external help), whose output indicators are then subtracted from the treatment groups' to determine the significance and size of the impact. The validity of PSM rests on two assumptions. The first one, expressed as

$$0 < P(X) < 1$$

where $P(X)$ are the propensity scores calculated based on observable variables X

implies that valid matches on $P(X)$ can be found for all values of observable variables X . The second one can be arithmetically expressed as

$$E(Y_t | X, D = 1) = E(Y_t | X, D = 0)$$

and it presumes that conditional on X , households that did not receive any help have the same outcomes in the analysed variables as the households that participate in the project would have had they not been participating.

In estimating the effects of the GDS project and the PDS scheme in general, I divided the households surveyed into those that received that specific type of support (GDS or PDS) and those that did not receive it (control group). In assessing the impact of the different project and PDS components, I again divided the households into two groups, with one containing those

who received that particular component and the second one those who did not, controlling for other project/PDS components in the case of their recipients.

In order to examine also the conditioning role of local governance in the aid-food security relationships along with assessing the robustness of the results obtained through the PSM, as a second evaluative approach I use Probit and Ordered Probit regressions with robust standard errors clustered by household ID, with food-security levels (nutritional status) as the dependent variable and the types of aid received as the main independent variables.

Methods for analysing the qualitative data

As a primary method here I use simple content analysis, which is a detailed and systematic examination of text in an effort to identify patterns and themes and to discover potential procedural explanations (Berg and Lune, 2012). I read each of the long-interview transcripts carefully and identified a series of unifying themes and topics. I cross-checked these with the results obtained via quantitative methods and used the qualitative data to provide depth and explanatory power to my overall findings.

Data and descriptive statistics

Food-insecurity measures

Table 1 displays summary statistics of all the variables used in the quantitative part of the study. The main dependent variable is a food-security index, constructed on the basis of four questions, which inquire about the adequacy of each household's food consumption, food availability in the previous year, concerns about future food availability, and the frequency with which each household would have preferred to eat other foods. Initially I intended to include also other questions in the index – namely the frequency with which each household lacked food in the house or had to eat a smaller meal than desired – but I found no variation in the response pool, with all households denying such situations have ever occurred⁸⁰. The final index thus varies from 3 (low food insecurity) to 11 (high food insecurity), with the average individual reporting a score of almost 7, which can be classified as a moderate state of food insecurity.

⁸⁰ I adapted my survey's food-security module from the Young Lives' and the World Bank's Living Standard Measurement Studies surveys.

Table 1. Descriptive statistics of all variables used

	Mean	Std. Dev.	Min	Max
<i>Dependent variables</i>				
Food insecurity	6.91	1.90	3	11
Food consumption	2.11	0.48	1	3
Future concern	2.20	0.74	1	4
Would prefer other foods	0.79	0.60	0	2
Food availability	1.21	0.41	1	2
No. of meals per day	2.80	0.28	2	3.5
No. of foods per day	2.53	0.19	2	3.5
Diarrhoea	2.69	1.35	0	7.5
Illness	3.05	0.92	1.5	7.5
Financial concern	2.37	0.77	1	4
<i>Project and governance variables</i>				
Project	0.88	0.32	0	1
Agricultural component	0.81	0.39	0	1
Livestock component	0.46	0.50	0	1
Credit component	0.69	0.46	0	1
Wash component	0.25	0.43	0	1
Ration card	0.62	0.49	0	1
AAY card	0.28	0.45	0	1
BPL card	0.31	0.46	0	1
APL card	0.03	0.18	0	1
Local governance quality	6.59	1.62	4	9
<i>Control variables</i>				
Male	0.54	0.50	0	1
Age	26.24	19.22	0	90
Education (age>22y)	3.44	4.54	0	18
HH size	9.56	4.88	1	24
Female headed hh	0.13	0.34	0	1
Muslim	0.03	0.18	0	1
Pucca' house	0.64	0.48	0	1
Wealth index	0.02	2.02	-4.01	14.69
Income per capita (USD)	86.74	45.95	26.20	392.93
N	1257			

Source: Author's own calculations

Other food-security variables include the number of meals a person generally consumes per day (varies between two and three to four, with the mean of 2.8) and the number of different food groups a person consumes per day (again varies between two and three to four, with a mean of 2.53)⁸¹. Finally, variables assessing the number of times a person suffered from a bout of diarrhoea in the past month (on average between two and three times) and the number of times a person was ill in the past six months (approximately three times on average) have

⁸¹ Dietary diversity, as measured by the number of food groups usually consumed, has been increasingly praised for its accuracy as a food-security indicator (Headey and Ecker, 2013; Hoddinott and Yohannes 2002; Moursi et al., 2008; Ruel, 2003).

constituted my attempt to include in my food-security measurements also individual and more objective indicators of nutritional status⁸².

The final dependent variable used, *financial situation*, has less to do with food security and more to do with a subjective measurement of wellbeing as it enquired of surveyed households whether they were concerned about their financial situation in the coming year. The resultant values vary from 1 (little concern) to 4 (high concern), with the average falling at 2.37.

Overall, the dependent variables paint a picture of moderate food insecurity in the villages surveyed, with people somewhat but not overly worried about their future prospects. However, as the previous chapter insinuated, households in India might have the tendency to downplay the gravity of their food-security situations and the qualitative data gathered suggest that it is the case also here.

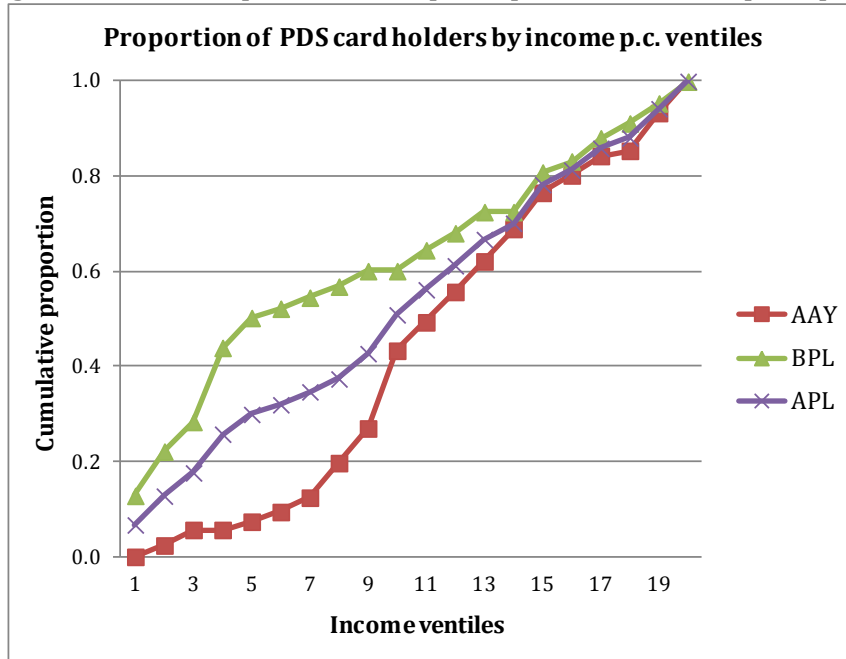
Assistance and governance variables

The first relevant variable here, *project*, inquired whether a respondent has been a beneficiary of any of the GDS project components. Out of the 1257 people surveyed, 1110 (89 per cent) received at least one of the components while 147 did not. The following four variables provide the same information vis-à-vis the four separate components – agricultural, livestock, credit, and WASH. The results in Table 1 show that 81 per cent of respondents have benefitted from the agricultural project elements, 69 per cent have received credit support, 46 per cent livestock help, and 25 per cent support from WASH.

The four following variables in Table 1 provide information about the government's PDS scheme. The first one, *ration card*, shows that approximately 62 per cent of individuals live in households holding some type of ration card. 28 per cent of households have the AAY card, 31 per cent the BPL card, and 3 per cent the APL one. The graph in Figure 7 analyses the targeting of the three ration cards vis-à-vis income levels using concentration curves⁸³. The curves clearly show that while the BPL card has been indeed targeted in a somewhat pro-poor manner as the national strategy intended, the AAY card has actually been awarded in greater proportion to richer people in my sample. The APL card seems to be owned relatively equally by all income ventiles.

⁸² Initially I aimed to obtain weight and height measurements from household members as well but due to logistical difficulties and cultural sensitivities I had to eventually abandon the idea.

⁸³ These curves plot the income per capita of the survey respondents (divided into twenty categories – 'ventiles' - from lowest to highest) against the cumulative proportion of the different ration cards' holders. If the targeting favours the poor, people populating the ventiles towards the left benefit proportionally more and the curve appears convex. Conversely, in the case of pro-rich targeting, the curve looks concave.

Figure 7. Relationship between PDS participation and income per capita

Source: Author's own calculations

Turning attention back to Table 1, the final variable in this section, local governance quality, was obtained by asking three people deemed as community leaders in the area (GDS project worker and two project participants, one male and one female) to rate the 11 communities under study on a scale of 1 (bad) to 10 (good) based on the perceived quality of local institutions⁸⁴ and state of corruption. The three different measures were then averaged to obtain one final governance indicator. Table 1 shows that the average community was ranked slightly above six, with no community scoring lower than four or higher than nine. These results would suggest that public affairs in the communities under study are being run rather well; however, long interviews insinuated that corruption was an every-day presence in people's lives. An overly optimistic view of the state of local governance was also found in the Young Lives surveys discussed in the previous chapter and Uttar Pradesh is according to Transparency International (2007) a more corrupt state than Andhra Pradesh, where the Young Lives surveys were conducted. Nevertheless, given that what matters here primarily is the relative comparison of the communities to each other rather than the absolute ratings, this over-optimism should not significantly bias the results.

Control variables

The control variables used here can be split into two groups. The first one is demographics, including gender, age, education, religion, household size, and whether a household is female-headed. The second section has attempted to gauge a household's economic wellbeing, by

⁸⁴ Particularly the municipal workers, the police, and the judge (if any)

inquiring about their annual income⁸⁵, their type of dwelling ('pucca' or 'kachcha'⁸⁶), and whether they own any valuable items (toilet, water pump, watch, pressure cooker, radio, fridge, TV, phone, sewing machine, fan, bicycle, motorcycle or a car).

Looking first at the demographics, 54 per cent of the sample is male, with the average age slightly above 26 years. The average education level of all adult persons older than 22 years surveyed is 3.44, with a large range from no education to 18 years of schooling. 13 per cent of respondents live in female-headed households and only three per cent are Muslim. The average household size is close to 10, indicating the co-habitation of several generations of families.

Turning attention to the indicators of economic well-being, 64 per cent of respondents live in so-called 'pucca' houses with the rest in 'kachchas'. 'Pucca' houses refer to buildings constructed using firm materials such as clay, bricks, tiles, or even metal, whereas 'kachcha' houses are made of temporary materials, primarily mud and other organic matter. Data on the valuable items owned were used to create a wealth index, using principal component analysis, with the resulting average somewhere around 0 on a scale from -4 to more than 14. Finally, the average per capita income in my sample is extremely low, less than 85 USD annually, which is deeply below the international poverty line of 1.25 USD per person per day. Nevertheless, these numbers cannot be taken at a face value from this point of view as all the households surveyed are agricultural and most of them are subsistence farmers, who consume primarily home-cultivated food (which they do not report as part of their income).

Qualitative data

While the long interviews were conducted using a series of open-ended questions, a few statistics were also collected on the respondents in order to compare them with the survey-respondent group. Due to the fact that men in this part of India are generally seen as more competent at talking with strangers, 73 per cent (11 out of 15) of my sample were constituted by males. Unsurprisingly then, the 15 interviewed people had also a higher average level of finished education, 4.3 years of schooling⁸⁷ as opposed to the 3.4 years in the whole sample. The mean age of the interviewees was also higher than in the quantitative study, 42 as opposed to 26, due to older people seen by members of the communities as more fit to participate in interviews. The average household size and income per capita were similar, however, at nine members and 89 USD annually. Interviewed persons were also asked to rate their household financial situation on a scale of 1 (poor) to 3 (well-off) and their food security situation on a scale of 1 (bad) to 3 (good). Absolute majority of respondents replied 2 to both questions, suggesting living in a state of moderate food insecurity and mild poverty. Nevertheless, further questions

⁸⁵ Income, however, is not used in matching due to its endogenous relationship with the project variables.

⁸⁶ Permanent versus make-shift housing.

⁸⁷ The average level for adults over 22 who are male in the whole sample is 5.1.

indicated that most respondents' families were actually very poor, confirming yet again the suspicion about the tendency of poor families in India (and perhaps elsewhere as well) to downplay the true scale of their destitution.

Data and study limitations

Due to the nature of the data collected, the intrinsic difficulties of establishing attribution in impact evaluations, and the complex nature of food security, this study suffers from several limitations. First, I compare recipients of certain types of assistance to non-recipients but the reasons underlying the differentiation are not always clear. In the case of the GDS project, the non-recipients are primarily people who could not receive the project/specific project component due to geographical causes – because the NGO either does not work in their community at all or because it does not implement the specific project component there⁸⁸. However, all people in my study were theoretically eligible to receive the PDS cards (actually, almost all to receive the AAY cards) but not all obtained them. The credit component of the GDS project was also taken up only by some people eligible to receive it. Since matching can be done only on observable characteristics and there are some unobservable ones at play here – connections likely in the case of PDS, entrepreneurial nature or social capital in the case of the credit component – it is possible that the estimated impact of these interventions is overstated as the traits that made the people recipients of the intervention in the first place could also have a positive effect on their food security in their own right. The reverse is improbable: if connections, entrepreneurial spirit, and social capital have any effect on food security, it is likely positive.

On the other hand, other data issues are likely to downplay the interventions' impact. Due to the unavailability of baseline data, in matching I use wealth information gathered at the same time as information on food security and project receipts; however, it is possible that wealth indices of intervention recipients had increased already thanks to the interventions. If that is the case, the positive impact of aid initiatives could be downward biased. 'Contagion' of the agriculture and livestock NGO project components could have similar effects – i.e. good agriculture and livestock practices could be adopted also by farmers in communities that did not receive the interventions directly, through information spreading in the region, in which case the comparison group is no longer reflective of the state of the project recipients had the interventions in question not been implemented at all.

My hope with regard to these limitations is that the two opposing forces on my estimates of impact mostly cancel each other out. Moreover, in relation with the unavailability of baseline

⁸⁸ In the case of the WASH aspect, one prerogative for implementation is assistance from local authorities, which some of the poorer communities had not yet managed to attain at the time of data collection.

data, I also perform matching on demographic variables only (leaving out wealth) to check for robustness of results. Finally, the qualitative data gathered through long interviews should serve as a check on the numerical results and in case of agreement should strengthen their validity.

The main limitation vis-à-vis the complex nature of food security in this study has to do with the appropriate level of food-security measurement. Some food-security variables used here, such as the frequency of illness and diarrhoea, are person-specific but others apply to the household as a whole, as it was not possible for us (my research assistant and me) to talk to each household member separately. This issue is particularly problematic for the measurement of female food-security status, as women in South Asia have been described by researchers to frequently lack adequate access to resources even in resource-sufficient households (Behrman, 1988; Jayachandran and Pande, 2012; Maxwell, 1996; Ramachandran, 2007). My hope is that the two person-specific food-security indicators and data from qualitative interviews can help fill the resultant information gap; nevertheless, I have to cautiously account for it when drawing conclusions based on my findings here.

The impact of aid in general

The first part of Table 2 shows the impact of the GDS project on recipients' food security as measured by the food-insecurity index, the number of meals consumed per day and of food groups consumed per day, the frequency of diarrhoea and illness, and financial concern. Overall, the impact appears to be positive, with the most robust results found on increasing the number of meals consumed per day and reducing the frequency of diarrhoea in the past month. A less robust but still positive result was found with regard to the project's impact on recipients' food-insecurity index. Paradoxically, it also seems that the project might have increased people's concern about future financial security but that could be attributed to the inherently uncertain nature of project assistance. Even though project recipients are better off today than they would have been had they not received any help, their worry that things will deteriorate significantly if/when the project leaves might have heightened. The quality of local governance strengthens the positive effect of the project, particularly in reducing the food-insecurity index and the frequency of diarrhoea and illnesses and in increasing dietary diversity, aka the number of food groups consumed⁸⁹.

Information gathered through interviews generally confirmed these findings. All the persons interviewed that were active beneficiaries of the project expressed a notion that the assistance provided by the NGO contributed to improving their food security. As an illustration, one of the

⁸⁹ From the un-displayed control variables, the most significant were the ones capturing household wealth, namely the wealth index and whether a household lives in a permanent 'pucca' house. As expected, the better-off households suffered from less food insecurity in general. Female-headed households also appear to be more vulnerable to food insecurity than male-headed ones, again an expected result given that usually households are female-headed because no father/husband is present and hence there are fewer adults to provide financially for the household dependents.

project beneficiaries said that ‘GDS has taught us so many ways to help ourselves in a better way using the same resources that we already have’. Another confirmed this view, stating that ‘ever since GDS started working here, we have more food in the house and eat better.’ When asked about the intervening effects of governance, most respondents opined that although the local authorities did not interfere much with the NGO’s work, in some instances the positive impacts of the project were dependent on the quality of the local bureaucracy, particularly on their willingness to cooperate and their likelihood to require bribes in exchange.

The PDS ration-card scheme appears much less effective than the project in the quantitative results. It might have slightly lowered the frequency with which survey respondents suffer with illnesses and diarrhoea but otherwise has had no impact on their food security. Thus, the logical pathway through which the PDS could have theoretically boosted recipients’ food security by increasing their access to food and future certainty has not been realised by the scheme in general among the people that I surveyed. This finding of no PDS impact is not unprecedented, however (e.g. Kaushal and Muchomba, 2013; Kochar, 2005)⁹⁰.

The effect of the PDS has also been in no way conditioned on good local governance according to my calculations, a result that seems a little surprising in view of the information gathered from interviews, which suggested that some PDS shopkeepers were significantly more demanding of bribes in exchange for selling the subsidised rations than others. For example, one woman said in the interviews:

‘Often, when I go to the Fair Price Shop (FPS)⁹¹, they tell me that they have run out of stock ... but I know they have stock for their friends. Lalita [her friend] said that the FPS in Gram Mazgawa is better, they always sell her rice.’

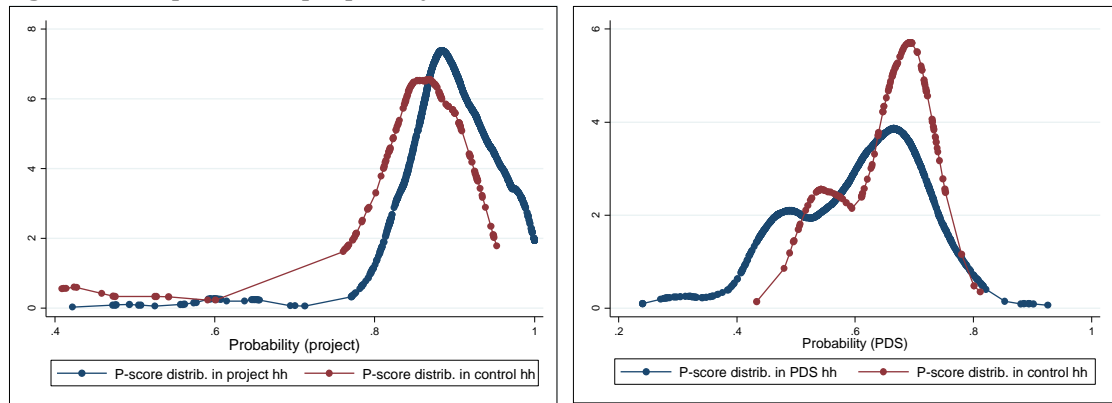
However, the ratings of local governance were not based on the quality of the Fair Price Shops, and thus there likely is a low if any level of correlation between ‘good’ local governance as measured in this study and the level of corruption among PDS administrators.

On the benefits of owning the ration cards, people in interviews reported that particularly the possession of the AAY cards was useful. In their words, ‘having an AAY card is better than a BPL card... we are poor, we thought they would give it to us but they didn’t ... but at least we have the other one [BPL], some of our neighbours never got any.’ At the same time, several interviewees expressed a wish that the cards covered more types of food than just wheat and rice⁹².

⁹⁰ The PSM models were also run without the wealth index, as a robustness tests, and the results obtained varied slightly in the size of coefficients but generally not in significance.

⁹¹ Fair Price Shops are where the PDS grains can be purchased.

⁹² In some states/communities, sugar and kerosene are also sold for subsidised prices at the FPS, but not in the villages surveyed.

Figure 2. Comparison of propensity scores between treated and control matched households

Source: author's own figure

Table 2. The impact of aid on recipients' food security and the conditioning effect of governance

		Food insecurity	Meals per day	Foods per day	Diarrhoea	Illness	Financial concern
Project	<i>PSM</i>	-0.01	0.23	0.00	-0.54	-0.03	0.23
	<i>Ordered probit</i>	0.05	15.27	0.34	4.43	1.44	3.52
Governance		-0.57	1.30	0.12	-0.16	-0.04	0.00
		-1.83	5.23	0.55	1.78	0.17	0.02
Project*Gov		-0.46	0.60	0.20	-0.05	-0.29	0.09
		2.08	4.49	1.84	0.45	2.87	0.36
Project*Gov		-0.31	0.45	0.17	-0.30	-0.39	0.13
		3.76	2.68	1.27	2.28	3.29	0.50
<i>Matched treated</i>		912					
<i>Matched control</i>		147					
Ration card	<i>PSM</i>	-0.23	-0.01	-0.02	-0.11	-0.16	0.01
	<i>Ordered probit</i>	1.48	0.55	1.52	0.95	1.82	0.12
Governance		-0.04	0.12	-0.25	-0.34	-0.26	0.16
		0.18	0.51	1.01	1.80	1.32	0.67
Ration card*Gov		-0.25	-0.24	-0.18	0.13	0.05	-0.34
		2.69	1.92	1.02	1.19	0.51	2.38
Ration card*Gov		-0.11	0.09	0.21	0.11	0.01	-0.16
		0.88	0.80	1.13	0.93	0.12	0.96
<i>Matched treated</i>		741					
<i>Matched control</i>		479					

The number next to each variable is the Average Treatment Effect on the Treated (ATET) in case of PSM regressions and a coefficient in case of the Ordered Probit regressions, the number below is the corresponding Z score. Results significant at least as the 90% level are in bold.

Only three interview respondents mentioned to have benefitted from the laptop-distribution scheme but all of those who did obtained more than one laptop even though they did not have more than one child of the appropriate age to be eligible to receive more than one. One person had two in their household, one three, and one six (!). When asked how they acquired them in such high numbers, the interviewees were rather evasive and said that distant family members donated them as they had already owned computers themselves. To quote, one said:

'Akhileshji [Chief Minister of UP] distributed laptops and we have six at home.' Interviewer: 'So many? Do you have six children finishing 10th or 12th grade?' Man: 'Well, no. [Silence for 30 seconds]. Uhm, some cousins gave us theirs. Because they already had computers.'

However, none of the laptops mentioned by the interviewees were in active use due to insufficient electricity, five or fewer hours a day, no internet connection in the communities, and computer illiteracy among most household members. All three laptop-holding interviewees expressed their desire to sell them. While that could provide a one-time boost to their household incomes, even from the limited information on this intervention it seems unlikely to significantly enhance the recipients' technical skills - particularly when the laptops are not being used. From this perspective, the rather long potential pathway through which this scheme could eventually bolster participants' food security will probably never come to fruition⁹³.

The heterogeneous impact of aid

First, looking at the aid implemented by GDS versus by the government, both the quantitative and qualitative data presented above suggest that the NGO aid has been significantly more effective at bolstering recipients' food security. When asked about the difference between NGO and government assistance specifically, interviewees also pointed to the greater effectiveness of NGO aid, citing much faster delivery times, less bureaucracy, and no corruption as the main underlying reasons. One interviewee summed this notion nicely, saying: 'Unlike the government, GDS gives its services without any hassle. There are lots of procedures involved in government services. And they always want some extra money.' This finding appears to validate my initial hypothesis (H2.2) on NGO versus government-implemented aid even more so than the findings from the previous chapter. However, the types of assistance provided here by the NGO differ completely in kind from those provided by the government, and hence it is not clear whether an agricultural extension service or micro-finance provision run by the government would also be less successful than the NGO ones examined here. What certainly seems quite inefficient is the distribution of laptops to families that still lack reliable access not only to electricity and internet connections but also to safe drinking water and toilets.

With a view to *how* aid is disbursed, the two categorisations assessed here are into credit and non-credit aid and according to aid volatility. Table 3 displays the results obtained vis-à-vis the different impacts of credit and non-credit aid and validates once again hypothesis 3.2, in which I argued that credit aid was likely to be less effective than non-credit aid but at the same time more conditioned on governance. While non-credit aid impacts positively almost all the food-security indicators examined, credit aid appears largely ineffective and in addition increases people's financial concerns.

The qualitative data confirmed these conclusions, suggesting that people in the Maharajanj area use the micro-credit loans primarily to cover unexpected emergencies, to fund large

⁹³ The Times of India also share the view that the laptop scheme has been ineffective: <http://timesofindia.indiatimes.com/india/Beneficiaries-selling-Samajwadi-Party-laptops-for-Rs-4000/articleshow/25908761.cms>

weddings or funerals, and to purchase material goods and the high interest rates on the loans increase their worries for the future. One interviewed woman said: 'I got two loans, one to pay for my son's operation and one for my daughter's wedding. We are still paying off the second loan ... and the payments are a burden. Last month I had to borrow from a neighbour to pay up on time.' Perhaps surprisingly, my data have suggested that very few people use the loans to start or support existing business and the few businesses that were started were by-and-large unsuccessful. Three people recollected the story of a woman who opened a cosmetics shop in one of the villages with the help of a micro loan but unfortunately went out of business shortly after the opening.

Table 3. The impact of credit versus non-credit aid on recipients' food security

		Food insecurity	Meals per day	Foods per day	Diarrhoea	Illness	Financial concern
Credit	<i>PSM</i>	0.25	0.00	-0.01	0.00	-0.64	0.37
		1.26	0.17	0.26	0.01	7.28	1.45
	<i>Ordered probit</i>	0.32	0.27	-0.42	-0.20	-0.31	0.51
		0.19	0.97	1.35	0.65	1.32	1.89
Non-credit	<i>PSM</i>	-1.39	0.22	0.00	-0.45	-0.13	-0.02
		1.72	13.03	0.41	3.56	1.57	0.43
	<i>Ordered probit</i>	-3.08	3.43	3.03	-1.28	-1.49	-2.35
		1.81	2.15	1.64	2.13	0.93	1.90
Governance	<i>Ordered probit</i>	-0.48	0.07	-0.15	0.03	-0.26	0.04
		2.44	1.22	1.28	0.18	2.20	0.16
Credit*gov	<i>Ordered probit</i>	-0.27	0.11	0.92	0.05	0.23	-0.21
		2.13	0.52	2.88	0.29	1.08	1.97
Non-credit*gov	<i>Ordered probit</i>	-0.38	0.25	-0.05	0.28	0.24	0.34
		1.64	1.12	0.89	1.13	1.00	0.96

The number next to each variable is the Average Treatment Effect on the Treated (ATET) in case of PSM regressions and a coefficient in case of the Ordered Probit regressions, the number below is the corresponding Z score. Results significant at least as the 90% level are in bold.

Regarding aid volatility, no relevant quantitative data were collected but in the interviews, people did not appear to be seriously harmed by it from the side of the GDS project as it has provided assistance continuously for more than seven years with no plans of disbanding thus far. Nevertheless, some people did express a mild worry that things would deteriorate again once GDS left the area (no one seems to have illusions that this will never happen). Looking to the PDS scheme, while the households that have a ration card generally have it for life, the availability of the subsidised grains for purchase does vary over time and hence food-insecure families cannot fully rely on the cards. Particularly in times of droughts or floods when the harvest is bad and people are in most need of free/cheap food, the ration-card stores tend to run out of stock. As one interviewed man said: 'The [ration] card is good but often when we want to use it, our FPS has nothing to sell.' Moreover, since 2012 there has been a push in Uttar Pradesh to replace all the existing plastic ration cards with digitised ones, in an effort to curb corruption⁹⁴. As of 2014, this process has not been completed yet but it has added an extra

⁹⁴ This effort is related to the aadhaar scheme, which is an effort by the Indian government to afford each Indian citizen a unique biometric identifier, which could eventually be linked to social welfare schemes in order to reduce diversion, leakage, and other types of corruption (e.g. Zelazny, 2012).

element of insecurity into the scheme. Hence overall, the data clearly provide support to my original sixth hypothesis (H6).

Finally, we can use the data available to examine the heterogeneous impact of aid on food security on the basis of *where* the aid specifically goes. Looking at the different effects of the four project components, displayed in Table 4, agricultural and livestock help appear most beneficial followed by WASH.

Table 4. The heterogeneous impact of the various GDS components on food security

		Food insecurity	Meals per day	Foods per day	Diarrhoea	Illness	Financial concern
Agriculture	PSM	-0.47	0.12	0.04	-0.99	-0.64	-0.20
		1.69	2.80	5.98	2.85	3.39	1.39
	Ordered probit	-0.26	0.50	0.35	-0.20	0.29	-0.18
		0.90	2.02	1.67	0.84	1.24	0.65
Livestock	PSM	-0.61	0.09	0.03	-0.02	0.16	-0.46
		2.99	3.12	2.16	0.12	1.60	5.93
	Ordered probit	-0.19	0.46	0.32	-0.21	-0.48	-0.26
		1.72	1.60	0.89	1.49	1.97	1.27
Credit	PSM	0.25	0.00	-0.01	0.00	-0.64	0.37
		1.26	0.17	0.26	0.01	7.28	1.45
	Ordered probit	0.32	0.27	-0.42	-0.20	-0.31	0.51
		0.19	0.97	1.35	0.65	1.32	1.89
WASH	PSM	-0.46	0.17	0.10	-0.63	-0.11	-0.59
		2.57	0.87	1.16	5.37	1.15	8.45
	Ordered probit	-0.22	0.45	0.47	-0.90	0.30	-0.73
		1.68	1.56	1.19	4.01	1.08	2.63
Governance	Ordered probit	-0.27	0.31	0.39	-0.12	-0.10	-0.02
		1.92	2.11	2.76	1.16	0.80	0.11
Agri*gov	Ordered probit	-0.26	0.10	0.66	-0.06	0.03	0.13
		1.61	0.45	2.77	0.40	0.17	0.77
Livestock*gov	Ordered probit	-0.14	0.32	0.44	-0.26	0.08	0.05
		0.95	1.63	2.02	1.90	0.43	0.76
Credit*gov	Ordered probit	-0.27	0.11	0.92	0.05	0.23	-0.21
		2.13	0.52	2.88	0.29	1.08	1.97
WASH*gov	Ordered probit	-0.06	0.15	0.96	-0.35	0.29	0.17
		0.59	1.15	3.88	2.30	1.27	1.04

The number next to each variable is the Average Treatment Effect on the Treated (ATET) in case of PSM regressions and a coefficient in case of the Ordered Probit regressions, the number below is the corresponding Z score. Results significant at least as the 90% level are in bold.

The agricultural intervention bolstered most robustly the number of meals a person consumes per day along with the number of different food groups consumed. This result, the interviewees explained, arose thanks to the project workers introducing them to new types of crops (primarily vegetables) as well as to the use of chemical fertilisers and drip irrigation. For several farmers the intervention backfired one year, however, as they grew only one new crop (in this case, a new rice variety) and proceeded to lose their whole harvest in a flood. In one farmer's words: 'It was very bad that year. We lost almost the whole harvest. We had very little to eat the whole winter. My brother [who works in Delhi] sent us some money - I don't know how we would have made it otherwise.'

Other positive but less robust effects of the agricultural component have been a reduction in the participants' perception of food insecurity along with the frequency with which they suffer

from diarrhoea and other illnesses. In interviews, beneficiaries have described this effect as a result of consuming food of better quality and variety, which has contributed to an overall improved food-security state. Thus, the evidence suggests that the agricultural project component indeed bolstered food security via the mechanisms conceptually laid out in Figure 1.

The livestock project component appears to have improved the recipients' food-security index even more (=a larger numerical difference between those receiving the intervention and their synthetic control group). To a smaller degree, the intervention has also augmented the number of meals participants consume per day, lowered the frequency with which they suffer from diseases, and lessened their financial concerns about the future. The last effect, according to the interviews conducted, is related to the increase in the size of the recipients' herds thanks to GDS' help with livestock breeding and health care, confirming my earlier conjecture about livestock being seen by the villagers as a form of insurance. When asked, one farmer said: 'We have two cows now. We have more milk than before...I feel better because even if one cow dies, we'll still have the other one.' At the same time, as the farmer also indicated, owning more animals has enabled their owners to drink more milk and eat more butter, cheese (paneer), and meat than before⁹⁵, resulting in a greater number of daily meals and types of food consumed. My data hence confirm that the livestock intervention indeed bolstered food security via all four its components: by increasing food availability in the project communities, expanding recipients' access to food, improving their food utilisation through an augmented consumption of animal protein, and finally enhancing their future food-security outlook thanks to domestic animals being perceived as a form of insurance or savings.

The credit part of the project performed the worst from the viewpoint of the recipients' food security. As Table 4 reveals, its effect on most outcome variables has been insignificant. Only one PSM result suggests that those with access to microcredit suffer less often from illnesses. On the other hand, an Ordered Probit result insinuates that the microloans heightened people's financial concerns. This finding can logically be attributed to people's fears that they will be unable to repay the loans. The four interviewed women who borrowed from the GDS-supported self-help groups all used the money to cover consumption rather than production costs (medical costs, weddings etc.) and the repayment of the loans has strained their already-tight household budgets. Nevertheless, people who have taken loans from the credit groups would have perhaps borrowed money even in their absence, from local money lenders or other avenues, and thus it is not clear whether the negative effect discovered can fully be attributed to the GDS project's credit component. What seems more straightforward is the conclusion that the credit intervention failed to bolster recipients' food security via the pathway displayed in Figure 3, as

⁹⁵ Not beef since in Hindu villages cows are considered sacred but goat and chicken meat.

it did not significantly raise household incomes and thus in turn did not translate into improved access to food.

The WASH project component has had a robust positive effect on people's food-insecurity index, comparable in size and consistency to the positive effect of the livestock component. It has also significantly reduced the frequency of recipients' diarrhoea. This finding, as explained in interviews, is mainly thanks to the WASH beneficiaries gaining access to in-household toilets and to more knowledge about the importance of hand washing and safe water- and food-handling practices, which all contribute to lowering the occurrence of digestive and other health problems. One interviewee said:

'One of the greatest services which GDS has given us are the toilets. Earlier, there were lots of flies and insects. Kids used to get lots of diseases. Ladies had to clean all the places around the house. Kids used to run around the house with stained legs. Now that we have the toilet, things are better.'

The WASH intervention thus contributed to better food utilisation, as was conceptualised theoretically in Figure 4. The other pathway to food security displayed there, via higher future certainty, has also come to life, as demonstrated by the intervention's positive impact on recipients' financial concerns (aka, they were alleviated). This likely happened due to a realisation that observing sanitary standards would render household members overall healthier and hence less needy of emergency credit assistance to cover health costs.

The quality of local governance reinforced the positive effects of all four project components. This conditioning effect has been the strongest in the case of the credit intervention. Interviewed credit recipients suggested that the conditioning role might lie in the fact that the communities with better local authorities (less corruption, more efficient) provided some support to those organised in microfinance self-help groups, ranging from arranging additional business training courses to providing locations where the groups could meet. Interviewees also highlighted the importance of governance in strengthening the impact of the WASH component, as the physical toilets themselves were supposed to be provided through the government (with GDS only assuring their proper installation) and in some communities, their delivery was much more efficient than in others.

Out of interest, I also compare the effectiveness of the three different PDS ration cards (Table 5), even though they all constitute a form of direct transfer aid and hence their comparison cannot add much to the assessment of my hypotheses. The results show that while holding an AAY card unequivocally helps people improve their food security, it is not so in the case of the other two cards, with the BPL card actually appearing harmful in its effect on several of the food-insecurity indicators examined. There are two reasons for this larger impact. First, by design the

AAY card confers more benefits on its holders, as they are entitled to buy wheat and rice at much lower prices than BPL and APL holders. Second, according to some interviewees, when the stocks of subsidised food are low, only AAY card holders are often allowed purchasing. One man said:

‘The AAY card is better than the BPL. The rice and cereal are cheaper and the FPS often give preference to the AAY [holders]. Me [BPL holder], they shoe away, saying they have nothing left. But I know they have some.’

Table 5. The heterogeneous impact of ration cards on food security

		Food insecurity	Meals per day	Foods per day	Diarrhoea	Illness	Financial concern
AAY	<i>PSM</i>	-0.42	0.06	0.03	-0.18	-0.13	-0.22
		3.24	3.28	2.82	1.76	2.08	4.30
	<i>Ordered probit</i>	-0.16	0.27	0.32	-0.45	-0.27	-0.21
		1.89	3.37	2.71	1.75	3.43	2.25
BPL	<i>PSM</i>	0.63	0.13	-0.05	-0.54	0.35	0.62
		1.48	1.58	1.13	1.28	2.05	3.80
	<i>Ordered probit</i>	0.04	0.05	-0.87	-0.28	-0.23	0.47
		0.16	0.55	2.69	1.43	0.98	2.00
APL	<i>PSM</i>	-0.08	-0.07	0.01	0.05	-0.16	-0.14
		0.21	1.20	1.05	0.20	1.51	1.56
	<i>Ordered probit</i>	0.16	-0.38	-0.04	0.08	-0.52	0.21
		0.32	1.53	0.12	0.19	1.90	1.10
Governance	<i>Ordered probit</i>	-0.15	0.23	0.22	-0.22	0.03	-0.18
		1.90	2.21	1.68	3.24	0.41	2.09
AAY*gov	<i>Ordered probit</i>	0.02	0.15	0.50	0.00	0.11	0.05
		0.15	1.47	3.19	0.01	0.97	0.34
BPL*gov	<i>Ordered probit</i>	0.02	-0.03	0.18	-0.01	-0.04	0.01
		0.65	0.67	3.30	0.17	0.91	0.55
APL*gov	<i>Ordered probit</i>	0.00	-0.01	0.03	-0.02	-0.06	0.00
		0.05	0.17	0.50	0.40	1.59	0.00

The number next to each variable is the Average Treatment Effect on the Treated (ATET) in case of PSM regressions and a coefficient in case of the ordered probit regressions, the number below is the corresponding Z score. Results significant at least as the 90% level are in bold.

The BPL and APL cards are hence considered to be a far-inferior possession to the AAY cards, which then explains why particularly the distribution of AAY cards is so income-regressive (Figure 7). Since the AAY cards render much more significant positive effects, richer people with more money for bribes and better connections are more interested in obtaining them, leaving many of the most destitute with the ineffective BPL cards.

Unlike in Table 2, however, governance quality here appears to condition positively the impact of AAY and BPL cards on the number of food groups recipients consume per day. Information from interviews indicated that in some better governed communities, Fair Price Shops ran out of supplies less frequently and hence even BPL cards might have had positive impact on recipients' food security.

In order to find out whether the positive effect of the different aid initiatives increases when more than one is implemented simultaneously, I conducted an impact evaluation of the compound effect of the different GDS and PDS components on households' food-insecurity

index. Table 6 displays the results and shows that the livestock component in combination with WASH and with the agricultural initiative has the most sizeable reducing effect on food insecurity. In fact, the size of the impact is larger than the sum of the positive effects of the three individual components, highlighting the existence of synergy among the three interventions. One interviewee commented on this finding:

‘Through the agricultural intervention I started growing vegetables; the livestock component helped me buy a second cow. And I got the toilet. So now my kids eat more food, drink more milk, and they are ill less often. And they are doing well. So yes, I think it is good to receive help from several sides.’

Livestock help joined with WASH and AAY also has a positive influence on food security but not as large in size as the agricultural component combined with the livestock one and WASH, suggesting that those in receipt of productive help from GDS no longer rely to the same extent on subsidised food from the government. Since the effects were estimated using PSM only, I could not assess here the conditioning role of governance.

Overall, the results on the heterogeneous impact of aid on food security based on the specific aid activity involved imply that agricultural and livestock aid along with social-infrastructure aid are more helpful to food security than economic (credit) and direct-transfer aid. In addition, the analysis of compound impact of the different aid initiatives suggests that households receiving all three beneficial project components (agricultural, livestock, and WASH) benefit significantly more than households receiving only one component, confirming the conjecture that bolstering more than one food-security aspect at a time can strengthen food security to a greater extent.

The results also indicate that one type of the direct-transfer aid examined here (the AAY card) is very effective at bolstering recipients’ food security. However, there are several concerns about the long-term effects of direct-transfer programmes, primarily that they are unsustainable and that they instil in their recipients a passive, aid-reliant mentality. The first worry is not particularly relevant here as the PDS is a long-standing government scheme, unlikely to be disbanded any time in the near future. The second worry might be more applicable but the data collected do not allow me to delve deeper into its exploration. However, the main problem with the direct-transfer programme here is its dismal targeting of the poor, as a result of which the transfers cannot help the many of the most food-insecure households.

Table 6. The Impact of two/three aid initiatives combined on recipients' food security

Agri										
Livestock	-0.53									
Credit	3.20	-0.49								
WASH	0.24	1.83	-0.45							
AAW	-0.49	1.88	4.48	1.80						
BPL	-0.41	-0.49	-0.16	-0.43						
APL	1.75	1.89	0.96	1.78						
Agri*Liv	0.33	0.02	0.81	-1.04						
Agri*Credit	1.35	0.12	2.08	2.22						
Agri*WASH	-0.28		-0.28							
	1.12		1.14							
			-0.10	-1.95	-0.38	0.36				
			0.56	5.28	1.66	1.58				
				-0.43	-0.46	1.68	-0.28			
				1.77	1.81	4.07	0.85			
					-0.71	-0.63				
					1.98	1.85				
	Agri	Livestock	Credit	WASH	AAW	BPL	APL	Agri*Liv	Agri*Cr	Agri*W

Numbers not in italics are the ATET of variables from the left and from the bottom combined, while the numbers in italics are their corresponding Z scores. Results significant at least at the 90% level are in bold.

Discussion and conclusions

The aims of this chapter have been several. First, it served as a testing ground for my initial hypotheses, intended to assess their validity also on the most local level. Second, it aspired to provide a more nuanced, detailed look at the mechanisms and processes through which aid worked to improve recipients' food security. Third, it hoped to contribute to elucidating the 'South Asian enigma'. I believe that the chapter achieved the first two goals: it validated most of the hypotheses that it managed to test on the basis of the data available and it also provided some explanations for the procedural effects of aid, which – while not ground-breaking – were not outright obvious on the basis of quantitative data alone. The results might also shed some light on the 'South Asian enigma' as is discussed further in this section.

Assessing aid effectiveness

This study, similar to the preceding ones, found that aid can have a small but significant positive impact on recipients' food security, which is at least to some extent positively conditioned on the quality of governance, in this case of the local kind. This finding not only validated my first hypothesis (H1) once again but in combination with results from the previous chapter interestingly suggested that not only the quality of governance at the national level but also at the more local levels matters in ensuring aid effectiveness. Accordingly, local authorities possess a significant ability to either enhance or hinder the impact of aid projects implemented within their jurisdictions.

With regard to the different types of aid, this study confirmed once more a few others of my initial hypotheses. As in the previous chapter, non-governmental aid was found here to be significantly more effective than governmental aid, thanks to being faster, less bureaucratic, and burdened with less corruption (H2.2). Credit aid was significantly less effective than non-credit aid and positive at all only in communities deemed to be well-governed locally (confirming H3.2). Credit recipients elucidated the lack of effectiveness by pointing out that most people took out loans to cover consumption rather than production expenses and found it hard to subsequently repay them. They also pointed out that many people obtained loans from the self-help groups to repay other loans, from banks, microfinance institutions, and money lenders, which often led them to a vicious cycle of over-indebtedness and great financial concern. The inconsistency in the availability of subsidised food rations (aka, aid volatility) was reported as one of the crucial problems undermining the effectiveness of the PDS (H6).

Vis-à-vis the effectiveness of different aid activities, agricultural aid – both to crops and livestock – and social-infrastructure aid (specifically, sanitation, hygiene, and water-focused activities) appeared to be the most effective at boosting recipients food security, validating hypothesis eight (H8) both in its original and in its amended form. Moreover, the analysis of compound impact suggested that actually receiving both agricultural (crop and livestock) and social-infrastructure aid at the same time has the most positive impact. The positive effect of the aid activities revolving around crops and livestock appears to come primarily from the greater amount and variety of foods produced as a result. Some beneficiaries were also able to sell part of their food production, improving their financial situation and in turn also their ability to purchase more/different types of food if needed. The sanitation and hygiene project component, on the other hand, seems to have bolstered recipients' food security primarily by improving the sanitary handling of food and water and in that way reducing the frequency of digestive and other illnesses.

The direct-transfer aid supplied by the national government did not have a significantly positive impact overall but its most beneficial card, the AAY, was found to be on its own highly effective at reducing food insecurity⁹⁶. The data available, however, did not allow me to examine whether this positive impact would hold also in the long run and more importantly, the targeting of the initiative to the richer people in the communities surveyed suggested that many of the most food-insecure people were left out of the initiative. On a different note, while the distribution of free laptops organised by the UP government was not intended to specifically bolster food security, from any developmental point of view it appears to constitute a waste of resources, which in a country with child undernourishment rates as high as in India could surely be used more productively.

⁹⁶ These findings align with those from a decade ago by Dev (2003).

The 'South Asian enigma'

The point made above with regard to the laptop scheme brings me back to the topic of the 'South Asian enigma', which my study certainly did not resolve but might have contributed to its greater understanding. The term, coined by Ramalingaswami *et al.* (1997), refers to the fact that the rate of South Asian (and particularly Indian) child malnutrition is disproportionately high in view of the region's level of economic development. Panagariya (2013) argued that the rates of child undernourishment were not in fact so much higher in India than elsewhere, but that the international reference standards used were simply inapplicable to India – that Indian children were genetically shorter and lighter than children elsewhere. Nevertheless, a multi-reference growth study by the WHO (2009) showed that children living in affluent Indian neighbourhoods in New Delhi were not significantly different in their height or weight from their peers in the US or Norway. Alternative explanations for the enigma have focused on discrimination against girls and higher-order children within Indian households, with parents providing relatively more resources to boys and first-born children (Jayachandran and Pande, 2012), and on the negative effects of low hygiene, which might instigate undernourishment even among economically better-off households (Spears, 2013).

In my study, I did not collect specific nutritional data and hence could not examine child undernourishment precisely. What I did learn from the surveys and interviews carried out, however, was that parents in general desired male offspring more than female and consequently invested less in girls, also in terms of their feeding. When asked who went hungry first within the household in the case of food scarcity, all survey respondents without exception responded that it was women and girls. Interviewees confirmed this view, admitting that men and boys were always fed first, with girls and women eating only what remained. These findings hence provide some support to the hypothesis that the high rates of child undernourishment in India might be at least partially driven by the intra-familial discrimination of girls.

More of a contributing factor in my study, however, seems to be the lack of good hygiene and sanitary practices. Out of the 1257 survey respondents, only 31 per cent had access to a toilet within household premises and out of the remaining 69 per cent, most practiced open defecation. The results of both my quantitative and qualitative data analysis suggest that the WASH project component, focused on the installation of in-household toilets and provision of sanitary and nutritional education, significantly contributed to better food security among recipients and that this relationship was further strengthened by the presence of 'good' local governance. Hence, my case study supports the conclusions by Spears (2013) and Haddad *et al.* (2014) that one of the best ways to tackle food insecurity and child undernourishment in India is by increasing investment in sanitation and hygiene programmes and raising awareness about

the issues to achieve a greater involvement of both national and local governments⁹⁷. Moreover, it shows that even small-scale initiatives can have a meaningful positive effect on strengthening food security, implying that more well-designed pro-poor social and economic initiatives would likely reduce undernourishment and poverty faster than a higher but less socially-aware economic growth (as argued by Drèze and Sen, 2013 as opposed to Bhagwati and Panagariya, 2013).

On the other hand, as the failure of a large-scale toilet-construction project in Odisha to improve food security showed (Chapter Four, Box 3), the supportive services in the WASH interventions might be equally (if not more) important as the physical provision of toilets and as all development initiatives, neither this one is single-handedly a panacea to India's food insecurity (Clasen *et al.*, 2014). Rather, as my results from the compound-effect analysis have implied, strengthening food security via different pathways simultaneously is likely the most beneficial approach. The pledge of the current Indian Prime Minister Narendra Modi to build 600 million toilets by 2019 thus might not translate into as dramatic a decrease in food insecurity as some might envision⁹⁸.

Concluding remarks

This chapter concludes the empirical part of my thesis. It has shown that many of the hypotheses that were found to hold true in the macro levels of analysis hold also at the micro level. In addition, by analysing more detailed, in-depth data collected through long interviews, it was able to provide more of an insight into the effectiveness and ineffectiveness of different aid types in their impact on food security. In the next chapter, I summarise, analyse, and discuss the findings from all four empirical chapters together, in an attempt to draw more definite and generalise-able conclusions. Furthermore, I point out the gaps and limitations of my research and briefly address issues that are highly relevant to aid and/or to food security but were not yet discussed here. Finally, I formulate some relevant policy recommendations.

⁹⁷ These initiatives are much easier to carry out than to successfully ensure that Indian girls – and high-order children – receive an equal amount of resources as male and first-born children. Many Indian states including Andhra Pradesh, Karnataka, and Himachal Pradesh have put some programmes aimed at addressing also this issue in place but their effectiveness has been challenged (UNFPA, 2010).

⁹⁸ <http://www.voanews.com/content/on-world-toilet-day-india-focuses-on-pledge-to-build-toilets-for-all/2526262.html>

CHAPTER SEVEN: DISCUSSION

In this last chapter, I aim to achieve four goals. First, I discuss the thesis' main findings, which emerged in the course of the four previous empirical chapters. Second, I talk about the limitations and problems within my research and how it could be remedied in further literature. Third, I briefly consider some issues that are important either within the field of food security or within the field of development aid but which I did not address in the thesis as it stands and what they mean for my overall findings. Fourth, on the basis of conclusions drawn in the three preceding sections, I discuss the relevance of my discoveries for the 'real world' and offer some concrete policy recommendations.

Summary of overall findings

The overarching theme within this thesis has been the question whether development aid plays any role in strengthening the food security of recipients. Existing literature has examined this relationship very scarcely; yet, given that food insecurity remains an ongoing and growing global issue and that development aid is an important tool used to address it, the question deserves more attention than it has received thus far. So as to render the answer provided as nuanced as possible, in addition to considering the general impact of aid on food security I examined the heterogeneous effects of different types of aid and the conditioning role of governance as well. Moreover, I investigated the query on two different levels – country (macro) and household/individual (micro) - and utilised a variety of quantitative and qualitative methods of analysis, in order to strengthen the validity and robustness of the results attained.

The impact of aid in general

In all four empirical parts of the study, I found aid to have a small but mostly significant and positive impact on food security, whether measured on the country or on the household/individual level. At first sight, this finding might seem somewhat tautological. After all, development aid is provided to poor countries with the official aim to stimulate development and hence discovering that it indeed strengthens one of the key development indicators, food security, can seem anything but surprising. Nevertheless, many authors and organisations dispute that development aid has any positive effect on countries' development, partially due to its political nature and partially due to the lack of knowledge vis-à-vis the truly helpful interventions. From this perspective then, my finding does carry some importance and, given the number of different studies and methods that I utilised to reach it, it would be hard to discredit its validity.

On the macro level, the quantitative cross-country study indicated that doubling the amount of aid per GDP would reduce undernourishment prevalence by around one percentage point and the rate of underweight and stunted children by somewhere between a half and three percentage points (Chapter Three). The qualitative four-country case study suggested that aid bolstered food security in Ethiopia and Vietnam but could not conclusively draw a similar link in India and Peru (Chapter Four). The second finding does not annul the first one but only expands on it, as it was expected that the positive effect of aid varies by country as well as by the time period examined. In addition, it highlights the greater importance of aid to food security in countries with higher proportion of budgets constituted by aid. Also importantly, in no country⁹⁹ the impact of aid on food security appeared to be significantly negative.

On the micro level, the quantitative four-country household study found aid projects to reduce the prevalence of child undernourishment in recipient families by an average of 10 percentage points in three of the four countries examined – in Peru, Ethiopia, and Vietnam (Chapter Five). The field study in Uttar Pradesh, looking at other food-security indicators than nutritional status, concluded that the aid project examined lowered recipients' feelings of food insecurity and the frequency with which they suffered from diarrhoea and increased the number of meals and types of food groups consumed. The government food-security scheme, on the other hand, had no significant impact overall (Chapter Six).

Comparing the findings on the macro level with those on the micro level, in view of the 'micro-macro paradox' described by Mosley (1986) I expected to find the effect of aid in the country studies less significant than in the household ones but my results have provided only limited support for this hypothesis. Whereas in the four-country case study I could not authoritatively conclude that between 1990 and 2010, aid strengthened food security in Peru, aid projects within that period seem to have done so on the household level as results in Chapter Six indicated. Authors have cited various possible reasons for similar micro-macro discrepancies, including aid fungibility, aid-induced institutional deterioration, and aid's high transaction costs (Howes *et al.*, 2011). Nevertheless, in my particular case the problem seems to lie primarily in the small size of aid flows relative to the size of Peruvian economy, which made the detection of a significant national impact very difficult. The finding that such an impact *is* still notable on the household level, however, encouragingly suggests that even in Peru aid can still improve the lives of the poor and the marginalised.

On the other hand, when looking at the different indicators used to measure food insecurity, the macro results have appeared to be actually more consistent in their significance than the micro ones, where aid was often found to improve only one or two of the several indicators

⁹⁹ That is, in none of the four countries examined (Peru, Ethiopia, India, and Vietnam) between 1990 and 2010. Quite likely aid did have a negative effect on some developing countries' food security at some point in time.

considered. The most likely explanation here is that the country-level studies examined the effect of aid on food security over two decades, while – due to the nature of the data available – the micro studies only looked at one or two years in that time frame. Since the effects of aid on food security, as on many other development indicators, are cumulative, more significant effects would likely be uncovered if the household-level data were gathered annually as the country data are. The second explanation might be related to rising global inequality. While development aid strengthens food security in developing countries in general, the positive effects might sometimes accrue in greater degree to the richer sections of the population than to the poorer ones, examined in the micro-level studies, which could also contribute to rendering the micro-level results less consistently significant than the macro ones (e.g. Pathak and Singh, 2011).

The conditioning role of governance on the effect of aid in general

In all four empirical parts of the study, I found the quality of governance (institutions and policies) to play a positive role in reinforcing the effect of aid on food security. The intensity of the conditioning effect varied based on the type of aid, as the following sections reiterate in greater detail, but I can conclude that even when looking at the impact of aid in general the quality of governance seems important. Results from the quantitative cross-country study suggested that an increase in the quality of national governance as measured by the Worldwide Governance Indicators (WGI) by one point on the scale of five bolsters the positive impact of aid on food security by an average of 10 per cent (Chapter Three). Moreover, disaggregation of the index into its six separate components intimated that particularly political stability and the absence of violence, regulatory quality, and control of corruption were crucial to aid effectiveness. The following four-country case study confirmed that political stability and the absence of violence, along with relatively low corruption in programme/project implementation and the willingness and ability of the national governments to cooperate effectively with donors in the design of poverty-reduction strategies tended to strengthen the positive effect of aid on food security (Chapter Four).

The two micro-level studies furthermore demonstrated that the lower-than-national levels of governance matter in aid effectiveness as well. The quantitative four-country household study in Chapter Five considered the influence of community-level institutional quality, as rated by community leaders, on aid's effect on household food security and discovered a positive conditioning impact at least with regard to some of the food-insecurity indicators used. The Indian field study in Chapter Six also scrutinised the role of village-level governance and found a positive link, with the underlying explanation that villages with better local authorities and institutions in place had better operating public programmes and were more willing as well as

capable of supporting the successful implementation of private-assistance initiatives. These findings provide rather unprecedented empirical support to the rising voices within the policy world that call for paying more attention to the role that local government structures play in aid effectiveness, as evidenced by allusions to their importance by the Accra Agenda for Action (2008) and the Busan Partnership for Effective Development Cooperation (2011) declarations.

The impact of different aid types

To date, studies on aid effectiveness have not come up with a comprehensive aid classification, and therefore in this study I came up with my own: according to *who* provides and/or implements aid, *how* aid is provided, and *where* it is provided. As Figure 2 in Chapter One showed graphically, I divided aid according to *who* provides it into multilateral and bilateral,¹⁰⁰ with bilateral being divided further into DAC and non-DAC aid, and according to *who* implements it into governmental (including multilateral and bilateral agencies) and non-governmental (including both non-profit and for-profit institutions) aid. In the second dimension of *how* aid is provided, I looked at the different effects of concessional loans versus grants (or, on the micro level, of credit versus non-credit aid), of budget support versus programme and project aid, of food versus financial aid, and of varying degrees of aid volatility. Finally, in the dimension of *where* aid goes, I classified aid first into long-term, short-term, and humanitarian (following Clemens *et al.*, 2004) and second into agricultural, social, economic, and 'other' aid (in the macro studies represented primarily by aid to tourism, finance, and transport; in the micro-studied constituted by direct transfers of cash or food).

Who provides aid

On the basis of theoretical considerations and existing findings, I expected to find multilateral aid more supportive of food security on the country level than bilateral aid, and within that, DAC aid more effective than non-DAC aid. Looking to the implementing side of the equation, I hypothesised that NGOs would be more successful than governmental agencies. Aid provided by donors bilaterally as compared to aid from multinational organisations has largely been portrayed as more political and burdened with economic strings attached, which I believed would dampen its ability to achieve desired development objectives. In a similar vein, NGOs are generally described as more effective and efficient than governmental organisations thanks to lower administrative costs, greater operational efficiency, and fewer opportunities for corruption, and therefore I predicted that NGO-implemented aid projects would strengthen food security more than those implemented by governmental agencies.

¹⁰⁰ I considered including here also private aid but so far insufficient data on this aid flow are available.

In my research I found some support for both above-cited hypotheses. Multilateral aid on its own appeared to have a more positive effect on food security than bilateral aid but the difference was small. DAC aid was also found to be only somewhat more beneficial for food security than non-DAC aid, although in reality the difference might be larger (or smaller) but could not be detected precisely due to the paucity of publicly available data on non-DAC aid flows. On the other hand, bilateral aid appeared significantly more conditioned on the quality of governance than multilateral aid, which can likely be ascribed to the more political and less development-oriented nature of bilateral aid (Chapters Three and Four).

Looking to the implementing side of the equation, I discovered projects implemented by non-governmental organisations to bolster household food security more consistently than projects implemented by governmental organisations (Chapters Five and Six). The difference was particularly notable in the Indian field study, where I compared a multi-component NGO project with a governmental food-transfer scheme, and found the latter to be riddled with corruption at all stages of implementation and as a result largely ineffective, despite the great amount of funds invested in it. The quality of local governance was found to play a potentially positive reinforcing role in both NGO and GO-implemented aid, however, since local authorities could facilitate or hinder the work of private institutions as well, through cooperation or non-cooperation.

How aid is provided

Findings with regard to whether the aid provided needs to be repaid or not have been one of the strongest and most consistent ones throughout the four different levels of my study. Originally, I expressed the expectation that loan/credit aid would appear to have a less positive effect on food security than grant/non-credit aid but that the former would be more susceptible to the influence of governance. The results have indeed confirmed this hypothesis. In country-level studies, loans had a less consistently positive impact than grants but were more positively reinforced by good governance. In household-level studies, credit aid had no effect or in some cases even negative effect on food security but again, its influence was positively conditioned on the quality of governance. I can thus conclude that concessional loans constitute the right tool for strengthening food security only in countries with above-average quality of policies and institutions. Furthermore, microcredit projects should apparently not be used as a primary means of combating food insecurity and in order to have a positive development impact at all, they should be utilised in communities with better local governance structures, ones willing to engage constructively with the credit interventions. The qualitative part of the Indian field study also indicated that credit provided for productive purposes could achieve more beneficial outcomes than credit provided for consumption only if invested successfully; a finding that has

been repeatedly restated in existing literature on microfinance in the past (e.g. Imai and Azam, 2012).

The budget support – programme/project aid division could only be explored at the macro level, due to the nature of budget support, which is provided as a sum of money to the recipient government to be used for whatever development purpose it sees fit¹⁰¹. I hypothesised that programme/project aid would be more effective at bolstering food security than budget support unless used in countries with above-average quality of governance. My findings confirmed that hypothesis only partially. I did not discover, in fact, budget support to have a statistically different effect on food security indicators from programme and project aid on its own. This finding can be seen as encouraging or discouraging, depending on one's point of view, as it suggests that the effects of budget support on food security are not statistically different from those of programme and project aid.

However, I did find budget support to be influenced more strongly by the quality of governance, which is logical given that this aid modality leaves significantly more room for the recipient government to decide how the aid is to be used. In the absence of appropriate institutions and corruption controls, the money provided to the government might never reach the recipients intended. With this view in mind, it was sad to discover in the four-country qualitative case study that Ethiopia, a country with a very poor governance record, received more aid in budget support than any of the three other countries examined, even more than Peru, whose governance has been rated increasingly more positively in recent years. The most likely explanation is political: Ethiopia is currently an important Western ally in the 'War on Terror' in the Horn of Africa, which has awarded the Ethiopian government an important advantage in negotiations with donors (Feyissa, 2011; Hackenesch, 2013). That is probably also why, despite well-publicised findings of serious human-rights abuses against its own people, Ethiopia continues to receive ever growing amounts of aid (e.g. HRW 2010, 2012; Oakland Institute 2013).

Results on the heterogeneous impacts of commodity (food) aid and non-commodity aid were, in contrast, quite consistent with my hypotheses. At first sight, food aid could seem as the most natural method of improving food security – after all, what fills people's stomachs if not food? Nevertheless, a lot of controversy exists in literature regarding the side effects that food shipments might have on the recipient countries/localities, not least the pricing out of local producers and potential reductions in domestic agricultural production in the long run. My initial hypothesis was that non-food aid would be more directly supportive of food security than food aid, except for cases of famine or other emergencies. Indeed, in both the macro and micro

¹⁰¹ This is naturally a simplified portrayal – in reality, many donors put various restrictions/requirements on how budget support can or should be used.

studies, I found food aid to be less effective at strengthening food security than financial aid. The qualitative case study also suggested that agricultural production in Ethiopia, one of the countries that currently receive the highest amount of food-aid shipments in the world, suffers from the continuous influx of free food and the country has consequently become ever more reliant on food aid even during non-drought years (Chapter Five). Further, I discovered some, originally not expected, evidence that food aid might be more conditioned on the quality of governance than financial aid. This was evident particularly in the Indian field study, where leakages, diversion, and national and local-level corruption rendered its national food-transfer scheme, the Public Distribution System, quite ineffective (Chapter Six, also Kaushal and Muchomba, 2013; Kochar, 2005).

Finally, I found aid volatility to have a negative effect on food security just as I expected. The country-level studies confirmed the hypothesis first quantitatively and then suggested that the effect was particularly bad in Vietnam where a multitude of donors was frequently entering and exiting the aid market (Chapters Three and Four). However, the deleterious impact of aid volatility on Vietnam's food security was becoming ameliorated as governance improved. As a result, not only public poverty-reduction programmes began replacing foreign aid projects but the government also became better at enforcing a certain level of donor coordination. Nevertheless, the results from household-level regressions in Chapter Five suggested that Vietnamese people were worried by the unpredictability of aid even if its physical effects were no longer significantly notable.

People interviewed in the Indian field study confirmed the often anxiety-inducing impacts of aid volatility (Chapter Six). They also confessed that, at least in their case, the government-provided assistance was more volatile than the NGO assistance, due to fluctuations in the availability of subsidised-food stocks and the unpredictable nature of frequently corrupt public servants in charge of the programme. Thus, they provided further corroboration to the claim that volatility in social and economic assistance is harmful and can be both improved and exacerbated by good and bad governance, respectively.

Where aid goes

Based on the existing literature and own theoretical considerations vis-à-vis *where* aid goes, I expected short-term and agricultural aid to be most effective at boosting food security. Clemens *et al.* (2004), who were the first to use the classification of aid into humanitarian, short-term, and long-term, found only short-term aid to have a discernibly positive impact on growth. However, in my thesis it is only long-term aid that consistently appeared to strengthen food security. Results on the heterogeneous effects of aid to various sectors elucidated why. In the quantitative cross-country study, social-infrastructure aid had the most significant positive

impact on food security while agricultural aid had surprisingly almost no significant effect at all (Chapter Three). Since social-infrastructure aid falls fully under long-term aid and agricultural aid mostly under short-term aid, this finding explains why long-term aid appeared more beneficial to food security than short-term aid. Moreover, the finding led me to modify the hypothesis vis-à-vis the effects of aid to various sectors to include as the kind that strengthens food security the most alongside agricultural aid also social-infrastructure aid.

The three following studies confirmed both the original and the modified hypotheses. The four-country case study again suggested the social-infrastructure aid, particularly to public health, nutritional education, and water and sanitation, was one of the most helpful to food security but also showed that agricultural aid could be equally helpful if combined with better quality of certain types of governance (primarily political stability and control of corruption) and with effective pro-poor policies as was the case in Vietnam (Chapter Four). In India, conversely, much of agricultural aid was diverted or channelled to larger, richer farmers, without ever reaching the poorest and most marginalised, and as a result, its impact on national-level food security was not notable (*ibid*). The household-level studies further illustrated this point, showing that when applied to the poorest farmers, agricultural aid indeed had a strong positive effect on food security (Chapter Five). The specifics of the project matter as well, however; for example, the Indian field study demonstrated how encouraging an overt reliance on new, higher-yielding crops at the expense of traditional crop varieties and multi-cropping could in the case of floods contribute to greater harvest losses and consequently deepen food insecurity (Chapter Six).

The household-level studies also showed that social infrastructure aid - to water, sanitation, hygiene, health, and education - had a positive and often very cost-effective impact on recipients' food security but that its evidence took sometimes longer to become apparent than the evidence of agricultural or other short-term aid (Chapter Five; Petrikova, 2014). Finally, analysis of data from the field study in India (Chapter Six) confirmed that combining agricultural interventions with social-infrastructure ones was very helpful to achieving food security, more beneficial in fact than the sum of the interventions' effects on their own. In this way, my study adds its voice to findings by IYCN (2011) or Walingo (2006), who highlighted the importance of multi-component projects in achieving sustainable development outcomes among participants.

With regard to the conditioning role of governance, on the country level it appears to matter most in ensuring the effectiveness of agricultural aid (Chapter Three) – likely because without proper institutions and policies in place, it can easily be siphoned off by corrupt channels or directed to middle-class farmers, who are generally not the most food insecure. This happened during India's 'Green Revolution', which consequently failed to translate into major poverty reduction in rural areas, and continues to occur in India's procurement arm of the Public

Distribution System (Chapters Four and Six). On the other hand, the household-level studies, particularly the Indian field study, showed that the quality of governance can matter in aid to all sectors, particularly if implementation of that type of aid relies on cooperative action from national or local authorities (Chapter Six). If aid does not rely on such cooperation, in the short-term it can affect food security positively even in the presence of low-quality governance; nevertheless, the long-term sustainability and particularly the long-term effects of such development projects on countries' institutions and development are questionable, as I discuss in more detail further in this chapter.

Recapitulation of hypotheses

Table 1. Graphic summary of the discovered effects of different types of aid on food security

	Actual effects	Impact on food security		Validating hypotheses
		Levels		
		Macro	Micro	
	Aid in general	↑ G	↑ G	H1 ✓
Who gives/ implements aid?	Multilateral agencies	↑		H2.1 ✓?
	Bilateral donors	↑ G		
	DAC Non-DAC	? G		
	Governmental organisations (GOs) Non-governmental organisations (NGOs)		↑ G ↑ G	H2.2 ✓
How is aid disbursed?	Concessional loans/Credit aid	↑ G	↑ G	H3.1 ✓, H3.2 ✓
	Grants/Non-credit aid	↑ G	↑ G	
	General budget support	? G		H4 ✓?
	Programme aid	↑ G		
	Project aid	↑ G		
	Commodity/Food aid	↑ G	↑ G	H5 ✓?
	Financial aid	↑ G	↑ G	
Aid volatility	↓ G	↓ G	H6 ✓?	
Where does aid go?	Humanitarian aid	? G	↑ G	H7 ✓?
	Short-term aid	↑ G	↑ G	
	Long-term aid	↑ G	↑ G	
	Agriculture	? G	↑ G	H8 ✓?
	Social infrastructure	↑ G	↑ G	
	Economic infrastructure	? G	? G	
Other sectors/Direct transfers	?	↑ G		

↑ positive effect, ↓ negative effect, ? mixed effect, - no effect; • most, •less, •least; G -positively conditioned on governance

Throughout the four preceding empirical studies, I tested, modified, and tested again the eight hypotheses, which I formulated on the basis of theoretical deliberations and existing empirical findings in the theoretical part of my thesis. Table 1 summarises my findings on the different questions graphically and displays clearly which hypotheses were validated and which were not. In fact, the table shows that none of the original hypotheses were refuted in full; however, hypotheses 2.1, 4, 5, 6, 7, and 8, as the preceding discussion also illuminated, were expanded or confirmed only partially.

Research limitations

This thesis has multiple research limitations: among the most significant are the amount of data analysis carried out, increasing validity at the expense of reliability, sometimes choosing breadth over depth, and finally leaving out of the discussion some important issues. First, the quantitative sections of my thesis contain the results of more than 500 regressions, amounting to at least 5000 data points. With addition of the results of the qualitative studies, it is a great amount of research information generated by one person only, and hence it is statistically unlikely that all of it is correct, despite my best efforts at objectivity. The desire to remain objective and removed from the research matter has also likely not been able to fully prevent my personal opinions and preferences influencing my findings. In awareness of this possibility, I carried out a number of robustness tests in each study separately as well as overall, with each subsequent chapter to some extent testing the results from the previous one, in the hope of increasing the validity of the overall results.

This effort, however, weakened my study's reliability, which brings me to the thesis' second chief limitation. Qualitative methods such as pattern matching or analytical narrative utilised here are inherently harder to replicate than statistical models based on publicly available data. Moreover, while I have made also the personally collected data from India available online, it is likely that a replication of similar data collection would yield at least slightly divergent results. Nevertheless, I still stand behind the field-research part of my thesis as well as behind the qualitative methods used because I believe, as I mentioned already in Chapter Two, that they helped me explain the various aid-food security relationships in greater detail and depth than had I used publicly available data and quantitative methods alone.

On the other hand, even with the use of the different methods and the four different levels of study – or perhaps because of them – I have often chosen breadth over depth in this study. This is particularly evident in the four-country case study where I could have devoted a whole thesis to each country's history of aid receipts, food security, and their various links but could only scratch the surface of each in order to finish this document in a timely and relatively brief manner. The decision of breadth over depth stems from the research questions that I posed to

myself initially, which endeavoured to provide a comprehensive, even if reasonably nuanced, answer to whether and how aid could strengthen recipients' food security. In view of the to-date unexplored nature of the question, I still believe that my approach was warranted but now it leaves room for further research, whether conducted by me or by someone else, to explore the various findings and propositions, which emerged throughout the thesis, in more depth.

Some issues with regard to development aid and food security deserve to be mentioned even in a largely technical wide-view-offering study as mine, however, to which I devote the next section. In particular, I discuss the negative effects of climate change, water scarcity, and conflicts on food security in developing countries and ponder whether aid can play a positive role in resolving these issues as well. Then I talk about the view of food security as a human rights issue, its application in practice and its connection with aid. Finally, I touch on the possibly imperialistic and de-politicising nature of aid and on by extension on the question whether aid should be provided at all.

Issues not discussed

Climate change

I have mentioned the issue of climate change already, as one of several important control variables that affect food security. However, since climate change has been in recent years rising to the top of the world's predominant concerns and the great magnitude of its potential negative impact on global food security has become ever clearer, no discussion of food security can be complete without devoting to the issue at least a couple of paragraphs.

To date, researchers have routinely assessed primarily the effects of climate change on food availability. While they do not agree on the precise quantitative estimations, they concur that the impact is likely to be negative overall (Brown and Funk, 2008; Funk and Brown, 2009; Gregory *et al.*, 2005; Lobell *et al.*, 2008; Schmidhuber and Tubiello, 2007). The effects will vary significantly for different regions, however, with Central Asia and Russia predicted to be the greatest net beneficiaries thanks to rising temperatures in regions that are currently too cold for agriculture. In contrast, Sub-Saharan Africa and South Asia, continents that already suffer from food insecurity the most, are predicted to be the greatest net losers in food production as a result of climate-change-induced decrease in rainfall and increase in temperatures (*ibid*).

The negative effect of declining food availability on global food security is going to be further compounded by the negative effects of climate change on the stability aspect of food security, due to greater climate and food-price volatility, as well as on the utilisation aspect, due to an anticipated increase in the occurrence of water-borne and tropical infectious diseases

(Schmidhuber and Tubiello, 2007). The impact of climate change on people's access to food is harder to estimate but it is unlikely to be positive overall.

Can aid play a positive role in ameliorating the destructive effects of climate change and in that way strengthen food security in developing countries? It has certainly tried to achieve the first goal. Hicks *et al.* (2008) in their book *Greening Aid* have shown that between the 1970s and 2000s, both bilateral and multilateral donors increased the amount of aid aimed at improving the environment, with the largest relative increase in aid targeted at efforts to curb climate change and to improve water supply and its quality. In 2000, 'environmental' aid constituted according to the authors approximately 10 per cent of all aid provided globally. However, little if any research has measured whether this type of aid has had actually any positive impact on the environment more generally and on climate change more specifically.

Related to the second goal, even if aid could ameliorate climate change and in that way contribute to better food security in developing countries in the longer run, in the short run 'environmental' or 'green' aid can have perhaps unintended but certainly negative side-effects on people's food security (Davies, 1992). For example, helping to enforce stricter regulation on deforestation through aid projects that enclose certain parts of the forest can perhaps reduce the emission of greenhouse gases through the preservation of a larger forest cover in the long run but at the same time it is likely to exacerbate immediate food insecurity of local citizens who rely on forests for their livelihoods. Dercon (2012) extends this idea to 'green' economic efforts more generally, arguing that 'green' growth and pro-poor growth are not necessarily synonymous and that the poor should not be made to pay the price for greening the planet. In the long run, since the poor and food insecure are those most vulnerable to changing climate conditions, they would also benefit the most from measures that ameliorate this global phenomenon; nevertheless, it seems immoral to expect them to bear the brunt of the efforts in the short run and even more unethical that aid could require them to do so. On the other hand, as Davies (1992) points out, there are manners of providing food-security aid that are simultaneously respectful of the environment: she calls the approach 'people-first' and encourages all donors to adopt it.

Water scarcity

Related to climate change and environmental damage more generally, water scarcity has been rising on the food-security agenda as another major impeding factor. Water is a key element in agricultural production and hence its shortage can adversely impact food production and in turn food availability and access to food. Deterioration in the quality of water used can further undermine the food-utilisation aspect of food security.

Global demand for water has tripled since the 1950s whereas the supply of fresh water has decreased (Gleick, 2003). Consequently, by 2025 more than three billion people are predicted to live in water-stressed or water-scarce countries (Molden *et al.*, 2010). By 2050, demand for water by nine billion people is expected to surpass the available supply by 3300 km³/year (Hanjra and Qureshi, 2010). Agriculture, as the largest user of water in the world that accounts for 70 to 90 per cent of global water consumption (FAO, 2008; Molden *et al.*, 2010), is the first sector likely to lose out under these conditions, eclipsing global food production and fuelling food insecurity. The challenges of water scarcity are going to be further amplified in this regard by the rising cost of developing new water resources, irrigation-induced land degradation, and groundwater depletion (Hanjra and Qureshi, 2010). Rising water pollution will in turn drive up the incidence of water-borne and diarrhoeal diseases, negatively affecting food utilisation particularly among the poorest and most marginalised social groups (Prüss *et al.*, 2002; Tilman *et al.*, 2002). Ensuing tensions over the use of water can also lead to conflicts, both national and international (Giordano *et al.*, 2005).

Could aid positively influence the future development of this situation? As my study showed, well-implemented aid initiatives in water and sanitation can enhance the quality of drinking water and sanitation and thus contribute to the improvement of recipients' food security via the food-utilisation route. From this perspective it is encouraging then that amount of aid disbursed for development programmes and projects in water and sanitation quadrupled between 2003 and 2013 (CRS, 2015). Development aid could theoretically help increase also the efficiency of water usage, by for example redirecting farmers from flood to drip or spray irrigation. In the past, however, the trend has been the opposite, with aid financing many large hydrological and irrigation projects, which have encouraged unsustainable water management. More importantly, aid cannot create new water sources nor speed up the refill of depleted water aquifers; instead, people need to learn to live within the physical constraints of the planet Earth more modestly and/or efficiently.

Conflict

Like climate change and water scarcity, conflicts can and do have a negative effect on countries' and people's food security and as with climate change, although I briefly discussed the role of conflict in food security in the country-level studies, I did not analyse it in detail. Yet, the harm that conflicts inflict on global food security can be dramatic. At the time of writing (August 2014), the World Food Programme is providing food aid to eight global hunger hotspots - Iraq, Syria, South Sudan, Central African Republic, Cameroon, West Africa, and Somalia – all of which can be directly or indirectly connected to ongoing or past conflicts in the regions.

The primary pathway through which conflicts exacerbate food insecurity is through the use of food as a weapon (Cohen and Pinstруп-Andersen, 1999). Armed sides in conflicts often aim to subjugate each other through starvation, which they hope to impose through the destruction of agricultural production. That is achieved by a variety of methods, ranging from physically destroying crops to preventing local populations from cultivating fields to blocking the entry of food imports to the affected areas. Even if not coerced, however, rural populations often flee conflict-ridden areas and agricultural production inevitably falls (Seddon and Adhikari, 2003). The resulting state of escalating food shortages and hunger can then in turn further fuel the conflicts (Barnett and Adger, 2007; Cohen and Pinstруп-Andersen, 1999).

From aid, primarily food aid is frequently deployed to conflict situations to preclude starvation but accessing the most vulnerable and food insecure is often highly problematic as the armed sides frequently discover ways to siphon it off for themselves and for those whom they wish to reward. However, if aid does manage to reach its intended targets, it can serve if not as a boost to long-term security at least to ward off acute malnutrition and unnecessary depletion of populations' asset base. Moreover, aid can also play a valuable role in reconstruction efforts, including the recovery of agricultural production and other measures that would strengthen food security in the long run. Of course, some donors play a role in the instigation of the conflicts in the first place; however, that issue usually does not involve development aid as such and is too complex to be given justice by discussing it only briefly here.

Gender

As climate change, water scarcity, and conflict, gender plays a crucial role in food security and should also be addressed at more length in this discussion. Women in the developing world have been predominantly those responsible for preparing food and in many countries also for obtaining it, whether through own cultivation or through purchase (Quisumbing *et al.*, 1995). However, they have traditionally faced many constraints in doing so, ranging from weak land rights and a limited access to common resources through a lack of equipment and technology and a limited contact with agricultural extension to lower education than men and a lack of access to credit (*ibid*). Simultaneously, women constitute the population group that tends to be the most calorically and nutritionally deprived as many traditional cultures dictate that women eat last, after men and children, despite their greater nutritional requirements during pregnancy and breastfeeding (Van Esterik, 1999). This discrimination begins at birth, with male infants often breastfed longer than female ones and fed more nutritious food (Quisumbing *et al.*, 1995).

I did not find evidence for this practice in my household-level study, with mothers reporting to have breastfed girl and boy infants for approximately the same amount of time in Peru, Ethiopia, India, as well as in Vietnam (Young Lives data). Girls were not found to suffer from

greater rates of undernourishment than boys either; in fact, the opposite appeared to be true in India and in Vietnam, where boys were significantly more stunted and underweight than girls (Chapter Five). Nevertheless, the studies also suggested that this initial difference might reverse in older age, with girls and women attaining significantly lower levels of education than boys and men and reporting to always be the last to eat in Indian households (Chapters Five and Six).

Aid donors, particularly those grouped in the DAC, have committed to ‘mainstreaming’ gender in their aid programmes and projects, meaning that they would strive to promote gender equality in all their aid activities. As a result, and recognising that women spend a significantly larger share of their incomes on feeding and clothing children than men, for example microcredit programmes all over the world have targeted predominantly female borrowers. In many instances, microfinance had consequently a positive impact on female empowerment and equity, likely more so than on poverty reduction (Maclsaac and Branch, 1997). Nevertheless, discrimination against women is deeply ingrained in most societies and attempting to combat it through aid is often problematic. For example, Rao (2006) explains how in India better women’s land rights, a goal promoted by many donors, failed to strengthen women’s food security. Instead, the new land legislation led to the devaluation of agriculture as a livelihood strategy: men began to perceive it more as women’s work and as a result, women’s work burden increased without much change in their status or their decision-making authority. Similarly, DFID’s deference to cultural rights in Muslim countries, where it is customary, for example, that women are not allowed to walk alone after dark, might be further reinforcing gender inequity (Elliott, 2010; Van Esterik, 1999).

Human rights

This point brings me to the question of human rights and their connection with food security. The human-rights issue does not constitute another element affecting food security like climate change, water scarcity, conflict or gender but rather a different lens through which one can view food (in)security. In the human-rights language, food security is referred to as ‘right to food’. Even though the two concepts are defined in a highly similar fashion (Khoo, 2010), the crucial difference lies in the perception of ‘right to food’ not merely as a means to achieve food security but as a wider, more encompassing objective, a part and parcel of human dignity (Mechlem, 2004).

Both international and some national laws have enshrined this right. Article 25 of the Universal Declaration of Human Rights states that ‘everyone has the right to a standard of living adequate for the health and well-being of [one]self and [one’s] family, including food.’ Article 11 of the International Covenant on Economic, Social, and Cultural Rights is more specific with regard to the right’s guarantor, recognising the fundamental right of everyone to be free from

hunger that should be ensured either through national institutions and policies or through international cooperation. These international rights are often not enforceable on the national level; however, 20 developing countries, including Peru, Ethiopia, and India, also mention the right to food in their constitutions. Nonetheless, even so legal recourses to ensure that one's right to food is guaranteed are generally unavailable, with the notable exception of India.

There, the Parliament passed in 2013 the National Food Security Act (NFSA), also called the Right to Food Act, which promises to provide five kilograms of grains (wheat, rice, or coarse grains like millet) at very low prices to 50 per cent of the poorest urban and 75 per cent of the poorest rural families every month. Thanks to this bill, the right to food is 'legally justiciable'; i.e. people have the theoretical possibility to seek accountability and remedies if their right to food is violated (Khoo, 2010). However, thus far not much has changed since the passing of the act – the extra grains are supposed to be distributed through the Public Distribution System, discussed here at various points, which has throughout its history been shown to be highly corrupt and quite inefficient. Moreover, the BJP government that took power in 2014 to date has not raised the portion of the budget assigned to the PDS, hence effectively preventing a full implementation of the NFSA. Even if it were realised in full, however, it would still not guarantee beneficiaries food security due to the caloric insufficiency of five kilograms of grains per month, the nutritional insufficiency of the foods included (only grains), the non-consideration of health and hygiene aspects of food security, and many others. That is not to condemn the human-rights approach to food security in general nor India's effort to legalise it more specifically, but to point to the importance of the quality of institutions and policies even in this area.

Can aid play any role either in directly ensuring the right to food of people in developing countries or indirectly in encouraging developing countries to ensure it for their citizens? In relation with the first point, the international community has not guaranteed but – as was examined and shown in this thesis – at least strengthened the food security of people in developing countries. However, it has generally not portrayed its actions as acts of obligation or duty but rather as acts of charity or goodwill, which is quite contrary to the view of food security as every person's inalienable human right that can be enforceable through the international community, as stated by the ICESCR. In relation with the second point, donors sometimes try to encourage their development partners to fulfil their citizens' human rights as well. However, such behaviour has often been criticized by academics from both developed and developing countries, which brings me to the next point.

The imperialist and de-politicising nature of aid

Research on the effects of aid on human-rights NGOs and other civil-society actors in developing countries often found the impact to be negative. Henderson (2002) used a Russian

case study to examine to what degree Western countries could ‘purchase’ civic engagement and participation and concluded that aid actually obstructed collective action towards building a vibrant civil society by encouraging domestic NGOs to focus on the short-term goal of obtaining international funding at the expense of the long-term goals of development. In a parallel fashion, Bano (2008) investigated the behaviour of NGOs in Pakistan and found that receipts of aid were positively correlated with the material aspirations of NGO leaders, which undermined their performance and led to a decline in overall NGO membership. Berkovitch and Gordon (2008) darkened this picture further, positing that donors formulated support for human-rights NGOs under the influence of the aid-receiving states, as a result of which NGOs obtained funding only for activities that were not in opposition to their states’ plans. As an illustration, they argued that under the current global neo-liberal regime, most states and in turn most donors were prone to prefer the advocacy of civil and political rights rather than economic and social rights. The absence of such critique can then be interpreted as the lack of any wrong in that dimension (of social and economic rights), which serves to both legitimise neo-liberal regimes and to strengthen the states (p. 899). This is particularly concerning for the promotion of right to food, which falls squarely under the realm of economic and social human rights.

In addition to being used to silence domestic human-rights NGOs through the provision of funding, aid has been described as imperialist and depoliticising also because it has offered piecemeal solutions to social problems in developing countries that might have diverted attention from more systemic solutions. Petras (1997), discussing the behaviour of NGOs in Latin America in the 1980s and 1990s, accused the organisations of complicity with the dictatorial regimes in the region for not denouncing the support rendered to the regimes by the US and European countries and for organising ‘soup kitchens’ to help victims of the dictatorships’ austerity policies instead of criticising the policies in the first place. Harrigan (2011) described donors as propping up repressive autocratic regimes in Northern Africa, including Mubarak’s regime in Egypt and Ben Ali’s regime in Tunisia. In line with these and similar criticisms, some researchers have depicted all foreign aid as designed to ‘fragment, subjugate, silence, or erase the local’ while hiding the political through ‘technical discourse that naturalises poverty, objectifies the poor, and depoliticises development’ (Ferguson 1994 in Mosse 2004: 643; also Long 1990; Ludden 1992; Scott 1998; Skaria 1998; Tsing 1993). If these claims are indeed true, should aid not stop being provided altogether?

Ferguson (1994) appears to believe in such a solution, arguing that the agencies that plan and implement development projects are not social actors likely to truly advance the empowerment of the poor and, consequently, the best form of action for Western people wishing to bring about change in developing countries is to participate politically in their own countries to combat their imperialist policies (p. 181). However, that is not a pragmatic

proposition. As Riddell (2014) realistically points out, foreign aid is simply not going to disappear anytime soon. ‘The political and moral drivers that have created and preserve the official aid system and the compassion and sense of injustice which drives individuals to support NGO and CSO projects and programmes means that aid as a form of ‘helping’ will be with us for ... many decades to come’ (p. 17). The correct question then is not *whether* aid should be provided - it clearly will be - but *how* can its provision be improved?

Recommendations and conclusions

Recommendations

My largely technical analysis of the aid-food security relationships can contribute to answering this question. My first main conclusion – that aid has a small positive effect on recipients’ food security – can in light of the discussion above not be translated into a practical recommendation. As I have suggested, aid will be provided no matter what, regardless of whether researchers like me (and much more influential ones) conclude that its overall effects are positive or negative. It can, however, at least assuage our conscience to know that this aid might as a side effect also bolster recipients’ food security. I have, however, not used simulation studies to analyse how countries’ food security would be affected if aid were to be significantly scaled up and hence cannot make any suggestions in that regard¹⁰².

In relation with my second main conclusion, that aid is conditioned on ‘good governance’ in its positive effect on food security, it would be easier to draw a recommendation but I am not fully convinced that I should. Even though I discovered aid to work better in countries and localities with higher quality of institutions and policies, the difference in effectiveness was not always very dramatic. Countries and localities with worse governance are simultaneously those most adversely affected by food insecurity and moreover, aid conditioning has often been found to be ineffective (Kanbur, 2000; Morrissey, 2004). As my further conclusions suggest, a more appropriate solution would probably be to condition only certain aid modalities. One recommendation regarding the quality of local governance quality generally can be extended here, however, and that is for donors to engage more with community and village-level government institutions, as they can often tip the scales of project results towards success or failure.

Turning to the selective conditioning now, I found particularly bilateral aid, concessional loans and credit aid, budget support, and food aid to be influenced in their impact on food security by the quality of governance. With regard to concessional loans and budget support, I would recommend that donors provide these types of aid in greater amount only to countries

¹⁰² I would have had to consider here issues such as countries’ absorptive capacity of aid.

with institutions and policies that are able to shoulder the burdens of interest rates and can successfully design and implement national poverty-reduction programmes. In countries with lower quality of institutions and policies, grants and programme and project aid appear to be better instruments of strengthening food security despite their potentially subversive side-effects on recipients' administrative capacities and fiscal discipline. Looking at aid provision on the household level, in the disbursement of credit aid the quality of local governance and the planned use of the credit (whether for production or for consumption) should be seriously taken into account since credit aid provided under the wrong conditions not only does not strengthen recipients' food security but might even undermine it.

Bilateral and food aid also have a more positive impact on food security in the presence of better governance but formulating recommendations on the basis of such findings is more complicated. First, bilateral aid is conditioned on governance more so than multilateral aid because it is provided for more political reasons than compassionate ones. However, advising countries to stop providing aid for political reasons is naturally not realistic; political considerations are often the main reason underpinning the choice of development-aid recipients. Second, in relation with food aid, even though this type of aid works better in countries and localities with better governance, it is often provided in emergency situations where concerns about the quality of governance cannot supersede the need to quickly intervene. The finding can, however, serve to encourage donors to keep the quality of governance in mind when providing food aid and to try to overcome institutional deficiencies (corruption, nepotism, violence) to reach those in most need of assistance. On the other hand, the case of Ethiopia which has become essentially 'addicted' to food aid at the expense of developing its agricultural sector should serve as a cautionary tale against using food aid for too long or outside of emergency situations.

From the perspective of *where* aid should go, my findings suggest that donors aiming to strengthen food security should focus on providing primarily agricultural and social-infrastructure aid, with a few qualifications, however. Agricultural aid is also heavily influenced in its impact on food security by countries' quality of governance and hence, when disbursing it to countries deficient in that regard, donors should do their best to ensure that the aid manages to reach the most marginalised sections of society that are generally the most food insecure. In order to do so, the aid should either support the adoption of innovative low-cost solutions rather than practices requiring pricy inputs that only larger farmers can afford (as has happened during India's 'Green Revolution') or, alternatively, should ensure the support of government for enabling access to such inputs also to smaller farmers through universal and targeted subsidies (for evaluations of such programmes in Malawi and Sierra Leone, see e.g. Harrigan, 2008 and Spenser, 2012).

Social-infrastructure aid is not susceptible to the quality of governance to the same extent as agricultural aid and particularly its public-health, water-and-sanitation, and nutritional-education components appear to be very beneficial to food security. The caveat here has more to do with the timing of the aid. As a study related to this thesis showed (Petrikova, 2014), the positive effects of social-infrastructure aid become evident later than the effects of agricultural aid and hence examining the impact of this type of aid too early could fail to notice the positive results. Nevertheless, the positive effects of social-infrastructure aid also appear to be often long-lasting and hence more sustainable. Combining that with their frequently relatively low costs, social-infrastructure initiatives such as the construction of toilets or safe-water access points and provision of hygiene and nutritional education often constitute a very cost-effective manner of bolstering food security. Additionally, their positive effect is compounded further when implemented in combination with agricultural initiatives (Chapter Six).

The final two findings that could give rise to policy recommendations are that NGO-implemented projects have a stronger positive effect on food security than projects implemented by governmental agencies and that aid volatility is harmful to food security. Accordingly, NGOs – despite their many shortcomings – should be preferred to governmental agencies in the implementation of projects aimed at improving food security because they are on average less corrupt and more cost-effective in implementation and in turn more likely to instil real benefits through their work. Countries and households would also likely be more food secure if aid were planned on a longer-term basis so that they could better prepare for the future. Improving aid predictability belongs among donors’ chief commitments in the Paris Declaration on Aid Effectiveness (2005) and hence one can hope that the corresponding recommendation to decrease aid volatility will also materialise.

In view of the other issues discussed in this chapter as influential in the aid-food security relationship – climate change, water scarcity, conflict, gender, human rights, depoliticising nature of aid – in order to improve the effect of aid on food security, donors should keep the issues in mind in both the design and implementation of all their projects, programmes, and other aid initiatives. Many DAC donors are already committed to respecting these issues verbally but the execution of the commitments in reality is often lacking.

Directions for further research and conclusion

As I have mentioned in the limitations section, this study often chose breadth over depth and hence many of the issues examined here could be explored deeper. The links between different types of aid and food security in individual countries could be investigated further using more primary data obtained through surveys and interviews with key informants. The complexities of the aid-governance-food security relationship could be traced in more detail through larger and

longer field studies. The classification of aid into different types could be taken one step further as well, by comparing for example the effectiveness of grants and loans to social infrastructure or of bilateral versus multilateral budget support. Future research could also focus on investigating the heterogeneous impacts of aid on development outcomes other than food security, for example on poverty reduction, inequality or economic growth.

Other issues, less directly related to the topics of aid, food security, and governance yet still interesting that emerged in this study and were not explored sufficiently further include, among others, the following questions: Why are countries with larger populations more food secure than countries with smaller populations, *ceteris paribus*? Why is the rate of premature births in Peru so much higher than the global average? Why are Vietnamese people more disturbed by the unpredictable nature of aid than people in Peru, India, and Ethiopia? Why do Indian people report to be much more food secure than objective data indicate? Why are Indian and Vietnamese boys more often stunted and underweight than girls – has the pattern of discrimination against girls now reversed?

To sum up, in this chapter I first summarised findings from the previous four empirical chapters. After that, I described the thesis' key research limitations and discussed a few issues that were important but not mentioned in the previously more technical discussions. Finally, on the basis of the findings I formulated several policy recommendations for donors to ponder in their efforts to increase aid's positive effect on food security. In the next, concluding, chapter, I offer a brief recap of the thesis as a whole and present a few concluding thoughts.

CONCLUSION

Despite achievements in reducing hunger on the global scale, close to one billion people in the world remains food insecure. Even mild food insecurity leads to a whole host of negative psychosocial consequences including feelings of exclusion, powerlessness, desperation, fear, stress, disrupted household dynamics, deviant behaviour, and revolts. More serious food insecurity can contribute to the depletion of economic bases, distress migration of masses, conflicts, famines, and death. In view of climate change-induced rise in global temperatures and unpredictability of weather patterns, the unrelenting growth in human population, and stagnating cereal yields, global food insecurity is likely to intensify in the following decades. While development aid constitutes a relatively small portion of global finance flows, with much larger amounts exchanged in trade or as remittances, it is still one commonly called upon to help tackle food insecurity in developing countries. To date, however, very little research has examined whether aid has any positive impact in this regard.

In this thesis, I tried to fill this void and progress beyond it – I examined if aid in general strengthens food security and whether this effect differs based on the type of aid provided and based on the quality of governance in the receiving country or locality. I examined this question through four related yet separate studies. First, I analysed quantitative cross-country data from 1990 to 2010 in an effort to uncover global patterns of aid-food security relationships. Second, I examined the relationships more closely, using qualitative analytical narrative technique, on country case studies from Peru, Ethiopia, India, and Vietnam. Third, in the same countries I analysed quantitative household-level data to find out whether the relationships differed when considered from the point of view of household and individual aid recipients. Fourth, I investigated the effect of aid on household food security on the basis of data gathered personally in a field study in northern India.

I found aid in general to be supportive of food security on both country and household levels, even though the size of the impact appeared to be relatively small. My results have provided limited support to the micro-macro paradox described by researchers in aid's effects on growth, where the effects on the micro level were more significant than the effects on the macro level. When examined on the country level, I could not detect aid to have strengthened food security in Peru but on the household level the impact did appear significant. While other authors have cited aid fungibility, aid-induced institutional deterioration, and high transaction costs of aid as potential causes underlying the paradox, the one in my study arose in my view more due to the increasingly insignificant portion of aid in Peru's budget, which made the detection of a nationwide impact difficult.

Turning to the conditioning effect of governance quality, all four empirical studies in my thesis have demonstrated that aid bolsters food security more in the presence of better governance, whether measured on country or on locality level. In the cross-country study, I approximated governance primarily through the Worldwide Governance Indicators and their disaggregation in regressions indicated that particularly countries' political stability, regulatory quality, and control of corruption reinforced the positive effect of aid. Findings from the four-country case study also highlighted the importance of corruption controls, absence of violence, and the willingness and ability of governments to implement nation-wide poverty-reducing programmes. On a different note, the household-level studies demonstrated that not only national but also local institutions' quality could improve aid effectiveness, particularly when those institutions played a role in the administration or implementation of aid interventions.

With regard to the heterogeneous impact of different types of aid, I divided aid according to *who* provides or implements it, *how* it is provided, and *where* it is provided. In the first, donor-identity, category, I found aid from multilateral institutions to be a little more consistently beneficial than aid from bilateral agencies. Conversely, bilateral aid appeared to be more conditioned on the quality of governance than multilateral aid. From a micro-level perspective, aid projects and programmes implemented by NGOs were found to be more supportive of food security than those implemented by governmental agencies, whether international or national.

Looking at *how* aid is provided, I discovered aid provided in the form of grants to be more beneficial for food security than aid in the form of concessional loans. Conversely, loans along with budget support appeared to be more influenced by governance than their counterpart aid modalities. Similarly, the effect of credit aid on household food security was more positive in communities with relatively better governance. Lastly, I found food aid to be less helpful on average than non-food aid but more conditioned on governance and aid volatility, unsurprisingly, to be harmful.

Vis-à-vis the divisions according to *where* aid goes, the results have shown that particularly aid to agriculture (short-term aid) and to social infrastructure (long-term aid) strengthens recipients' food security, with the difference that the effect of agricultural aid is also heavily conditioned on the quality of country-level governance. The country-level case studies illuminated this finding by showing that while aid to agriculture had an apparently positive effect on food security in Vietnam, where it was accompanied by the government's efforts at reaching poor and marginalised farmers, in India where such policies were either absent or ineffective, aid to agriculture did not have an equally positive impact on food security. Aid to social infrastructure, that is to education, health, and water and sanitation, was found to have a positive influence on food security as well and one not as susceptible to the quality of

governance as agricultural aid. Results from the Indian field study further suggested that its positive impact could be compound by combining it with agricultural aid.

Several policy recommendations naturally emanated from these findings. As I mentioned in the previous chapter, donors are not likely to cease aid provisions anytime in the near future and thus recommending them to keep providing aid would be pointless although it is reassuring to know that even with all its imperfections, aid does have at least a small positive effect on food security. I also did not specifically propose conditioning all aid on governance despite findings that would justify such a recommendation because a) countries and communities with worse governance tend to also suffer from food insecurity the most and b) aid conditionality has not been proven to successfully modify aid recipients' behaviour. All the recommendations formulated are therefore related to the *types* of aid to provide in order to increase its positive impact on food security.

Concessional loans and budget support should be only used in countries with above-average quality of governance. When implementing credit-aid projects, the quality of local governance as well as the intended use of the microloans should both be taken into account. Food aid should only be provided in emergencies and even then the pros and cons of its utilisation should be weighed carefully as it can have powerful disincentive effects on local agricultural production and long-term resilience. NGOs should be preferred as project-implementers due to their lower costs and fewer corruption channels. Donors should attempt to increase the predictability of their aid disbursements. Aid to agriculture and aid to social infrastructure should be the preferred modes of sectoral aid when addressing food insecurity; however, in combination with each other and in some cases also with economic aid their effect is larger than just the sum of their individual effects. Finally, in all their activities, donors should be mindful of the complexities posed by climate change, conflicts, gender relations, and aid's depoliticising nature.

In this PhD thesis, I set out to fill a gap in existing research vis-à-vis the effects of different aid modalities on food security and the intervening role of governance. I believe that I have managed to fulfil that task at least partially and thus contributed to existing literature in four ways. First, my theoretical deliberations and empirical results shed light on the specific relationship between aid and food security, relevant to political science just as much as to economics and to development studies. Second, my disaggregation of general aid flow into its different modalities builds up the existing state of knowledge on the heterogeneity of aid impact. Third, my findings speak to the research on the role of institutional and policy quality in aid effectiveness and highlight the importance of not only national but also of local governance quality. Fourth, my formulated policy recommendations on enhancing the effectiveness of the aid provided constitute a contribution to the field of international public policy and evidence-based policy making. I am aware that many of the topics that I covered in this study could have

been investigated in significantly more detail; however, since my research entered a relatively unstudied territory, my primary goal was to provide a comprehensive even if somewhat cursory overview of the relationships between aid, food security, and governance. I believe I succeeded in bringing this goal to fruition. In future research, I – or other people – can explore some of the links and relationships deeper.

To conclude, between 2010, when I started writing this thesis, and 2015, when I finished it, donor countries provided more than one trillion USD in developing aid to countries in the global South. The number of people suffering from food insecurity in that time frame also declined by almost 100 million (FAO, 2010; 2015). According to my results, some of that decline must have occurred thanks to the provision of aid. If donors were to follow the recommendations formulated here on the basis of my findings, the reduction attributable to aid would be, I daresay, more substantial.

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APPENDIX

Appendix to Chapter Three

List of countries analysed in the basic model

Albania	Côte d'Ivoire	Kyrgyzstan	Paraguay
Algeria	Dominican Republic	Laos	Peru
Antigua and Barbuda	Ecuador	Lebanon	Philippines
Armenia	Egypt	Madagascar	Rwanda
Azerbaijan	El Salvador	Malawi	Saint Lucia
Bangladesh	Eritrea	Malaysia	South Africa
Belarus	Ethiopia	Mali	Sri Lanka
Belize	Fiji	Mauritius	Sudan, the
Bolivia	Gambia	Mexico	Suriname
Bosnia and Herzegovina	Georgia	Moldova	Tajikistan
Brazil	Ghana	Mongolia	Thailand
Burkina Faso	Guinea	Morocco	Togo
Burundi	Honduras	Mozambique	Trinidad and Tobago
Cambodia	India	Namibia	Tunisia
Cameroon	Indonesia	Nepal	Turkey
Cape Verde	Iran	Nicaragua	Turkmenistan
Chile	Jamaica	Niger	Ukraine
China	Jordan	Nigeria	Uruguay
Colombia	Kazakhstan	Pakistan	Venezuela
Congo	Kenya	Panama	Yemen
Costa Rica			

*Additional tables***Table 8. OLS regressions with fixed effects, using annual data**

<i>Food insecurity</i>	FE with 1-y periods							
	Undernourished		Hunger		Underweight		Stunted	
ODA per GDP	-0.48	-0.33	-0.48	-1.43	-0.34	-0.60	-0.42	-0.93
	0.11	0.76	0.12	0.71	1.80	2.09	1.87	1.77
Governance	-0.22	-2.48	-1.51	-8.19	-0.16	-1.38	-0.25	-1.31
	0.71	4.23	2.58	2.33	1.41	1.79	1.41	1.42
ODA*governance		-0.13		-0.40		-0.09		-0.15
		3.09		2.05		1.96		1.72
GDP(PPP) per capita	-12.07	-6.36	-14.89	-17.10	-5.77	-5.95	-9.85	-10.81
	2.58	1.68	0.50	3.29	2.57	2.41	3.29	4.57
Population	-10.54	-11.67	-41.32	-35.31	-5.11	-7.86	-2.15	-1.30
	1.44	6.22	2.79	2.86	1.78	2.85	0.51	0.33
Food production index	-0.07	-0.05	-0.14	-0.20	-0.04	-0.03	-0.03	-0.04
	1.95	1.97	2.59	3.18	3.15	2.04	1.38	1.95
Trade openness	0.00	0.00	-0.01	0.05	-0.02	-0.03	-0.01	0.01
	1.38	0.24	0.48	1.18	1.48	2.65	0.47	0.36
Social and economic rights	-0.12	-0.01	-0.15	0.00	0.00	0.02	-0.14	0.13
	1.05	0.24	1.45	0.00	0.01	0.64	2.75	2.58
Conflict	0.27	0.28	0.18	0.20	0.61	0.54	-0.68	-0.74
	0.19	0.55	0.08	0.00	1.15	1.04	0.95	0.95
Local food prices (xth)	-1.09	-0.73	-1.28	-2.13	-0.03	-0.06	0.63	-0.70
	2.16	1.65	1.69	2.51	0.16	0.39	1.31	2.06
World food price index	0.03	0.02	0.03	0.07	0.01	0.01	-0.01	-0.01
	1.86	5.16	1.04	1.87	0.45	1.27	1.01	0.42
Repayments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.15	0.31	0.42	0.38	0.35	0.42	0.22	0.25
N	560	560	560	560	317	317	317	317
R2	13%	44%	27%	29%	46%	47%	35%	36%

Regressions were run with robust standard errors and time dummies. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

Table 9. 2SLS regressions with fixed effects, using annual data

<i>Food insecurity</i>	2SLS with 1-y periods							
	Undernourished		Hunger		Underweight		Stunted	
ODA per GDP	-0.98	-0.07	-3.75	-1.97	-0.47	0.57	-1.13	-1.38
	1.73	0.11	2.26	0.67	2.41	0.70	2.33	2.03
Governance	-0.09	-0.08	-0.77	-1.12	-0.19	-1.85	-0.02	-0.51
	0.64	0.52	1.31	1.75	1.76	1.09	0.10	1.09
ODA*governance		-0.01		-0.04		-0.09		-0.04
		1.98		2.97		1.96		0.70
GDP(PPP) per capita	-5.35	-4.61	-19.18	-24.24	-5.53	-5.55	-10.61	-9.94
	1.98	2.71	1.99	7.42	1.93	1.92	2.93	2.51
Population	-11.83	-11.72	-46.62	-34.62	-8.66	-8.69	-4.04	-4.96
	2.46	2.37	3.95	2.97	3.29	3.30	0.99	1.17
Food production index	-0.08	-0.03	-0.05	-0.18	-0.02	-0.02	-0.03	-0.03
	2.58	1.89	2.09	2.29	2.61	2.35	2.48	2.39
Trade openness	0.00	0.03	0.05	0.06	-0.03	-0.03	0.01	0.01
	0.23	2.58	0.98	0.47	2.61	2.48	0.46	0.34
Social and economic rights	-0.01	-0.01	-0.10	0.04	0.00	0.00	0.06	0.06
	0.38	0.23	1.24	0.85	0.12	0.13	1.50	1.40
Conflict	1.21	0.27	0.82	2.26	0.54	0.51	-1.05	-1.11
	2.51	0.88	0.55	0.90	1.07	1.01	1.05	1.32
Local food prices (xth)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.97	1.70	2.09	2.94	0.52	0.52	1.78	1.59
World food price index	0.01	0.01	0.04	0.08	0.01	0.01	0.00	0.00
	1.88	2.46	1.29	2.15	1.62	1.57	0.02	0.01
Repayments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.84	0.45	0.52	0.54	0.13	0.12	0.67	0.69
N	540	540	540	540	310	310	310	310
R2	15%	40%	25%	27%	46%	47%	35%	39%

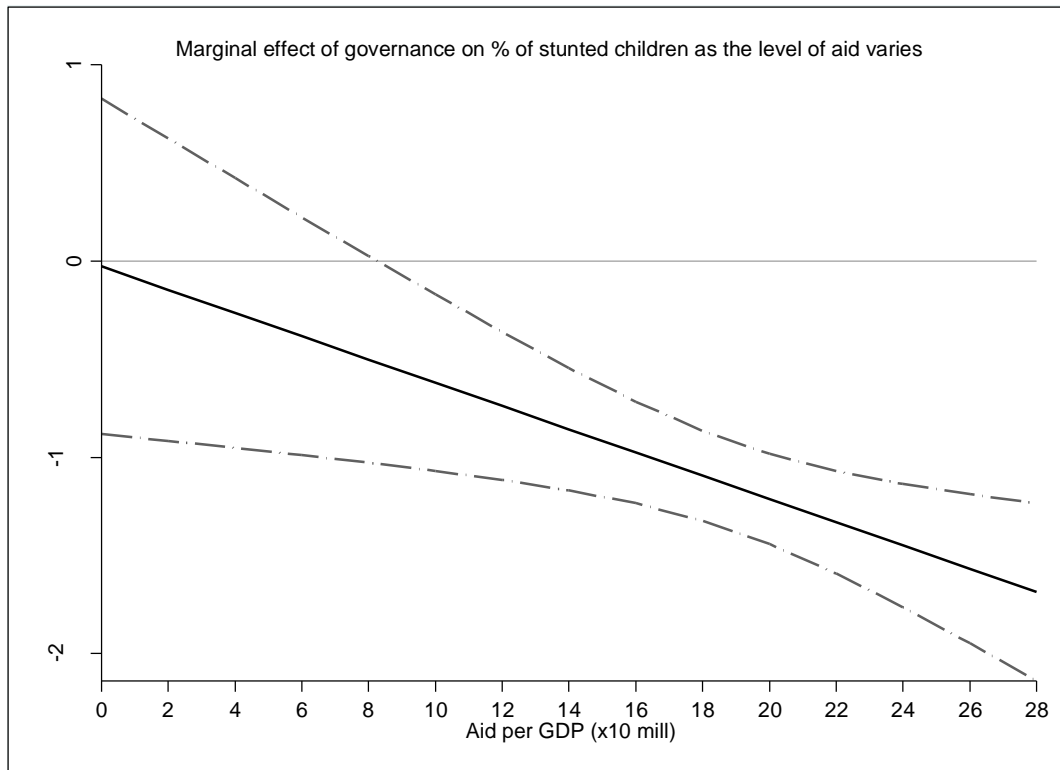
Regressions were run with robust standard errors and time dummies. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

Table 10. GMM regressions with fixed effects, using annual data

<i>Food insecurity</i>	GMM with 1-y periods							
	Undernourished	Hunger	Underweight	Stunted				
ODA per GDP	-0.48	-0.42	-1.18	-1.20	-0.18	-0.24	-0.05	-0.68
	1.78	1.97	2.05	2.12	1.94	2.48	1.33	1.31
Governance	-0.06	-0.93	-0.17	-2.06	-0.02	-0.03	-0.04	-0.02
	0.82	1.74	2.41	3.89	1.18	2.33	3.87	1.18
ODA*governance		-0.12		-0.11		-0.01		-0.36
		2.81		2.48		1.58		4.25
GDP(PPP) per capita	-1.01	-1.61	-3.17	-3.19	-1.14	-1.12	-0.85	-0.83
	2.24	2.54	4.89	4.90	2.31	2.29	1.85	1.83
Population	-0.15	-0.28	-0.42	-0.36	-0.11	-0.12	-0.20	-0.20
	1.20	1.49	1.74	1.64	1.01	1.03	1.45	1.49
Food production index	-0.02	-0.01	-0.07	-0.08	-0.01	-0.01	-0.10	-0.10
	1.96	1.66	3.12	3.08	1.08	1.52	5.69	3.29
Trade openness	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	1.36	1.30	1.17	1.78	1.19	1.32	1.82	1.81
Social and economic rights	0.00	-0.01	-0.02	-0.03	0.03	0.03	0.02	0.02
	0.45	0.52	0.60	1.67	1.54	1.62	0.54	0.61
Conflict	0.38	0.32	0.76	1.99	0.44	0.38	-0.18	-0.18
	1.41	1.31	2.97	2.75	2.50	1.84	1.04	1.03
Local food prices	0.01	0.01	-0.15	-0.12	-0.02	-0.02	0.03	0.03
	0.10	0.31	1.96	1.86	0.23	0.59	0.72	0.60
World food price index	0.01	0.01	0.04	0.05	0.00	0.00	0.00	0.00
	2.24	2.22	2.02	2.14	0.12	0.45	0.99	0.96
Repayments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.70	1.68	0.76	2.04	1.72	2.97	1.42	1.37
LDC	0.11	-0.03	0.15	1.39	0.47	0.42	-0.33	-0.43
	0.30	0.25	0.41	2.33	0.70	1.54	1.45	2.08
N	500	500	500	500	302	302	302	302
AR2 test (Prob>z)	0.262	0.294	0.236	0.38	0.495	0.29	0.375	0.691
Hansen test (Prob> χ^2)	0.354	0.144	0.754	0.683	0.967	0.887	0.93	0.959

Regressions were run with robust standard errors and time dummies. The first number next to each variable is the coefficient; the number below is the corresponding t-statistic. Bold font represents significance at least at the 10% level.

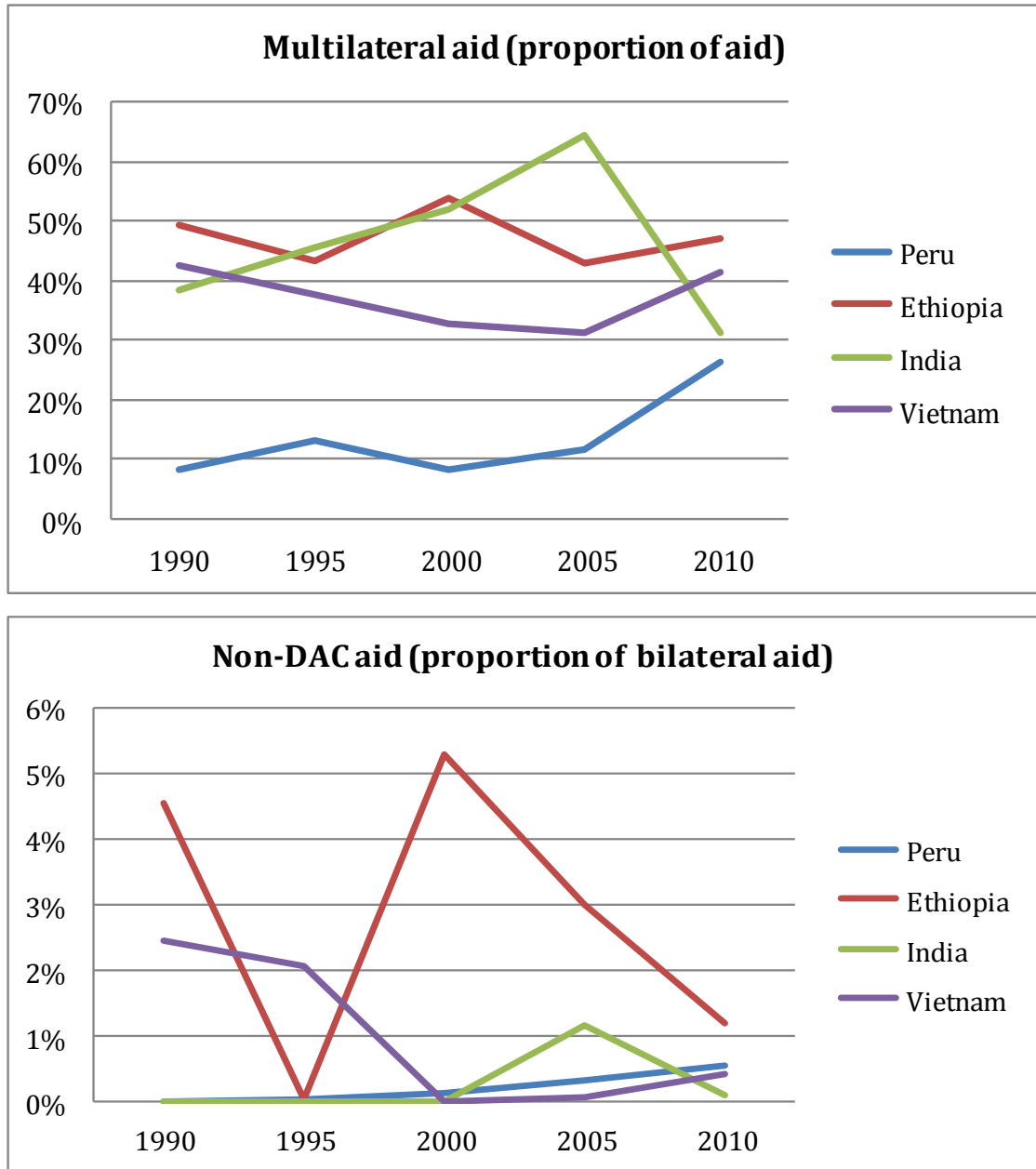
Figure 3. Marginal effect of governance on undernourishment (90% c.i.)



Source: Author's own work

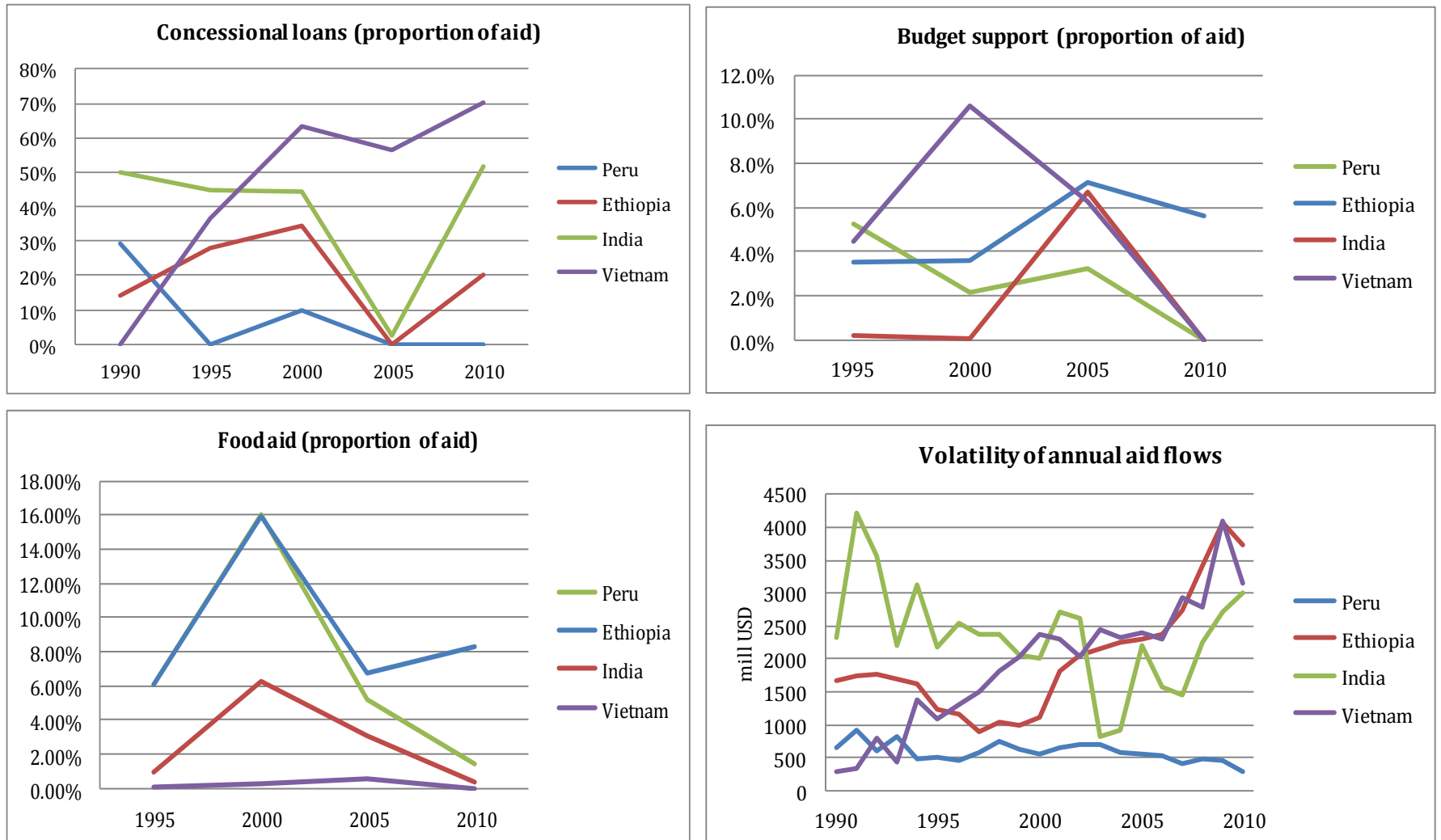
Appendix to Chapter Four

Figure 9. Trends in *who* provides aid



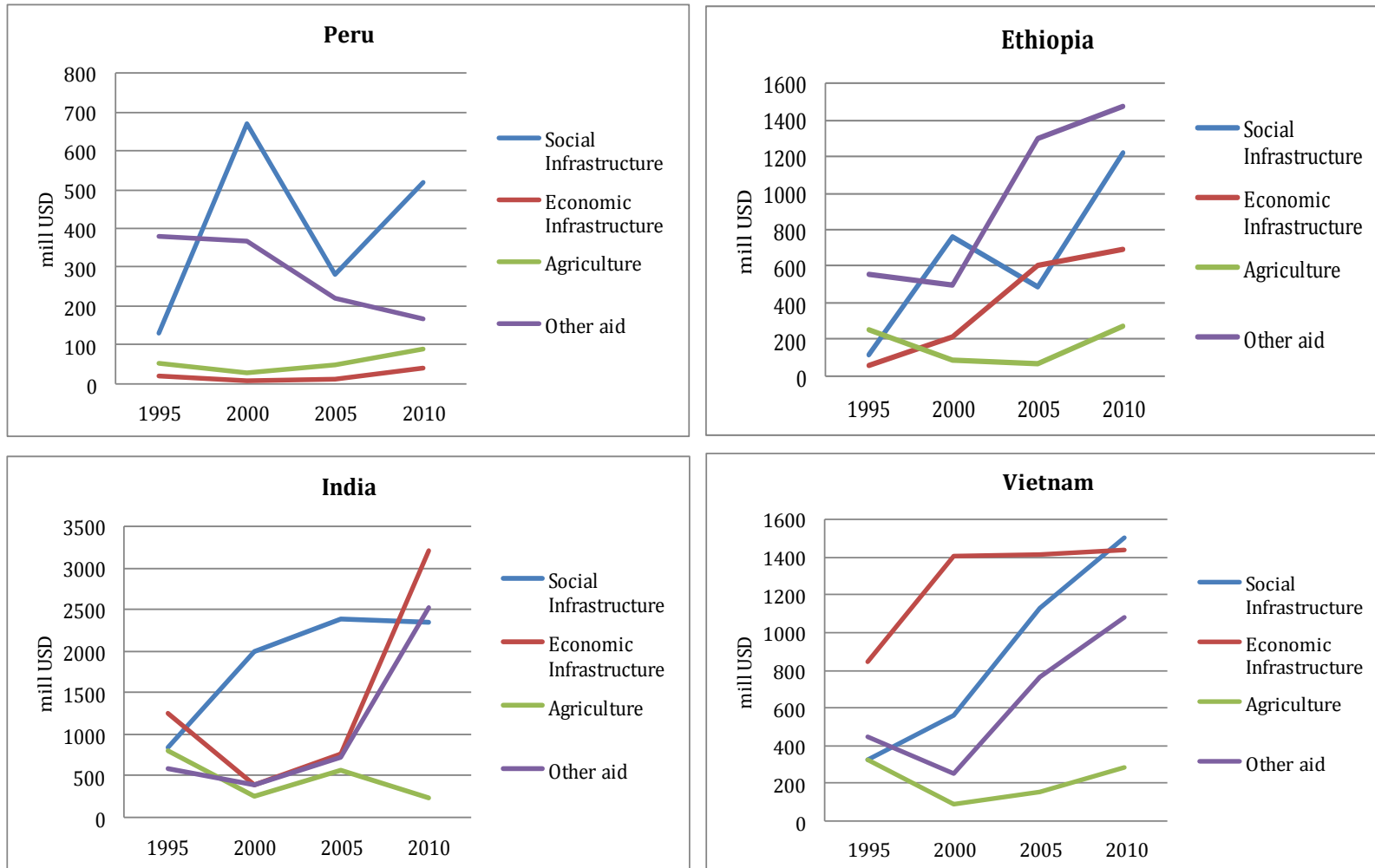
Source: QWIDS

Figure 10. Trends in *how* aid is provided



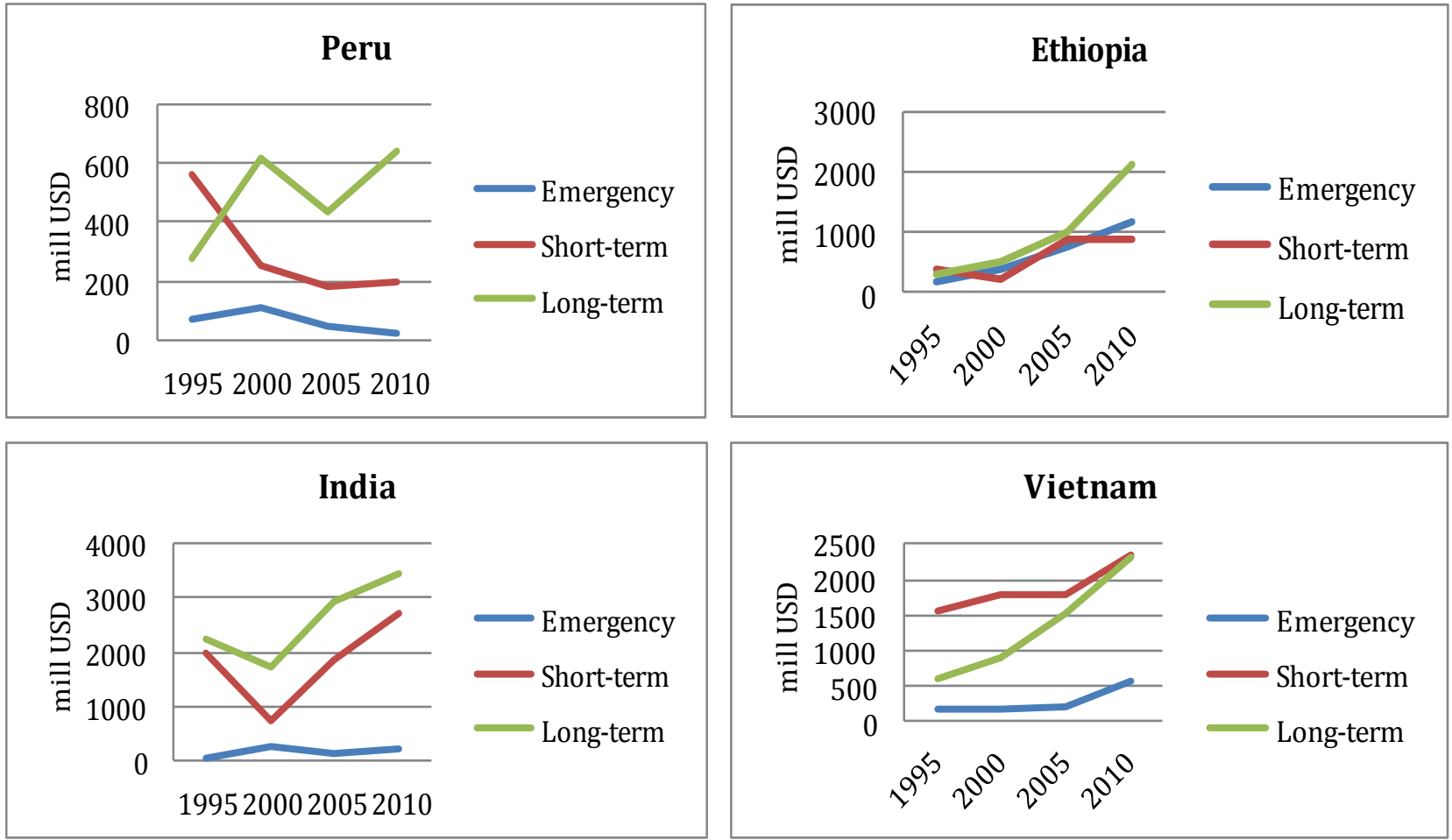
Source: QWIDS

Figure 11. Trends in where aid is provided (1): Division by sector where implemented

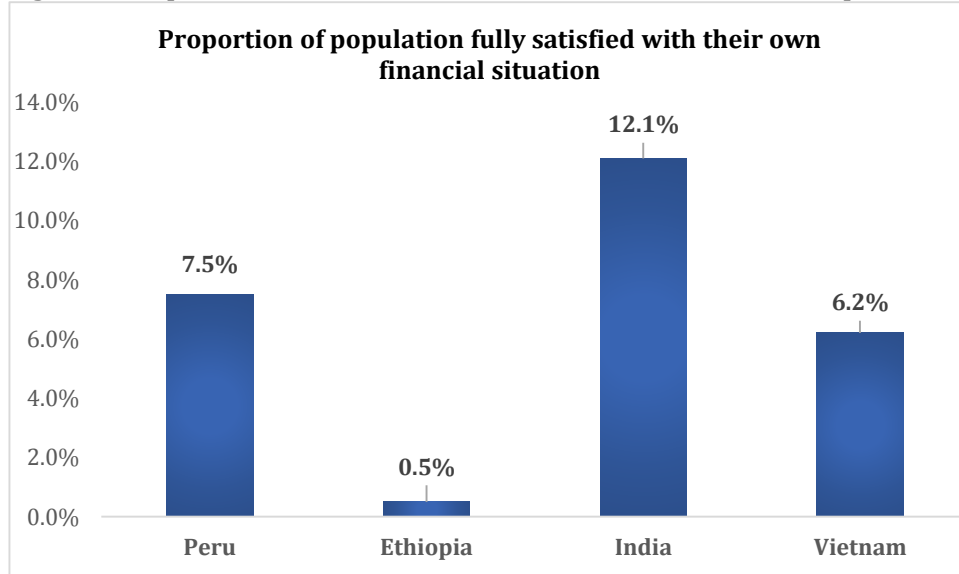


Source: CRS

Figure 12. Trends in *where* aid is provided (2): Division into 'short-', 'long-term', and emergency



Source: CRS

Appendix to Chapter Five**Figure 1. People satisfied with their financial situation in Peru, Ethiopia, India, and Vietnam**

Source: WVS

Appendix to Chapter Six*Survey questionnaire*

Total number of household members _____	Date of interview _____
Household (male-headed 1, fh 2) _____	
	Time Beginning of interview _____
	End of interview _____
Main Questionnaire	
<i>Evaluation of the Impact of the GDS Project on Food Security</i>	
Part of GDS Project _____	Yes 1 No 2
Recipient of WASH _____	Household number _____
Recipient of credit/marketing support _____	Household name _____
Recipient of agricultural/livestock help _____	Household address _____

1. Household members:

Sex Male 1 Female 0	Age	Relationship to head	Highest education	Religion
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

2. Observations:

a. House _____

Pucca 1

Kachcha 2

b. Roof _____

Tin 1

Cement 2

Straw 3

Other 4

c. Floor _____

Brick 1

Cement, stone, tile 2

Mud, dirt 3

Other 4

3. Ownership/economic well-being:

a. Asset Yes 1, No 0	How many?
i. Toilet	
ii. Water pump with deep boring	
iii. Watch	
iv. Pressure cooker	
v. Radio/CD player	
vi. Fridge	
vii. Black and white TV	
viii. Colour TV	
ix. Mobile phone/Telephone set	
x. Sewing machine	
xi. Fan	
xii. Bicycle	
xiii. Motorcycle	
xiv. Deep plough	
xv. Tractor	
xvi. Tillage machine	

b. Total income per year (estimated) _____

Excluding external assistance

c. Are you a holder of any ration card?

AAV _____

BPL _____

APL _____

Yes 1

No 0

4. External assistance:

a. How much assistance have you received from the GDS project? _____

b. How long have you been part of it? (years) _____

c. Which activity did you like the most? _____

d. Do you receive any assistance from other programmes/people? If yes, how long? (years) _____

e. What programmes/people? _____

Government 1

Other local NGO 2

Relatives 3

Neighbour 4

Religious org 5

Bank/Microfinance org 6

f. In your opinion, what type of new project would benefit/empower you the most? _____

5. Food security:

a. Over the last week, how many meals did your household eat per day, on average? _____

b. Over the last week, how many types of food groups did your household eat per day, on average?

c. Over the last month, how often did the children in your household suffer from diarrhoea? _____

d. *Over the last six months, how often were members of your household ill?* _____

e. *How satisfied are you with your current financial situation?* _____

- Fully satisfied 1
- Rather satisfied 2
- Less than satisfied 3
- Not at all satisfied 4
- Don't know 5

f. *Do you consider the current level of food consumption of your family as* _____

- More than adequate 1
- Just adequate 2
- Less than adequate 3
- Don't know 4

g. *How concerned are you about being able to provide your family with food in the next 12 months?* ____

- Very concerned 1
- A little concerned 2
- Not too concerned 3
- Not concerned at all 4
- Don't know 5

h. *In the past 4 weeks, were you or any other member of hh not able to eat the kinds of food you would have preferred to because of lack of resources?* _____

- Yes 1
- No 0

i. *How often did this happen?* _____

- Rarely (1-2 times) 1
- Sometimes (3-10 times) 2
- Often (more than 10 times) 3

j. *In the past 4 weeks, did you or any other hh member have to eat a smaller meal/eat fewer meals in a day I than you wanted to because of not enough food?* _____

- Yes 1
- No 0

k. *How often did this happen?* _____

- Rarely (1-2 times) 1
- Sometimes (3-10 times) 2
- Often (more than 10 times) 3

l. *Which hh members would be the first to eat smaller meals/go hungry?* _____

- Women 1
- Men 2
- Children 3
- The elderly 4

m. *In the past 4 weeks, was there any time when there was no food in the house because of lack of resources?* _____

- Yes 1
- No 0

n. *How often did this happen?* _____

- Rarely (1-2 times) 1
- Sometimes (3-10 times) 2
- Often (more than 10 times) 3

o. How was food availability in your hh during the past 12 months?

Sufficient 1

Some shortage 2

Extreme shortage 3

Jan ___ Feb ___ Mar ___ Apr ___ May ___ Jun ___ Jul ___ Aug ___ Sep ___ Oct ___ Nov ___ Dec ___

p. In the case of a natural disaster/crisis, who can you turn to? _____

Family 1

Friends 2

GDS 3

Other NGO 4

Microfinance org/Bank 5

q. Is your situation better now than before you were part of the GDS project? _____

Yes 1

No 0

Question for GDS/community leaders about local governance

Last year, Vatsalya and I carried out research in the following communities.

- a. Gram Sidhwari
- b. Gram Pachurkhi
- c. Gram Mazgawa
- d. Gram Powa
- e. Gram Ramholha
- f. Gram Gayaghat
- g. Gram Nagwa
- h. Gram Bardada
- i. Gram Karmaha
- j. Gram Billowha
- k. Gram Karmaini

Would you be able to rate them from 1 (best) to 10 (worst) based on how corrupt the local authorities in them are/how good you perceive the local governance structures to be? In your rating, could you also take into account the quality of public institutions (local judge, local police...)

Long interview questions

Basic information

Age

Gender

Number of people in the household

Education

Approximate household annual income

Would you say your family is: poor (1), neither poor nor well-off (2), well-off (3)

Food security situation

Scale: 1 quite bad, 2 could be better (for example, if they could buy other kinds of food or more food), 3 quite good/satisfactory

Questions

What services exactly have you received from GDS in the past five years?

Has your food security/poverty situation improved in these past five years?

Do you eat meat? How often? How often do you eat fruits and vegetables?

If it did improve, do you think it was also thanks to the help that you received from GDS?

What service was the most useful? How did it help you exactly? (Just as an example, the answer here could be that thanks to the microcredit project they now earn more money and so can buy more things... or that now that they have a toilet, their children have less diarrhoea and everyone is healthier than before)

What other services/activities would you like to receive from GDS or from some other organization?

Aside from GDS, have you received help in the past five years from some other institution? Have you for example received microcredit from elsewhere or gotten help from government schemes such as PDS, free school meals for children, free food for pregnant women...? Please elaborate if you received any such help.

Are you happy with your life? What would you change? Would having more money make you happier?

What about the other members of your household? Are they happy? What would they want to change in their lives?

How secure do you feel about the future? Is there something that you are afraid of?

Have you ever been affected by any natural disaster? If yes, when and how?

Does corruption/poor public services affect your life? Could you describe some occasions when you or someone from your family was personally affected by corruption?

Do you vote in elections? What party do you support and why?

What would you improve in your community if you had the power and money needed?

Are you from a scheduled caste or tribe? If yes, do people treat you not nice because of that sometimes? If not, what do you think of the people from scheduled castes and tribes?

If you do not have enough food or money, can you get help from your family? Or your neighbours?