ELSEVIER
www.elsevier.com/locate/worlddev

CrossMark

World Development Vol. 76, pp. 114–131, 2015

http://dx.doi.org/10.1016/j.worlddev.2015.07.002

Does Food Aid Disrupt Local Food Market? Evidence from Rural Ethiopia

NATHALIE FERRIÈRE [a] and AKIKO SUWA-EISENMANN [b,*]

[a] *Paris School of Economics – EHESS, France*
[b] *Paris School of Economics – INRA, France*

Summary. — The paper examines the impact of food aid on households' marketing behavior, based on a panel of households followed during 1994–2009 in 15 villages of Ethiopia. The impact of aid is examined at the intensive margin (on quantities produced, sold or bought by the households) and at the extensive margin (on the number of producers, sellers and buyers). Food aid reduces the probability of being a producer. It also increases the probability of being a seller after a reform of aid policy in 2004 from "repeated emergency distributions" toward a multi-year program aiming at agricultural development.

Key words — food aid, market participation, production, extensive and intensive margin, panel tobit, Ethiopia

1. INTRODUCTION

Food aid has evolved in recent years from a one-size-fits-all food transfer to a variety of interventions, tailored to the context and needs of recipient households: food can be distributed for free or in exchange of work (Bezu & Holden, 2008); it can be transferred in cash or in-kind (Hoddinott, Sandström, & Upton, 2014; Sabates-Wheeler & Devereux, 2010;); in the latter case, it can be procured locally (or regionally) or shipped from overseas (Garg, Barrett, Gómez, Lentz, & Violette, 2013; Lentz, Passarelli, & Barrett, 2013; Violette *et al.*, 2013). Free food can be distributed to specific groups such as meals for schoolchildren; food-for-work may be coupled with agricultural investments. The efficacy of this wide array of interventions is attracting attention as ever (Lentz & Barrett, 2008).

This paper re-examines an important question on the efficiency of aid, namely if food aid could have a negative impact on production, sales, and purchases by recipient households, thus disturbing crop marketing. This question has been already largely debated. We take advantage of a panel dataset stretching over 1994–2009, in a nation that was one of the world top aid recipients, Ethiopia. [1] This long period allows us to assess whether there is "aid dependency" in the long run; moreover, as Ethiopia has overhauled its aid policy in the mid 2000s, we can see if the shift in aid philosophy in the recent years, from simple commodity transfers to holistic developmental interventions, can be felt on local markets. Using a panel of households followed over fifteen years allows controlling for the endogenous allocation of aid in an innovative way.

In a poor nation where most aid recipients are farmers, food aid can have a negative impact on production if aid is non additional (meaning that food aid transfers do not increase food consumption by an equal amount) and partly monetized, thus depressing the prices received by agricultural producers (Schultz, 1960). On the other hand, food aid also raises income, hence the demand for food bought on the local market, mitigating the negative price effect. In the case of food-for-work, there is also the risk that the program might displace normal employment. In the long run, repeated aid could also create dependency and lack of agricultural investments by farmers themselves or by the government. It could also shift consumers' preferences away from indigenous food (Barrett & Maxwell, 2007; Maxwell, 1991; Maxwell & Singer, 1979).

A variety of papers have put these assumptions to the data, and among them, many on Ethiopia. Four lessons emerge from this rich literature. First, there is a discrepancy between micro and macro approaches. While some (but not all) macro studies have found a small disincentive impact of aid at the nation or at the regional level (Barrett, Mohapatra, & Snyder, 1999; Gelan, 2006; Isenman & Singer, 1977; Mann, 1967; Tadesse & Shively, 2009), micro studies have failed to find any significant and negative impact of aid at the household level (Abdulai, Barrett, & Hoddinott, 2005).

Second, the dynamic impact of aid is worth studying, as short-term effects may differ from long-term ones. Abdulai *et al.* (2005) find a slight negative impact of aid received in 1994 in Ethiopia on labor supply for permanent and

* We thank the anonymous referees and participants of the XIVth Congress of the European Association of Agricultural Economists, the Casual Friday Development Seminar at the Paris School of Economics and the First International Conference on Global Food Security. For their helpful comments we are especially grateful to Luc Behaghel, Denis Cogneau and Karen Macours. Nathalie Ferrière thanks University of Paris 1—Panthéon Sorbonne for its fellowship. The research leading to these results has received funding from the European Union's Seventh Framework Programme FP7/2007–11 under Grant Agreement n290693 FOODSECURE and CEPREMAP. The authors are responsible for any omissions or deficiencies. Neither the FOODSECURE project and any of its partner organizations, nor any organization of the European Union or European Commission are accountable for the content of papers.The ERHS data have been made available by the Economics Department, Addis Ababa University, the Centre for the Study of African Economies, University of Oxford and the International Food Policy Research Institute. Funding for data collection was provided by the Economic and Social Research Council (ESRC), the Swedish International Development Agency (SIDA) and the United States Agency for International Development (USAID); the preparation of the public release version of these data was supported in part by the World Bank. AAU, CSAE, IFPRI, ESRC, SIDA, USAID and the World Bank are not responsible for any errors in these data or for their use or interpretation. Final revision accepted: July 2, 2015.

semi-permanent crops one year later, while they see no significant impact of current aid.

Third, a major difficulty in assessing the impact of aid comes from the endogeneity of aid allocation, namely, that aid is not distributed at random but is the result of targeting. Without controlling for targeting, Abdulai *et al.* (2005) find a negative impact of aid on households' labor supply and use of agricultural inputs. But this negative impact vanishes once controlled for household characteristics that might explain aid allocation. Hence, aid must be considered as an endogenous variable and the problem becomes one of finding a credible instrument that might explain aid allocation but not the outcome. Abdulai *et al.* (2005) instrument aid by households' observable characteristics and whether they have received aid in the past (thus assuming a kind of "aid inertia"). Gilligan, Hoddinott, and Taffesse (2009) use a propensity score matching method. The propensity score is based on observable household characteristics; moreover, as the matching compares treated and non-treated households in the same village, the method implicitly takes into account unobservable characteristics at the community level. However, they are not controlling for unobservable characteristics at the household level that might also explain aid allocation.

Fourth, the impact of aid on households is heterogeneous, because of the varying degrees of households' reliance on local markets. Levinsohn and McMillan (2007) show that the effect of aid on poverty depends on whether the household is a net buyer or a net seller. In the case of Ethiopia, poor households who are mostly net buyers will benefit from the low prices induced by aid. Yamano, Jayne, and Strauss (2000) look at the impact of food aid on local markets and suggest that purchases and sales must be examined separately. Based on a 1996 survey in Ethiopia, they find that food-for-work decreases local purchases of wheat, while free food transfers slightly decrease wheat sales. However, they do not take into account the endogeneity of aid allocation.

In this paper, we try to go further on these four points. First, we take into account heterogeneity of impact. We consider as Yamano *et al.* (2000) that the impact of aid depends on households being buyers or sellers of the crop they receive. We add two more groups: households that might grow a crop without selling or purchasing it on the local market (they are in autarky, producing for their own consumption only); and households that neither produce nor buy the crop that they receive as a food transfer. These four categories define what we call the "type" of households' participation to markets.

The data show that households do indeed switch their type of market participation from one year to another. Would not be likely that receiving food aid in non negligible quantity has influenced their decision to do so? Hence, we look at the impact of aid at the intensive margin (on quantities, controlling for a given type of market participation), and at the extensive margin (on the type of market participation itself). We focus on wheat, which is the most distributed crop in food transfers in Ethiopia.

Second, we refine the estimation method in order to take into account the endogenous allocation of aid. Our strategy is based on the panel dimension of the dataset we are using, five rounds of the Ethiopian Rural Household Survey (ERHS) during 1994–2009. As the dependent variables are a mix of continuous variables (for instance, the quantities produced) and discrete variables (such as the decision to produce), we cannot simply include household fixed effects. We estimate a panel tobit which allows for selection and endogeneity, a method presented by Semykina and Wooldridge (2010). Households fixed effects are included as the average over time of households characteristics. This method allows taking into account time-invariant unobservable household characteristics that might explain the allocation of aid.

On the dynamic impact of aid, we take advantage of the fact that aid is included twice in our estimations: first, as the current quantity of aid received by the household and as the average quantity received over fifteen years. The coefficient of the latter variable may be interpreted as an indicator of aid dependency in the long-run and will be contrasted with the short-term impact. Moreover, the impact of these two variables will be followed over fifteen years, a period during which Ethiopia has overhauled its aid policy. We will also distinguish between the impact of free food transfers and food-for-work.

The main findings of the paper are the following. On production, food aid has an impact at the extensive margin: it decreases the probability of being a wheat producer. Once controlled for selection, there is no evidence of any impact at the intensive margin, on quantities produced. This finding might help reconcile macro studies that find a slight negative impact of aid on production and micro studies that fail do to so: even though there is no significant impact on average individual productivity aid reduces the number of producers, thus decreasing aggregate nationwide production. Based on reasonable assumptions, our results suggest that aid in wheat has decreased wheat output by 114,000 tons in Ethiopia in 2009 compared to a total production of three million tons, a negative but small impact, which does not undermine the utility of aid in general.

Food aid has also an impact on sales after 2004. Here too, the channel goes through the extensive margin: after 2004, aid increases the probability of a household to be selling wheat, especially in the case of food-for-work. On the other hand, food aid (mostly free food distribution) had a positive impact on the probability of buying wheat before 2004; the effect is no longer significant and switches sign after 2004. The impact at the intensive margin, on quantities of wheat sold or purchased by households, is not significant. The change in 2004 coincides with the introduction of innovative aid policies in Ethiopia, aimed at building agricultural assets. Our results suggest that aid reform did make a difference in households' marketing behavior. Moreover, our results show the importance of factors that relate to the frequency and closeness of local markets within the district.

The remainder of the paper is structured as follows: Section 2 sets the context of food aid in Ethiopia and recalls related literature; Section 3 describes the data and households' heterogeneity with respect to market participation. In Section 4, we present the empirical framework and the way we deal with selection and reverse causality. Section 5 discusses the empirical results and the robustness checks before we conclude in Section 6.

2. CONTEXT

(a) *Food aid in Ethiopia*

Ethiopia has been one of the world's major recipients of international food aid for decades. As a result, over the last twenty years, food aid has amounted to one-tenth of domestic production in Ethiopia (Planel, 2005). For wheat, a major staple in the nation, food aid has even reached 40% of domestic production. [2]

Ethiopia has faced a major shift in food aid policy in the mid 2000s. Before that date, food aid was basically repeated emer-