Food Aid from the EU and the US – its consequences for local food production and commercial food trade

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Executive summary

Food aid involves country-to-country donations of food items, usually in the form of cereals. It is usually divided into three categories of roughly equal importance in quantity terms: emergency aid, project aid and program aid. Emergency aid is generally given in instances of climate shocks and conflicts, while project aid has an explicit development orientation and typically involves the use of donated food in food-for-work projects designed to improve rural infrastructure. Unlike the targeted and in many cases UN-distributed aid in the emergency and project categories, program aid is normally donated directly from government to government and used as budget support after being sold in recipient markets.

Food aid accounts for a mere 3 percent of world trade in food but as much as 80 percent of food availability in some recipient countries. The main donors are the USA, with more than half of total donations in quantity terms, and the EU, with about a quarter (half of which is union aid and half of which is from individual member states). The impact of food aid on the recipient countries' own food production has been the subject of much discussion and a number of studies with conflicting conclusions. The official objectives of this kind of foreign aid have often included short-term food security as well as long-term development of conditions conducive to local production. However, it has often been claimed that there is a substantial risk that in-flows of free food will negatively affect the incentives to maintain local production levels and in practice generate a dependency on food aid.

The analyses undertaken in this study yield average effects of food aid on groups of recipient countries and therefore the conclusions are not applicable to specific countries. It should also

be noted that the efficiency of food aid *vis-a-vis* other forms of foreign aid is not evaluated. To the extent that it is possible to trace any statistical relationships at all between agricultural production and food aid received in earlier years, small positive effects are observed. In an analysis of all food aid to the largest sample of countries used in this study, small positive effects on production are observed over a number of years after receipts of food aid. When aid from the European Union and the United States are considered separately, however, there is no discernible influence over local production at all. This conclusion is derived from an analysis of total cereal food aid flows from these donors to a large group of recipient countries.

In Sub-Saharan Africa, both EU and US food aid flows seem to exert some influence over future production. In the EU case, there are negative short-run effects but long-run positive effects yielding a neutral aggregate effect in the longer term. In contrast, American food aid does not appear to influence production in the short run, but nonetheless generates positive effects after a few years, yielding a positive aggregate effect in the longer term.

As far as the impact of different forms of food aid on local production are concerned, only project aid seems to have any effects. EU project aid has clear positive effects for several years after it is received. American project aid has more limited, but also overall positive effects on local production.

It is too soon since new, more explicitly recipient oriented, norms for EU food aid policy were established in 1996 to permit analyses on a more detailed level than total aid to a relatively large group of countries. On that level, no changes can be discerned as far as production effects are concerned - food aid from the EU can not explain any of the variation in recipient country production before or after 1996.

If food aid does not stimulate demand as much as it adds to supply, it will either replace or drive down the price of locally produced food which may in turn exhibit itself in diminished future production efforts. Since the production effects seem to be either positive or altogether absent, there is reason to expect some replacement of commercial imports. Concerns over such effects have put food aid on the agenda of WTO negotiations. Facing American reluctance, the EU has indicated that stricter regulations on the use of food aid is an example of the kind of parallel treatment of all export promoting measures that it expects in return for a phase-out of its agricultural export subsidies.

Aggregate cereal food aid plays a more prominent role in the determination of commercial imports than in local production of cereals. It can be interpreted as an immediate substitution of food aid for commercial imports. No tendencies toward long-term recovery of commercial import quantities are found either, which implies that food aid (at least in the aggregate) is not a good investment in terms of future food exports for donors.

Comparisons between EU and US food aid reveal clearly disparate effects on commercial imports. While US aid replace them, EU aid appears to cause a substantial increase in commercial food imports. An important part of the explanation for this is likely to be found in properties of and circumstances surrounding the program aid given by the EU, which during the period under investigation has accounted for 53 percent of its food aid to the sample of recipient countries. The analytical method employed in this study does unfortunately not lend itself to tests of such properties and circumstances, but a few plausible ones can be mentioned. They include re-export, trade related conditions for food aid, temporal coincidence with other aid efforts that stimulate demand, or possibly a propensity to

concentrate the aid to periods when world market prices are low and therefore particularly conducive to commercial imports.

US aid does not seem to replace the commercial imports of Sub-Saharan Africa to the same extent as it replaces those of other recipient countries, a finding which is compatible with the presence of some effects on production. Another exception is that the stimulative effect of EU aid on commercial imports does not arise when the sample is confined to Sub-Saharan Africa (but neither does any replacement). An explanation is also in this case likely to be found in properties of and circumstances surrounding the program aid of the EU, since only a few of the countries in Sub-Saharan Africa have received any food aid in that category.

As already noted, strong effects on commercial imports are primarily associated with program aid. While there are clear indications that US program aid replaces recipient country commercial food imports, it is precisely in this aid category that the import-promoting effects of EU aid seem to arise.

With the phasing out of program aid from EU food aid operations that can be observed since 1996, the trade effects of EU aid have become fairly neutral. The clearly negative impact of US aid on recipient country commercial imports is, however, present also in recent years.

According to the results of this study, emergency food aid has no significant impact on either current or future levels of local production or commercial imports. It is also noteworthy that even after the recent reductions in EU program aid (with its slightly odd import-promoting effects), there remains a clear difference between the largely neutral import effects of EU food aid and the clearly import-replacing US food aid. The concerns over trade distortions from food aid by the main donor do thus seem to carry some substance, but it is also worthwhile to keep in mind that in

instances where food aid is allowed to replace commercial imports, it works as balance of payments support to the recipient country.

The analytical method applied in this study has also made it possible to find out how food aid donations react to changes in recipient country production levels. In all the analyses mentioned above, there are indications of connections between changes in the agricultural output of recipient countries and subsequent inflows of food aid. Donor responses to a typical reduction in recipient output do however appear to be very small and (as concluded also in other studies of global food aid) arrive so late that they have no consumption smoothing effect.

1   Introduction

Food aid – country-to-country donations of cereals and other food items – accounts for a mere 3 percent of world trade in food but is nevertheless a matter of controversy, particularly between its main donors: the United States and the European Union. When considering that most of it involves food shipped from donor countries, it is natural to ask the question "[w]hy not a check instead?" as done by Singer et al. (1987). A large study by the OECD (2005) makes the point that using the donor country as the source of the donated food typically adds one third to the cash amount needed for the recipient to obtain food of the same quantity and quality. The main sources of controversy, however, and the focus of this study are instead food aid's purported threat to domestic agricultural production in recipient countries and to its role as an export subsidy harming the commercial food exports of third countries.

The threat to recipient country food production has received considerable attention in economic literature, at least since an article by Schultz (1960), and is high on the agenda among

development oriented NGOs (see e.g. Oxfam (2005)). Important reasons for this are that agriculture is the primary activity of many of the poor in developing countries and that agricultural expansion is widely believed to be a key to economic development (see e.g. Sen (1999). The main concerns are the pressure on prices expected from the addition to local food supply, possible shifts in preferences towards imported food types,[1] and increased variability in returns to agricultural production. The latter builds on claims that food aid is pro-cyclical in character, i.e. that more is given when world food prices (and thus the opportunity costs of giving food away) are low.

The major bone of contention between the main donors, however, and (as noted by the Financial Times on September 28, 2005) "an unlikely sticking point in the Doha round trade talks", is the expected negative impact of food aid on the commercial food exports of third parties. Those fears are often particularly acute with respect to food aid from the US, not only because it is by far the largest but also because one of its official purposes is the expansion of export markets for American agricultural products. The EU wants food aid to be subjected to the WTO disciplines on export subsidies while the US wants a continuation of the exemption for food aid. The actual effects of food aid on local production and commercial trade are thus of potential importance to development as well as to the credibility of the opposing positions taken by key players in the world trade negotiations.

This study continues, in Chapter 2, with an outline of the main characteristics of and trends in food aid over the past fifteen years. Then follows a presentation of the main international agreements that regulate food aid, as well as the official food aid policies and laws introduced to guide the food aid provided by the US and the

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[1] See Maren (1997) for what is claimed to be an example of this in the case of Somalia.

EU. Next, a theoretical review of possible effects on local production and commercial trade is provided. As a scarcity of and gaps in previous empirical literature on food aid consequences has been identified, a quantitative analysis is then carried out with the overarching aim of tracing the short-term and long-term effects of food aid on production and trade, while observing whether any possible effects differ between EU and US food aid. More specifically, the following questions are addressed:

- How does food aid adjust to variations in recipient country food production?

- How does food aid affect recipient country food production?

  - Are there traceable differences between the effects of EU and US food aid?

  - With regard to the new official norms for EU food aid established in 1996, can a change in the effects be discerned?

- How does food aid affect the commercial import of food of recipient countries?

  - Are there traceable differences between the effects of EU and US food aid?

  - With regard to the new official norms for EU food aid established in 1996, can a change in the effects be discerned?

- How do the effects differ between aid categories, and what implications does the answer have for the change of both US and EU policies in the last couple of years towards significantly less program and project aid?

2 Food aid basics

By food aid, one usually refers to international transfers of food for which recipients pay nothing or at least considerably less than world market prices. While about one quarter of all food aid involves food purchased in the recipient country (local purchases)

or in other developing countries (triangular purchases), the most controversial part of it (and the focus of this study) involves shipments of food produced in the donor countries.

Food aid mainly consists of cereals which account for about 80 percent of the total in terms of grain equivalent weight.[2] The dominant donor is the United States with 54 percent of total food aid donations over the past ten-year-period (1995-2004), followed by the European Union (14 percent from the European Commission and 11 percent from individual member countries). More than one hundred countries have received food aid during this period, but some have of course received more than others. About 34 percent has gone to sub-Saharan Africa where Ethiopia and Eritrea (when counted as one) are together the world's largest food aid recipient (at 11.4 percent of world food aid over the past ten years). Other recipients of large quantities of food aid are Bangladesh (6.4 percent) and North Korea (9.6 percent). In some recipient countries, like Cape Verde, Rwanda and Jamaica, more than half of food consumption often comes from aid.

Food aid is usually divided into three types or categories: emergency aid, project aid and program aid. Emergency aid (46 percent of all food aid in 1995-2004 but 58 percent in 2004) is generally given in instances of climate shocks and conflicts, while project aid (25 percent of all food aid in 1995-2004 but 28 percent in 2004) has an explicit development orientation and typically involves the use of donated food in food-for-work projects designed to improve rural infrastructure. Unlike the targeted and in many cases UN-distributed aid in the emergency and project categories, program aid (29 percent of all food aid in 1995-2004 but only 14 percent in 2004) is normally donated directly from

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[2] The most comprehensive statistics on food aid are kept by the World Food Program and the interested reader is recommended to visit www.wfp.org/interfais (which is also the source of the numbers in this brief overview) for more detailed information.

government to government and used as budget support after being sold in recipient markets.

3 Food aid regulations

In light of the fears that food aid is a hindrance to agricultural development and commercial trade, it is not surprising to find a number of international agreements and bodies which to some extent regulate the provision of food aid.

3.1 The Food Aid Committee and the Food Aid Convention

The Food Aid Committee is a group of food aid donors, namely Argentina, Australia, Canada, the European Union and its members, Japan, Norway, Switzerland and the United States (International Grains Council, 1999). This committee has since 1967 regularly updated the *Food Aid Convention* (FAC). The version now in use was agreed upon in 1999 and its explicit objective is "to contribute to world food security and to improve the ability of the international community to respond to emergency food situations and other food needs of developing countries" (FAO, 1999). The FAC contains a list of prioritized recipient countries and minimum aid quantity commitments of donor countries. Additionally, it states a number of principles for aid giving, including that all aid forming part of the minimum commitment shall be in the form of grants, can not be tied to commercial trade, shall be given in a manner that avoids harmful interference with commercial production or trade, and adhere to the Food and Agriculture Organization's (FAO) "Principles of Surplus Disposal and Consultative Obligations" (se below). Furthermore, it is stated that donor countries shall better monitor the effects of food aid, and support recipient countries' efforts to develop and implement their own food security strategies.

3.2 The Food And Agriculture Organization and the Consultative Committee on Surplus Disposal

The Food and Agriculture Organization of the United Nations (FAO) has the purpose to raise living standards and levels of nutritional intake, increase agricultural productivity and improve conditions for poor people in rural areas. In 1954 a subcommittee to the FAO – *the Consultative Committee on Surplus Disposal* (CSSD) – was established and assigned the task of supervising international transfers of agricultural surplus in the form of food aid, in order to avoid harmful interference with commercial trade and agricultural production. Its principles for surplus disposal and consultative obligations contain detailed instructions for donor countries concerning how to report food aid. The CSSD has also established the so-called "Usual Marketing Requirements" (UMRs), which are supposed to ensure that food aid does not cause changes in commercial food imports or re-exports by recipient countries.

3.3 The World Food Summit

The *World Food Summit* was arranged in Rome 1996 as part of the efforts to fight world famine.[3] The main result from this meeting was a goal for famine reduction: the 187 states present agreed to reduce starvation by half by 2015. At the current rate, however, this goal will not be reached until 2030 at the earliest. For this reason, another summit which came to be called "*World Food Summit – five years later*" (WFSfyl) was held in Rome 2002. The declaration from this meeting states that "trade is a key element in achieving world food security" (FAO, 2002). The importance of domestic production and distribution of food is strongly emphasized, and it is pointed out that 70 percent of the world's poor live in rural areas and are to a large extent dependent on agriculture and rural development. Regarding food aid, its

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[3] The following discussion is based on SOU 2002:75.

important role in situations of humanitarian crisis and as an instrument for development is acknowledged.

3.4 The World Trade Organization

During the *World Trade Organization*'s last round of negotiations, the Uruguay Round 1986-1994, the agricultural sector was explicitly mentioned for the first time. A decrease in export subsidies – which are used for surplus disposal often generated in countries with production-promoting support – was agreed. The similarly trade-distorting effects of food aid were also recognized, which explains why the agriculture agreement of the Uruguay Round states that "[m]embers donors of international food aid shall ensure: (a) that the provision of international food aid is not tied directly or indirectly to commercial exports of agricultural products to recipient countries; (b) that international food aid transactions, including bilateral food aid which is monetized, shall be carried out in accordance with the FAO 'Principles of Surplus Disposal and Consultative Obligations'" (WTO, 1994).

During the past few years food aid has come to play a more prominent role in the WTO context. In the ongoing (or at least unfinished) Doha Round of negotiations, important actors like the EU and the so-called Cairns Group have demanded stricter rules for the use of food aid.[4] To ensure that food aid does not constitute surplus disposal and circumvent the restrictions on export subsidies, the Cairns Group has proposed that

(i) food aid may only be channeled directly from government to government in the form of emergency aid given in response to appeals from the United Nations or other international or regional agencies,

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[4] The Cairns Group is composed of 17 agricultural exporting countries wishing to bring about a major liberalization of trade in agricultural products. Its members are Argentina, Australia, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, New Zealand, Paraguay, Philippines, South Africa, Thailand and Uruguay.

(ii) project and program aid may only be given through the World Food Program or other international or regional agencies (The Cairns Group, 2004).

In the same spirit, the EU has demanded rules which more effectively prevent the use of food aid for subsidizing exports of surplus production, ties to commercial imports from the donor country, or as an instrument for keeping competitors out of certain food markets. Also the EU has advocated requirements that food aid may not be a deal between the donor and recipient countries' governments, but must be initiated by international agencies or by certain private aid organizations (The European Commission (2000b).

The United States, which plays a dominant role among food aid donors as well as commercial food exporters and has the largest and most numerous stakeholders in food aid distribution, has however taken a restrictive stance with respect to new food aid regulations. After the US had rejected a proposal which was close to the EU position, the draft ministerial text for the Cancun Ministerial Conference (presented by the chairman for the WTO negotiations on agriculture) merely states that " [a]dditional disciplines shall be agreed in order to prevent commercial displacement through food aid operations".[5]

Pending continued substantial negotiations, the EU has made it clear that further restrictions on food aid are among its conditions for offering to withdraw its agricultural export subsidies. The EU Commissioner for Agriculture Franz Fischler said in a speech to the European Parliament on 13 January 2004 that when something is to be done about export subsidies this must concern all its forms, that there is a lack of negotiation proposals with this content from other parties, that the continued US silence on this

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[5] Draft Cancún Ministerial Text, fall 2003 (WTO (2003), Annex A, 3.5.

matter is noteworthy, and that the EU has made it clear from the very beginning that it will only move forward with export competition issues if all other measures are fully dealt with at the same time. This demand for parallel treatment of all activities with export subsidy elements and explicit inclusion of what is seen as "abuse of food aid", was repeated when, in May 2004, EU Commissioners Lamy and Fischler extended the EU's offer to include all export subsidies.[6] Hence, further restrictions on food aid designed to avoid interference with commercial trade can be said to be a condition for key moves in the direction of a more liberal agricultural trade regime.

The main combatants regarding the role of food aid in global trade agreements, as well as the most important donors – at least in quantity terms – are thus the EU and the US. For that reason, let us now continue with a review of the official policies and laws that are supposed to guide the food aid activities of those donors, as well as some relevant numbers.

4   The food aid of the main donors

4.1   US food aid

The main part of US food aid is regulated by Public Law 480 (PL 480), also called *Food for Peace*. The stated objectives are "to combat hunger and malnutrition; promote broad-based equitable and sustainable development, including agricultural development; expand international trade; develop and expand export markets for United States agricultural commodities; and to foster and encourage the development of private enterprise and democratic participation in developing countries" (USDA, 2001). The inclusion of the objective concerning export markets has fueled the criticism of US food aid.

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[6] For details, see AgraEurope (2004) and European Union at United Nations (2004).

US food aid has not retained the position relative to commercial food exports that it had during the years immediately following the introduction of PL 480 in the mid-1950s. In absolute numbers, however, its food aid volumes have not decreased over the years, but have varied substantially. Since 1988, US cereal food aid has varied between less than 3 million tons and almost 9 500 000 tons.[7]

As shown in Table 1, most of US cereal food aid delivered in recent years has gone to Ethiopia and Eritrea (reported together in some statistics and therefore also here), followed by Russia, Bangladesh, North Korea and Indonesia. The aid to Russia has been exceptional in the sense that it was almost exclusively given during one year (1999) as a response to reports of imminent starvation.

Table 1. The main recipients of US cereal food aid 1998-2002

Country	Total number of tons 1998-2002
Ethiopia and Eritrea	5 855 449
Russia	3 423 906
Bangladesh	1 729 172
North Korea	1 659 027
Indonesia	1 448 535
India	1 097 429
Jordan	999 538
Afghanistan	762 733
Yemen	621 671
Sudan	612 106
Kenya	576 071
Haiti	565 642
Pakistan	546 803
Philippines	539 589
Angola	532 393

Source: WFP/Interfais.

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[7] WFP/Interfais.

4.2 EU food aid

Until the 1980s there was a certain tension between food aid as a means of surplus disposal and as a part of EU development cooperation efforts. Since the beginning of the 1980s however, a number of council regulations that underline the development aspect of food aid have been enacted. Council Regulation 3972/86 compiled and repeated a number of political motives for EU food aid, which had occurred in previous legislation. Its main points were demands for better integration of food aid in the overall development aid efforts of the union and the development strategies of the recipient countries (Clay et al., 1998).

According to the regulation the objectives of EU food aid are to promote food security in recipient countries, increase the nutritional intake of recipient populations, assist in emergency situations, contribute to a balanced economic and social development in recipient countries and support recipient countries' own efforts to improve their food production. The regulation further proclaims that food aid should primarily be given to the poorest countries, and be based on an objective evaluation of needs. The highest priority should be given to immediate needs, but the regulation also allows EU food aid to be used for the creation of food reserves in recipient countries. Through the acceptance of Council Regulation 3972/86, food aid was formally separated from the common agricultural policy and one indication that this translated into actual policy is that local and triangular transactions increased sharply, from 11 percent in 1990 to 36 percent in 1996 (Clay et al., 1998).

EU food aid is today subject to Council Regulation 1292/96, "On food-aid policy and food-aid management and special operations in support of food security". The objectives of EU food aid, excluding humanitarian aid, are defined in the first chapter's first article, and include "to promote food security geared to

alleviating poverty, to help the population of developing countries and regions, at household, local, national and regional levels"; "to support the efforts of the recipient countries to improve their own food production at regional, national, local and family level"; "to reduce their dependence on food aid"; "to encourage them to be independent in food, either by increasing production, or by enhancing and increasing purchasing power"; and "to contribute to the initiatives to combat poverty with development as an objective" (European Commission, 2000c, chapter 1, article 1). With special emphasis it is stated that food aid, irrespective of the form in which it is distributed, must not disturb local markets. In the regulation's instructions for how aid may be distributed, "targeting" is emphasized. A number of criteria are listed, such as income per capita, the existence of particularly poor population groups as well as social welfare indicators. It is pointed out that aid as far as possible must reflect recipient populations' dietary habits (European Commission, 2000a, chapter 1, article 2).

The regulation is formulated in such a way as to allow aid to be sold on recipient country markets. In article 11 it is established that "[p]roducts shall be mobilized on the Community market, in the recipient country or in one of the developing countries" and that "[f]ood products available on the internal market may be mobilized on the market of a developing country, if the economic efficiency of doing so compares favorably with that of mobilizing products on the European market" (European Commission, 2000a, chapter 1, article 1). It may be observed that these formulations do not decree local and triangular purchases and only permit them if they can be made at a cost below that associated with similar products and quantities on the European market. The choice of basis for evaluating the European products – the world market price, the price received by EU farmers, or perhaps something in between – then becomes highly relevant.

EU food aid of the type analyzed in this study, i.e. deliveries of food produced in the EU, forms part of the *EU Food Aid and Food Security Program* which also includes technical and cash assistance in different forms. Between 1988 and 2002 the volume of EU cereal food aid has varied considerably, ranging between slightly less than 500 000 tons and slightly more than 2 500 000 tons.[8] The distribution between the different categories of aid has also changed over time, with a notable trend towards less and less program aid. In 2004, the EU gave no program food aid at all (WFP, 2005). As seen in Table 2, the four main recipients of EU cereal food aid in the 1998-2002 period (Russia, Ethiopia and Eritrea, Bangladesh and North Korea) are the same as for US food aid, but further down former Eastern bloc countries and African countries figure more prominently on the EU's list of recipients.

Table 2. The main recipients of EU cereal food aid 1998-2002

Country	Total number of tons 1998-2002
Russia	1 497 887
Ethiopia and Eritrea	1 172 620
Bangladesh	449 476
North Korea	221 155
Angola	165 303
Rwanda	158 185
Serbia and Montenegro	136 583
Tadzjikistan	86 874
Kyrgystan	85 484
Afghanistan	83 808
Sudan	83 563
Tanzania	81 365
Malawi	71 301
Kenya	67 345
Mozambique	57 245

Source: WFP/Interfais.

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[8] WFP/Interfais.

4.3 EU and US use of multilateral channels and local and triangular transactions

In light of the proposals for restrictions on government-to-government food aid put forth by the Cairns Group as well as the EU in the global trade negotiations, it may be of interest to look at to what extent the main multilateral channel (WFP) has been used for EU and US aid in recent years.

Figure 1 offers such a comparison and indicates an increasing use of the WFP by both donors. This is particularly true for US cereal food aid, for which the WFP share has more than doubled since 1988. This increase has also resulted in the WFP playing a more prominent role as a channel for US than for EU cereal food aid, as opposed to the situation prevailing back in 1988.

Figure 1. A comparison between EU and US use of the World Food Program as a channel for cereal food aid
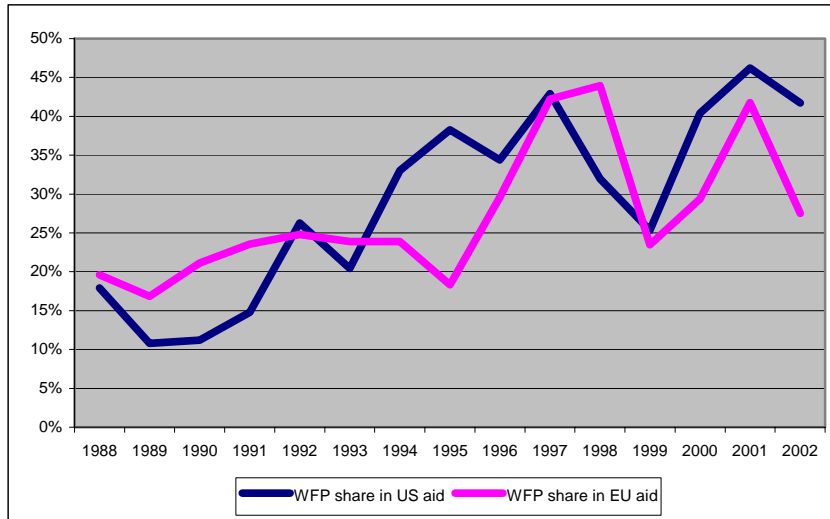
Source: WFP/Interfais.

Given the fears that food aid competes with and therefore worsens the conditions for local food production in the recipient

countries, it is of interest to take note of the main donors' use of local and triangular transactions as these are assumed to promote the demand for locally produced food. In Figure 2, the use of local and triangular transactions in EU and US food aid is contrasted, highlighting the large and growing difference in favor of the EU.

Figure 2. A comparison between EU and US use of local and triangular transactions for cereal food aid
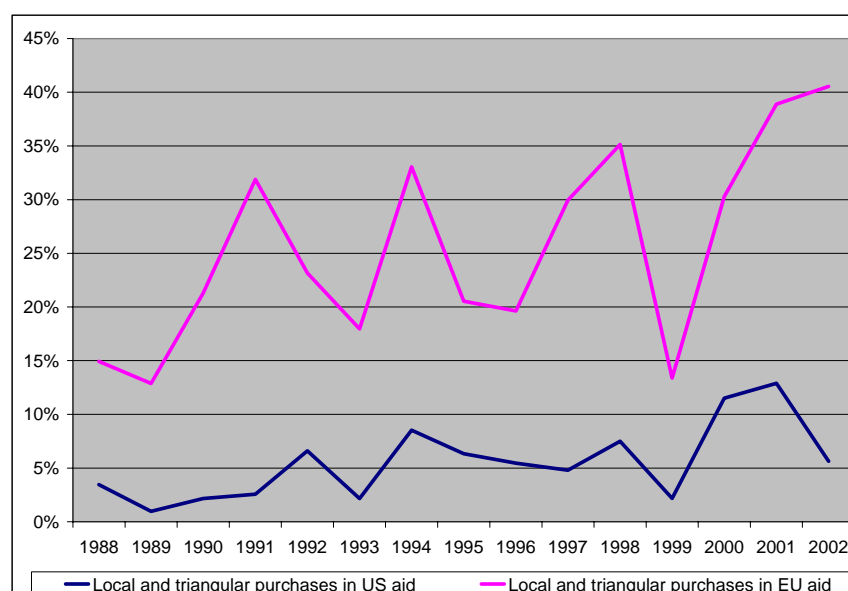
Source: WFP/Interfais.

5   Effects of food aid in theory

Food aid may have effects on local production and commercial imports in the short as well as in the long run. Those effects depend on the answers to a number of questions: what would the supply of food look like in the absence of food aid, how well integrated are the world food markets, do the particular food items included in food aid complement or substitute for items supplied from other food sources, where is the food procured,

what do the government and consumers of the recipient country do with the resources freed by food aid, etc. Bhagwati (1986) and Srinivasan (1989) have shown how the effects of food aid can be analyzed in a two-sector general equilibrium model. The following is an attempt to demonstrate how, in the simplest possible manner, one may think about the short-run effects of an inflow of food aid on local production and commercial imports of food. Thereafter, potential long-run effects are discussed.

5.1 Effects on the market for food in recipient countries in the short run

In Figure 3, local food output is represented by a vertical line denoted S, in order to reflect the almost non-existent possibilities for local agriculture to adapt its output to price changes in the short run. Domestic food demand is represented by a demand curve denoted D, which is downward-sloping, reflecting the assumption that the lower its price the more food is likely to be demanded. If the transport-cost-inclusive price of imported food is low enough for consumers to want more than the sum of local output and food aid, and if the recipient country is too small in economic terms to influence world market prices, then there will be a supply of commercial food imports, which can be illustrated by the horizontal line drawn at the price p* in the figure. That will also be the price that local producers receive and the per-unit market value of any food aid received.

Regardless of whether the items included in food aid are sold in local markets (as in the case of program aid) or whether they are distributed for free to individual consumers there, they constitute an addition to the supply of food in the recipient country, which is denoted A in Figure 3. Receipts of food aid can thus in the absence of commercial imports be expected to cause a fall in food prices in the recipient country or, if commercial imports are

present, have no impact on food prices but cause a reduction in commercial imports.

Figure 3. Short-run effects of food aid in the recipient country food market
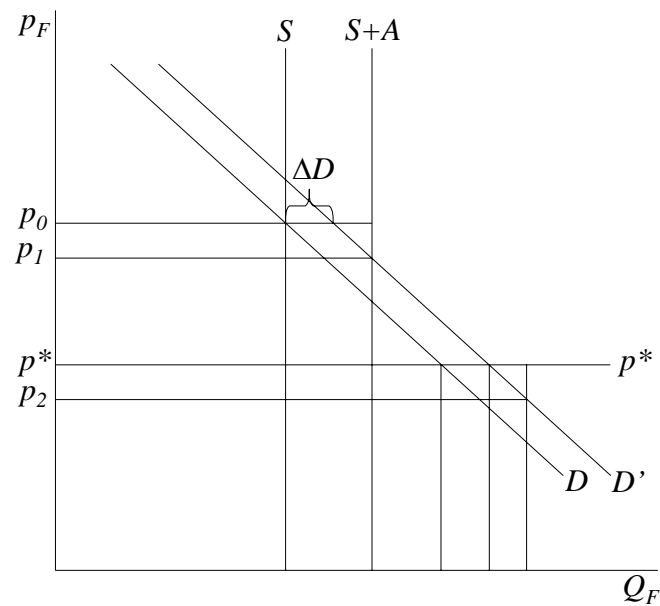
The extent of those effects of food aid on food prices or commercial import quantities will however be determined by its effects on demand. If the food included in aid shipments is sold on the market by the recipient government, additional government revenue is created and an increase in the incomes of some local residents can be expected. To the extent that this additional income is devoted to food, the demand curve shifts to the right (as illustrated by the horizontal difference •D between the curves D' and D in Figure 3). The same kind of effect can be expected from food aid that is instead directly distributed to households in the recipient country (as is common in the cases of project and particularly emergency aid). Since the food that is received makes it possible to reduce market purchases, households can also under these circumstances be said to have

received an addition to income that to some extent may be spent on food.

The increase in demand (at constant prices) that follows a food-aid-induced increase in food supply is sometimes referred to as additionality. It can be expressed as the ratio between the demand shift (•D) and the inflow of food aid (A), which is a little less than 50 percent in Figure 3. How close to full (100 percent) additionality is reached will primarily depend on who ends up with the extra income that food aid brings (targeting) and when that income arises (timing). Should the government for instance distribute the revenue from food aid sales (or directly distribute the food received as aid) to the very poorest at a time when their incomes are particularly low (so that they are on the brink of starvation), there will be very close to full additionality and very small effects on food prices or commercial import quantities.

To summarize, in Figure 3, the inflow of food aid A, giving rise to some but not full additionality, would cause a fall in the price of food from p0 to p1 if there are no commercial imports. If commercial imports are available at the transport-cost-inclusive price p*, that price will prevail both with and without food aid, and the entire adjustment to food aid comes as a reduction in imports equal to the difference between food aid and the additional demand that it creates. If, however, the recipient country government fulfills demands from donors to ensure that the inflow of food aid does not lead to a reduction in commercial imports (according to the "usual marketing requirements" dictated by international agreements on food aid), there will be a negative effect of food aid on food prices (from p* to p2 in Figure 3).[9]

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[9] This does of course require that the recipient country government is indeed able to exercise control over the quantity of imports, either directly if there is a government monopoly on cross-border food trade, or

The simple analysis carried out so far thus implies that in the presence of commercial imports, food prices in the recipient country will be unaffected by food aid, unless the recipient country is forced to ensure that pre-aid import levels are maintained. An important implicit assumption is that the actual food items included in local production, commercial imports and food aid are identical or at least viewed as perfect substitutes by consumers in the recipient country. Food is, in other words, viewed as a homogeneous good. If, in practice, there are significant content differences, the effects of food aid will depend on (i) how close substitutes the items included in food aid are to the contents of local production and commercial imports, and (ii) how the additional income inherent in food aid affects the demand for locally produced and commercially imported food items. If, for instance, the contents of food aid are closer substitutes for local production than for commercial imports, and only a small part of an addition to income would be devoted to locally produced food, then it is reasonable to expect a downward pressure on prices received by local producers also in the presence of commercial food imports.

Furthermore, the conclusions drawn do not take into account the fact that the cost of imported food may vary between regions in a recipient country. In practice, while some regions may have to rely completely on local production and food aid due to prohibitively high transport costs for imported goods, other regions (perhaps with better access to ports or road networks) may be able to engage in commercial imports at reasonable cost. In some countries, it may therefore be possible to observe a mix of the expected effects on food prices and commercial import quantities.

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indirectly if it is possible to effectively administer instruments like tariffs and quotas (i.e. if smuggling can be prevented or at least be made more costly).

5.2 Effects on net incomes from agricultural production in the short run

If an inflow of food aid leads to lower food prices, a fall in agricultural sales revenue accruing to recipient country farmers can be expected. It is, however, far from self-evident that a fall in food prices caused by food aid will lead to a fall in their net income, even in the short run.

Through effects on costs as well as the use of freed resources, food aid might actually increase net farm incomes in the recipient country. The costs of agricultural production could in theory fall more than food prices, as shown by Mohapatra et al. (1999). If agricultural labor is paid with food (or if wages are indexed to food prices), labor costs will fall as much as food prices. If exchange rates are highly sensitive to changes in import quantities, for instance in the presence of balance of payments problems, then food aid which replaces commercial imports may carry the added benefit of significantly reducing the costs of importing inputs such as fertilizers and equipment.

Aside from the just mentioned direct effects on labor and input costs, food aid may also affect the costs of agricultural production indirectly through reductions in the overall demand for intensively used resources. An even more indirect manner in which food aid could raise the net incomes of recipient country food producers, pointed out by Lahiri and Raimondos (1996), exists in the many cases where recipient countries have tariffs on industrial imports. Those tariffs make industrial production expand, which puts upward pressure on the costs of resources that are useful for both industrial and agricultural production. The industrial import tariffs thus do harm to food production by raising its costs, but they constitute a difficult to replace source of public revenue. By reducing the recipient government's need for

tariff revenue, food aid can therefore indirectly support local agriculture by facilitating a tariff removal.

5.3 Effects on the market for food in recipient countries in the long run

In those cases where receipts of food aid do end up causing lower net incomes from agricultural production in the short run, there may be effects on output in the longer run. If farmers have adaptive expectations, in the sense that low prices this year are seen as indications of low prices in coming years as well, land improvement and cultivation efforts may be reduced. Furthermore, credit market imperfections may make current agricultural investments sensitive to current farm incomes. If such links between short-run income declines and long-run output are important, a dependency on food aid could arise (at least if food aid does not contribute to sustained expansion of other economic activities).

A key factor is the utilization of the additional resources made available to the country through food aid. Prominent, at least among the official purposes of the non-emergency forms of food aid, is the promotion of food production in the recipient country. As already mentioned above, food aid provides an opportunity to finance trade policy reforms that would reduce the discrimination of agricultural production, which often prevails in developing countries. One alternative use of the freed resources is to invest them in improvements of rural infrastructure such as roads, drainage and irrigation – common features of project food aid. Another is the development of and/or provision of information about more effective production methods. If well selected and implemented, such uses of the resources added or freed by food aid have the potential of raising future agricultural productivity in the recipient country. Under the right circumstances, one may

hence expect positive long-run effects of food aid on local food production.

Receipts of food aid may also have long-run effects on food demand. If the food items of which the aid consists differ from locally produced foods and if the free sample of e.g. foreign cereal types leaves a taste for more, there may be a long-run shift in demand from locally produced toward imported food. If, on the other hand, successful targeting yields improved nutrition (and thus improved bodily strength, avoidance of disease and disabilities, as well as improved school attendance and learning), productivity improvements may follow and eventually local food demand will rise.

6 Earlier studies

The effects of food aid have been studied quite intensively since the 1970s. Due to space limitations, the following will simply be a guide to important reviews of this literature, together with a brief overview of the main methodological alternatives and the associated results.[10]

As far as methodological choices are concerned, earlier research was mainly confined to case studies of individual donors' aid to individual countries (see Shaw and Clay (1993) for an overview). Those studies offered a great deal of detail but limited opportunities to identify causal relationships and little scope for making general conclusions. During the 1980s it became common to conduct regression analyses of food aid, using either cross sections of recipient countries or time series for single countries (see Nathan Associates (1990) for an overview). Since the 1990s, vector autoregression analysis has been introduced as a food aid research tool since it makes it possible to simultaneously trace

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[10] Substantial parts of this overview have been borrowed from Barrett (2002), who provides an excellent review of recent literature, with a focus on the trade effects of food aid but with substantial coverage also of studies dealing with the closely related effects on local agricultural production in recipient countries.

both short-term and long-term effects of food aid. Lavy (1990), Barrett et al. (1999), and this study, are among the few studies in this genre so far.

Most studies of the effects of food aid on commercial imports and local production have dealt with the crowding out that is usually expected to take place in the short run. Nathan Associates (1990), Saran and Konandreas (1991), and others point to crowding out of commercial imports in the 40-70 percent range.[11] Assuming that no simultaneous crowding out of local production is possible, Barrett (2002) points out that those results imply a degree of additionality in the 30-60 percent range, which he claims is in line with the results of microeconometric studies of food consumption demand. The rather large study on the effects of food aid on commercial trade carried out by the OECD (2003) can be said to confirm those results, while adding detail about variations with regard to food aid categories and distribution channels. Those studies that focus on the effects of food aid on local agricultural production, yield conflicting results as noted by Barrett (2002).

Lavy's (1990) vector autoregression analysis is concerned with cereals food aid and recipient output of cereals in 33 countries in sub-Saharan Africa during the period 1970-1987.[12] He finds significant positive effects of cereal food aid on local cereal production, instead of the negative effects many would expect. In complementary analyses he finds that a contributing explanation is that food aid replaces commercial imports, since the total supply of cereals in the recipient countries seems unaffected by inflows of food aid.

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[11] This summary is due to Barrett (2002).
[12] The countries in Lavy's study were Angola, Burundi, Benin, Burkina Faso, Botswana, the Central African Republic, Chad, Cameroon, Djibouti, Ethiopia, the Gambia, Ghana, Kenya, Lesotho, Liberia, Madagascar, Mauritius, Mauretania, Mali, Malawi, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zaire, Zambia and Zimbabwe.

Barrett et al. (1999) conduct an analysis similar to that of Lavy (1990) but are exclusively concerned with US program aid to those 18 countries that have received it most frequently during the period.[13] They find small but negative effects on local production in the short and in the long term, as well as some crowding out of commercial imports in the short term. They do, however, find positive long-term effects on commercial imports but that those effects mainly benefit third countries rather than the donor.

To summarize, the empirical literature, at least the part of it which allows some insight into both short- and long-term effects of the food aid that has been delivered in recent years, is quite scarce. A partial explanation is that it is difficult to come by relevant statistics further back in history than 1988. Possible differences in the effects of food aid according to donor have not been examined at all, despite claims of the use of food aid as a marketing tool. The empirical analysis described in the remaining parts of this study is an initial attempt at filling those gaps in the literature.

7 A quantitative analysis of the impact of food aid on production and trade

7.1 Choice of method

Considering the questions about local production and commercial import effects of EU and US food aid to be addressed, the key variables are clearly local production of food, receipts of donor-sourced food aid from the EU and the US, and commercial imports of food. Just like in earlier studies, the primary concern is with the per capita quantities of these variables, since that (rather than country totals) can be expected to be the focus of food consumption and aid choices.

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[13] The countries included in the study of Barrett et al. (1990) were Bangladesh, Bolivia, the Dominican Republic, Egypt, Ghana, Guinea, Indonesia, Israel, Jamaica, South Korea, Morocco, Peru, Pakistan, Sri Lanka, Sierra Leone, Sudan, Tunisia and Zaire.

As noted in the review of possible theoretical relationships between those variables, they all may affect each other in the long as well as in the short run. The choice of estimation method therefore follows Barrett's (2002) recommendation to use a kind of vector autoregression (VAR) analysis, which allows identification of temporal causality between variables, cross-sectional variations and takes into consideration the possibility of effects of food aid on trade and local markets over time.

More specifically, the key is to use a structural VAR on the form

$$\mathbf{B}\mathbf{x}_t = \mathbf{\Gamma}_0 + \mathbf{\Gamma}_1\mathbf{x}_{t-1} + \mathbf{\Gamma}_2\mathbf{x}_{t-2} + ... + \mathbf{\Gamma}_L\mathbf{x}_{t-L} + \mathbf{\varepsilon}_t \qquad (1)$$

where $\mathbf{x}_t \equiv (P_t, A_t, M_t)'$ is the vector of per capita quantities of local food production, receipts of food aid, and commercial food imports, respectively, all at year t, while $\mathbf{B}$ is a 3x3 matrix of contemporaneous correlation coefficients.[14] Pre-multiplying by $\mathbf{B'}$ yields the reduced form VAR

$$\mathbf{x}_t = \mathbf{A}_0 + \mathbf{A}_1\mathbf{x}_{t-1} + \mathbf{A}_2\mathbf{x}_{t-2} + ... + \mathbf{A}_L\mathbf{x}_{t-L} + \mathbf{u}_t \qquad (2)$$

where $\mathbf{A}_l = \mathbf{B'}\mathbf{\Gamma}_l$, that is employed in the regression exercises. Restrictions on the B matrix will make it possible to estimate key short-term effects in addition to the longer-term ones. Since the estimation will involve panel data and a fixed effects analysis will be carried out, the vector of constants $\mathbf{\Gamma}_0$ (and hence also $\mathbf{A}_0$) will be allowed to take on different values for different recipient countries.

7.2   Data
As in most other studies of food aid, the present analysis is confined to cereals, which, according to available statistics from

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[14] In the later estimates where aggregate food aid is replaced by the food aid flows from the EU and the US, the vector of per capita quantities is instead $\mathbf{x}_t \equiv (P_t, U_t, E_t, M_t)'$ and $\mathbf{B}$ is a 4x4 matrix.

the WFP, constitute about 85 percent of world food aid by weight. Important reasons are data availability, that cereals are not as afflicted by output measurement problems as some other crops (Djurfeldt, 2001, pp. 26-28 provides a good discussion of those measurement issues), and that the different cereal varieties are more or less equivalent in terms of basic nutrient value per unit of weight, thus facilitating aggregation. In all the estimates below, the measure of choice is therefore kilograms per capita of the aggregate "cereals" (where processed items such as wheat flour have been converted to their grain equivalent before aggregation). This aggregation does of course prevent discoveries of interesting effects across cereal types, but since a number of intertemporal relationships are to be estimated the chosen method forces us to limit the number of variables to consider.

The quantities of cereal food aid – divided between donors and sources (the donor country, the recipient country, or a third country) were obtained from the World Food Program during the fall of 2003. Data on cereal production, commercial cereal imports, and population in the recipient countries, were collected at the same time from the FAO. All references to the EU as a donor are concerned with aid administered by the European Commission and not at all to bilateral aid provided by individual EU member countries.

Some data adjustments have been necessary, particularly as the import quantities of some countries are reported for other periods than calendar years and often include food aid receipts.

Only the donor-sourced parts of cereal food aid have been included, since those are the primary concern in the debate on possible harmful effects of food aid and for positions taken in the global trade negotiations. In instances where it is possible that the estimates may be influenced by the omission of locally sourced

food aid, this variable is added to the exogenous variables in the system.

The country sample selection was carried out according to the following principles and procedures. Only recent recipients of food aid were considered to be of interest and the initial selection was therefore limited to those 110 countries or territories that had received food aid during the five-year period 1997-2001. The sample was then reduced to those 87 countries for which useful production and import data were available. For reasons of relevance and estimation feasibility, the sample was further reduced to those countries that had received cereal food aid for at least 8 out of the 14 years (1988-2001) of overlapping time series coverage. This final selection rendered the 76 recipients (with Ethiopia and Eritrea treated as a single recipient unit) used for the investigation of the effects of total cereal food aid receipts.

For the investigation of EU and US aid effects, a specific version of the 8-out-of-14-years rule was applied in the sample selection, namely that a recipient country must have received cereal food aid from the EU for at least 8 of years as well as cereal food aid from the US for at least 8 years. Those criteria yield a sample of 33 recipients, of which most are situated in Africa (mainly south of the Sahara), but Bangladesh and some Latin American countries are also included (see the country data overview in Table 3).

Table 3. Data overview

	Included in the sample for analyses of				Average quantity of cereals for the years 1988-2001 (kg per capita)										
Country	EU and US aggregate aid and emergency aid	EU and US aggregate aid, project aid and emergency aid	EU and US aggregate aid to sub-Saharan Africa	EU and US program aid	Domestic production	Commercial imports	Aggregate aid	US aggregate aid	US program aid	US project aid	US emergency aid	EU aggregate aid	EU program aid	EU project aid	EU emergency aid
Albania					204.55	67.27	29.95	5.35	4.42	0.20	0.73	20.88	20.84	0.00	0.03
Algeria					80.72	218.90	0.67	0.01	0.00	0.00	0.01	0.26	0.00	0.05	0.21
Angola	Yes		Yes	Yes	36.18	20.93	10.35	5.73	0.86	0.08	4.79	2.85	1.56	0.01	1.28
Bangladesh	Yes			Yes	168.83	9.49	6.51	3.11	1.71	1.27	0.14	1.14	0.50	0.50	0.14
Benin					132.82	35.01	1.62	1.30	0.06	1.21	0.04	0.00	0.00	0.00	0.00
Bolivia	Yes			Yes	127.39	18.81	22.90	19.64	11.66	7.97	0.00	1.28	0.58	0.70	0.00
Burkina Faso					228.80	11.75	2.68	2.39	0.17	2.14	0.08	0.12	0.05	0.01	0.06
Burundi	Yes		Yes		44.37	1.72	1.47	1.03	0.00	0.11	0.93	0.13	0.00	0.08	0.05
Cambodia					187.13	1.81	1.22	0.20	0.00	0.03	0.17	0.00	0.00	0.00	0.00
Cameroon					82.96	26.32	0.17	0.06	0.00	0.05	0.01	0.03	0.00	0.03	0.00
Cape Verde	Yes		Yes	Yes	34.36	60.32	92.83	49.93	14.29	35.63	0.00	7.67	5.81	1.86	0.00
Central African Republic					37.49	10.01	0.47	0.40	0.00	0.40	0.00	0.02	0.00	0.02	0.00
Chad					134.33	4.25	2.46	2.10	0.27	1.52	0.32	0.05	0.02	0.03	0.00
China (mainland)					286.89	14.03	0.11	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Colombia					78.35	54.59	0.46	0.23	0.19	0.01	0.04	0.00	0.00	0.00	0.00
Comoros					24.24	52.83	2.44	0.89	0.00	0.89	0.00	0.34	0.22	0.12	0.00
Congo-Brazzaville					3.80	48.37	4.08	3.60	2.67	0.78	0.16	0.09	0.00	0.07	0.02
Congo-Kinshasa	Yes		Yes		33.24	7.02	0.99	0.78	0.66	0.01	0.11	0.11	0.10	0.00	0.01
Cuba					31.83	154.62	0.73	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00
Djibouti					0.02	105.40	15.76	2.78	0.00	0.09	2.70	3.88	3.54	0.04	0.30
Dominican Republic	Yes				51.34	119.80	3.76	3.47	2.50	0.84	0.12	0.11	0.07	0.04	0.00
Ecuador	Yes			Yes	117.62	43.52	2.81	1.67	1.43	0.25	0.00	0.05	0.02	0.03	0.00
Egypt	Yes			Yes	230.17	132.66	9.92	6.91	6.84	0.07	0.00	1.34	1.28	0.04	0.03
El Salvador	Yes			Yes	143.61	49.29	14.24	13.31	11.53	1.62	0.16	0.14	0.08	0.05	0.01
Ethiopia and Eritrea	Yes		Yes	Yes	122.62	15.56	15.29	8.76	2.44	1.44	4.88	2.09	0.36	1.10	0.63
Gambia, The	Yes		Yes		98.04	88.93	5.22	4.37	0.66	3.71	0.00	0.12	0.00	0.10	0.02
Ghana					84.90	14.99	4.55	3.13	0.91	2.20	0.01	0.03	0.02	0.01	0.00
Guatemala					129.73	37.06	11.36	10.72	7.06	3.53	0.13	0.01	0.00	0.01	0.00
Guinea					84.08	42.45	2.59	2.10	1.66	0.15	0.29	0.04	0.00	0.00	0.04
Guinea Bissau					122.54	54.97	4.44	1.89	0.00	1.32	0.57	0.28	0.23	0.03	0.03
Guyana					358.93	23.18	53.11	51.62	50.78	0.85	0.00	0.30	0.20	0.10	0.00
Haiti	Yes			Yes	52.05	37.99	13.16	10.20	3.04	5.95	1.22	0.85	0.02	0.74	0.09
Honduras					118.10	26.81	17.42	16.15	11.14	3.97	1.04	0.40	0.40	0.00	0.00
India					188.58	0.88	0.32	0.30	0.02	0.28	0.00	0.00	0.00	0.00	0.00
Indonesia					204.04	22.98	0.92	0.66	0.40	0.11	0.15	0.00	0.00	0.00	0.00
Iran					223.38	99.65	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Iraq					119.86	139.46	0.94	0.56	0.00	0.00	0.56	0.13	0.00	0.00	0.13
Ivory Coast	Yes		Yes	Yes	87.90	58.42	2.29	2.09	1.79	0.28	0.02	0.11	0.11	0.00	0.00

Data overview (cont'd)	Included in the sample for analyses of				Average quantity of cereals for the years 1988-2001 (kg per capita)										
Country	EU and US aggregate aid, project aid and emergency aid	EU and US aggregate aid to sub-Saharan Africa	EU and US aggregate aid	EU and US program aid	Domestic production	Commercial imports	Aggregate aid	US aggregate aid	US program aid	US project aid	US emergency aid	EU aggregate aid	EU program aid	EU project aid	EU emergency aid
Jamaica					1.24	111.86	53.67	52.81	50.81	1.99	0.00	0.00	0.00	0.00	0.00
Jordan	Yes			Yes	25.28	300.14	48.04	44.49	42.80	0.26	1.43	0.95	0.00	0.80	0.16
Kenya	Yes	Yes			110.95	19.53	4.34	3.02	0.67	0.53	1.82	0.78	0.14	0.26	0.38
Laos					242.27	4.10	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lebanon					30.22	224.40	5.60	4.00	0.00	2.62	1.38	1.11	0.38	0.24	0.49
Lesotho	Yes	Yes		Yes	97.82	88.41	8.34	4.31	0.00	3.80	0.51	3.70	3.04	0.31	0.35
Liberia	Yes	Yes			43.98	18.80	35.00	31.12	2.57	1.72	26.82	2.25	0.00	0.04	2.21
Madagascar	Yes	Yes			132.97	7.61	2.15	0.74	0.07	0.44	0.23	0.86	0.75	0.08	0.03
Malawi	Yes	Yes			167.17	8.80	7.97	5.47	0.22	0.18	5.06	1.19	0.23	0.13	0.84
Maldives					0.04	97.33	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mali					213.69	7.49	2.03	1.00	0.33	0.61	0.06	0.03	0.02	0.00	0.00
Mauretania	Yes	Yes			64.95	119.76	14.82	5.35	1.75	1.74	1.87	4.00	1.81	1.49	0.70
Mozambique	Yes	Yes		Yes	62.28	10.95	17.76	10.70	5.24	1.85	3.61	2.97	2.21	0.04	0.71
Mongolia					176.51	34.80	4.98	2.94	2.60	0.00	0.34	0.17	0.00	0.00	0.17
Morocco					212.79	106.73	4.84	3.62	2.77	0.84	0.00	0.21	0.00	0.21	0.00
Nepal					240.57	2.67	0.24	0.08	0.00	0.07	0.01	0.00	0.00	0.00	0.00
Nicaragua	Yes			Yes	116.78	19.63	17.50	9.71	6.25	2.40	1.06	1.85	1.03	0.72	0.11
Niger					256.85	11.86	2.58	1.41	0.15	0.77	0.49	0.41	0.27	0.14	0.00
Pakistan					180.63	14.85	1.45	0.88	0.39	0.04	0.45	0.19	0.00	0.09	0.10
Peru	Yes			Yes	86.98	84.95	9.70	8.28	4.51	3.70	0.07	0.70	0.47	0.19	0.03
Philippines					169.44	37.84	1.39	1.32	0.90	0.42	0.00	0.00	0.00	0.00	0.00
Rwanda	Yes	Yes			35.76	16.37	12.68	10.30	0.05	0.53	9.72	1.55	0.02	0.10	1.43
Sao Tome and Principe	Yes	Yes			24.30	33.28	35.30	10.56	0.00	10.56	0.00	6.30	6.20	0.10	0.00
Senegal	Yes	Yes			110.12	79.31	3.75	2.19	1.02	0.70	0.47	0.17	0.00	0.09	0.08
Sierra Leone	Yes	Yes			76.33	36.37	8.02	6.56	1.89	0.78	3.89	0.44	0.22	0.06	0.16
Somalia	Yes	Yes			46.43	12.11	8.60	4.19	0.00	0.16	4.03	2.42	0.27	0.02	2.13
Sri Lanka					96.01	49.03	10.83	9.83	9.67	0.16	0.00	0.46	0.46	0.00	0.00
Sudan	Yes	Yes			148.02	15.51	8.34	5.04	1.39	0.07	3.58	1.48	0.00	0.07	1.41
Swaziland					127.62	78.20	6.64	4.95	1.26	1.23	2.46	1.45	0.00	0.05	1.39
Syria					320.67	81.40	1.69	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Tanzania					129.89	7.27	0.76	0.36	0.11	0.02	0.24	0.03	0.02	0.00	0.01
Togo					152.94	26.57	1.74	1.63	0.00	1.63	0.00	0.04	0.00	0.04	0.00
Tunisia	Yes				166.95	188.89	13.03	7.76	7.54	0.22	0.00	1.93	0.54	1.14	0.24
Uganda	Yes	Yes			90.92	2.06	1.32	0.86	0.00	0.24	0.62	0.25	0.00	0.15	0.10
Vietnam					245.28	6.03	0.92	0.12	0.10	0.02	0.00	0.08	0.01	0.04	0.02
Yemen	Yes	Yes		Yes	52.83	125.72	5.36	3.66	3.37	0.27	0.03	0.55	0.32	0.21	0.02
Zambia					139.08	11.35	8.32	3.81	2.80	0.00	1.00	1.21	0.75	0.25	0.20
Zimbabwe					199.50	17.17	5.21	4.21	2.86	0.00	1.35	0.36	0.00	0.00	0.36

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7.3 Estimation procedures and issues

After ruling out the presence of unit roots and determining the appropriate lag length, the four individual panel regressions of the reduced form VAR (e.g. regressing recipient local production quantities on lags of local production, US aid, EU aid and commercial import quantities) are conducted with country fixed effects and cross-section weights.[15] The information thus obtained is sufficient for an evaluation of Granger causality between the different variables and for construction of the variance-covariance matrix.[16]   The following restrictions on the B matrix of contemporaneous correlations are introduced to facilitate the estimation of same-year relationships between food aid, production and commercial imports:

1. $b_{12} = b_{13} = 0$. Local production is unaffected by inflows of food aid and commercial imports during the same year, since the main activities affecting local production levels (like ploughing, sowing, etc.) have already been carried out before the effects of food aid and commercial imports on local market conditions are revealed.[17,18]

2. $b_{23} = 0$. Commercial imports are more flexible than food aid, which requires some planning and organizational efforts.

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[15] The hypothesis of a presence of unit roots could in all cases be ruled out even at the 1 percent level of significance, when employing tests adapted to panel data recommended by Im, Pesaran and Shin (2003). The appropriate lag length (with the restriction of an equal number of lags across equations) is selected among alternatives involving up to 5 lags with the help of variance-covariance matrix determinants using the SBC criterion. The cross-section weights, derived from cross-section variance estimates obtained in a first-stage pooled regression, are designed to neutralize heteroskedasticity across recipient countries. The estimates have been obtained using EViews. All regressions include a time trend. Occasional comments on the statistical significance of coefficients in individual regressions are based on White's heteroskedasticity-consistent standard errors.

[16] The evaluation of Granger causality involves a Wald test of the restriction that all coefficients of past values of a variable are equal to zero. The level of significance (p-value) associated with the F-statistics thus obtained are reported in tables below. A more detailed description of and motivation for the methods used can be found in e.g. Enders (1995, pp. 294-354).

[17] In the later estimates where aggregate food aid is replaced by the food aid flows from the EU and the US, the restriction applies to food aid from both donors and (in the four-variable VAR then used) reads $b_{12} = b_{13} = b_{14} = 0$.

[18] The assumption that local production levels are insensitive to current receipts of food aid is supported by the results of Barrett et al. (1999).

Commercial imports may therefore be affected by food aid arriving in the same year, but any influence in the opposite direction can be ruled out.[19] The investigation with both EU and US food aid flows requires an additional restriction and the one of choice is that (on account of its dominant position as a food aid donor) the US does not take into account current EU food aid to a country when deciding on its own level of food aid to that country.[20] The just mentioned assumptions about contemporaneous correlations, together with the estimated error term variances and covariances, make it possible to calculate the non-zero contemporaneous correlation coefficients, and then carry out impulse-response analyses. The latter involves tracing out the consequences, for all current and future levels of the variables involved, of a hypothetical temporary increase in e.g. EU cereal aid by 1 kg per capita. The results of some of those exercises are exhibited in diagrams below, as well as in reports on cumulative effects of shocks presented in Table 4. Impulse-response analyses can also be used to obtain an indication of the relative importance of e.g. EU cereal aid for the future development of local production and commercial imports. This is done by calculating how an exogenous shock (amounting to one standard deviation) in e.g. current EU cereal aid would affect VAR-based forecasts of production, aid and import levels in future years, and relating those forecast error variances to the ones that would arise from similar exogenous shocks in the current values of the other variables. A large share of the overall forecast error variance is taken as a sign of substantial influence. If the assumptions about no contemporaneous influence of commercial imports on local production or food aid are correct, then (no reverse causality issue arises and hence) it is also possible to consistently estimate a

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[19] In the later estimates where aggregate food aid is replaced by the food aid flows from the EU and the US, the restriction applies to aid from both donors and (in the four-variable VAR then used) reads $b_{24} = b_{34} = 0$.
[20] This assumption was found to be of little consequence, however, as the estimates obtained using the reverse donor relationship were very similar.

single (fixed effects panel OLS) regression of commercial imports on current as well as lagged food aid and local production. The resulting estimates are used to complement (and add indications about statistical significance to) the picture of influences on commercial imports.

8 Results for estimates with aggregate cereal food aid

**Table 4. Summary of estimation results for cereal food aid from all donors**

	P	A	M
Number of recipient countries		76	
Years covered		1988-2001	
Number of lags used		5	
Local cereal production (P)			
Influence (Granger causality test p-value) on future levels of ...		0.0002	0.0505
Share of 10-year forecast error variance in ...	99.39%	0.73%	7.26%
Cumulative effect of a 1 kg per capita shock after 10 years	2.0215	-0.0022	-0.2611
Contemporaneous influence in separate estimate of M equation			-0.1003
... associated p-value (two-sided)			0.0000
Aggregate cereal food aid (A)			
Influence (Granger causality test p-value) on future levels of ...	0.0002		0.0889
Share of 10-year forecast error variance in ...	0.32%	99.16%	4.55%
Cumulative effect of a 1 kg per capita shock after 10 years	0.4171	1.6032	-1.0986
Contemporaneous influence in separate M-regression			-0.5609
... associated p-value (two-sided)			0.0000

The key figures emanating from the estimation procedures detailed above are collected in Table 4.

8.1 Effects on local production

In the P column various measures of influence on local cereal production are recorded. It is for instance possible to see that past receipts of aggregate cereal food aid probably help explain current levels of local cereal production in recipient countries (since the Granger causality test yields a p-value as low as 0.0002), but that it is not very important compared to other influences on local production (on account of the share in the 10-year forecast error variance being as low as 0.32 percent).

Figure 4. Local cereal production in the average recipient country after a temporary increase of 1 kg per capita in cereal food aid in the year 0
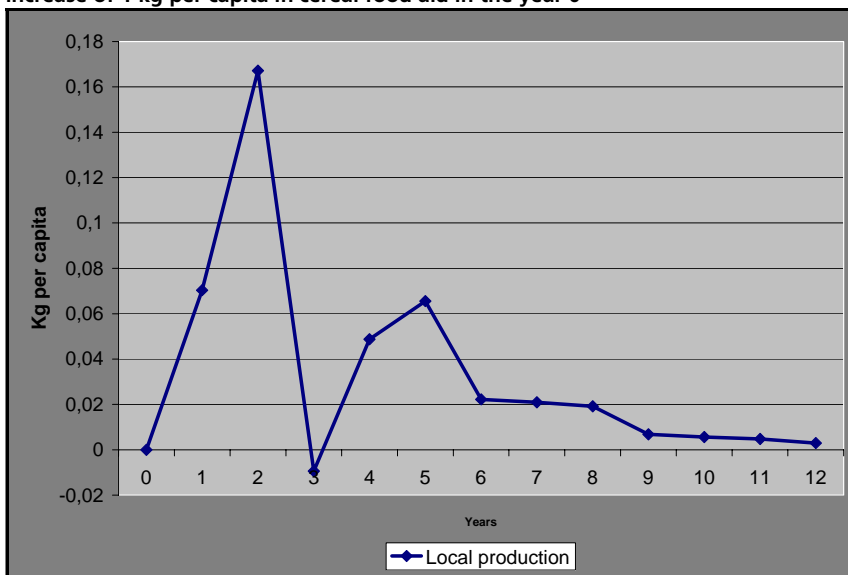

The results of an impulse-response analysis, tracing the production effects of a temporary exogenous increase in food aid in the amount of 1 kg per capita in the year 0, are exhibited in Figure 4. The assumption that no same-year effects can arise is reflected in the value for the year 0, but during most of the years thereafter local cereal production seems to be somewhat higher than they would be without the food aid shock. After a few years

the effects taper off and if one takes stock after 10 years, there is a positive cumulative response in local production amounting to 0.4171 kg per capita as reported in Table 4.[21]

8.2 Effects on commercial imports

Judging from the shares in forecast error variances reported in Table 4, food aid plays a more important role in the determination of commercial import than local production levels.

Figure 5. Commercial cereal imports by the average recipient country after a temporary increase of 1 kg per capita in cereal food aid in the year 0
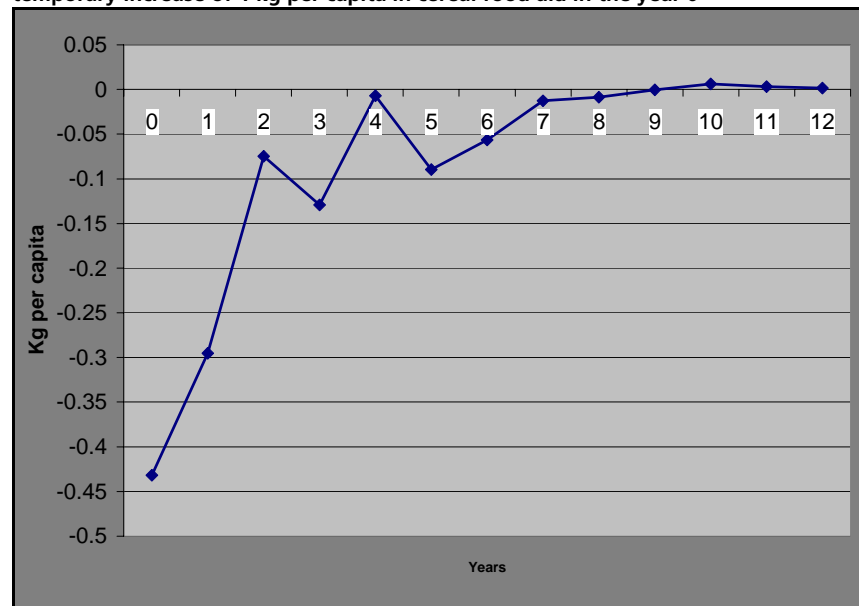
The rather weak significance associated with the test for Granger causality from aid to imports can not be interpreted as an indication of a weak relationship as it does not take the contemporaneous influence into consideration. That influence,

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[21] The impulse responses displayed in the figure, and the calculated cumulative effects, are of course nothing better than the best guesses that the data and estimation procedures allow. A considerable margin of error (calculations of the size of which are beyond the scope of this study) should be considered in all interpretations.

estimated in the separate (fixed effects panel OLS) regression of commercial imports on current as well as lagged food aid and local production, carries a strongly significant coefficient which suggests that the average recipient country reduces its commercial cereal imports by 0.5609 kg per capita during a year in which an additional 1 kg per capita of cereal food aid is received. Partly due to the increase in local production that food aid seems to bring about, import quantities are somewhat reduced also in the years after a food aid shock (as seen in Figure 5), bringing the estimated cumulative effect after 10 years to –1.0986 kg per capita.[22]

8.3 The responsiveness of food aid to changes in production levels in recipient countries

The VAR analysis also makes it possible to derive a bit of interesting information about donors' responsiveness to changes in recipients' food production levels. Are food aid donations at all responsive to changes in local food production levels? If so, do they compensate for adverse changes in local output, thus promoting an even supply of food?

Judging from the share of local cereal production in the 10-year forecast error variance in aggregate cereal food aid of 0.73 percent, the responsiveness is quite limited. The Granger causality test result hints at a delayed reaction (since that test only includes the relevance of lagged values of local production quantities in estimates of current food aid quantities). Both the smallness and the delay in the responses of food aid donations can be seen in the impulse-response diagram in Figure 6. The responses to a 1 kg per capita positive shock to local production in the average recipient country are indeed very small (not reaching 0.02 kg per capita in either direction in any year and evening out completely in the

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[22] The slight discrepancy between the coefficient estimate reported in Table 4 and the observation for year 0 in the figure is explained by the fact that the latter has been calculated using the assumptions on absences of some contemporaneous correlations specified in Chapter 7.

long term as seen in the size of the cumulative effect). It is also the case that the positive production shock generates an increase in food aid and the expected decrease does not take place until the two following years.

Figure 6. Consequences for cereal food aid receipts of a 1 kg per capita increase in recipient country cereal production in the year 0
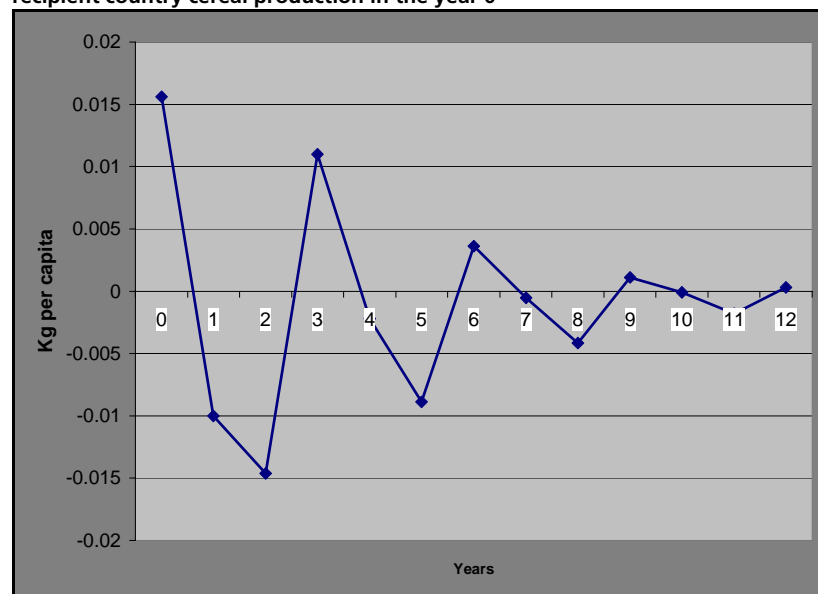
8.4   Summary and discussion of the results for aggregate cereal food aid

While keeping in mind that these are merely estimates and concern averages for the group of recipients as a whole, the results of the analysis of aggregate cereal food aid to the entire group of 76 countries that have been frequent recipients of such aid (and for which production and trade data have also been available) during the 1988-2001 period can be summarized as follows:

- Compared to other factors influencing future cereal production levels, cereal food aid seems to play a very limited role, but there is

nevertheless a statistically significant relationship between production in the average recipient country during one year and receipts of aid in previous years. A little extra aid in one year would generate somewhat *higher* local production volumes during a few years thereafter. This result contradicts the common claim that food aid generally has an adverse impact on food production in recipient countries.

- The impact on commercial imports is considerably larger. It is negative and is mainly concentrated to the year in which the aid reaches the recipient country. This can be interpreted as a consequence of less than full additionality. An extra kg of cereal food aid increases cereal consumption by about half a kg and reduces commercial cereal imports by half a kg. No signs of long-term increases in imports can be traced either, so the results point to violations of the Usual Marketing Arrangements. Another implication is that from the perspective of the average donor, cereal food aid is a poor investment in future cereal exports, as previously noted for the case of US program aid in a study by Barrett et al. (1999).

- Donations of food aid do, to a very limited extent, seem to adapt to changes in local production in recipient countries. However, the donor reactions seem systematically late and a reduction in local production typically does not yield an aid response until one or two years thereafter. That is in line with the results obtained by Gupta et al. (2003) in an examination of the consumption smoothing properties of food aid, the conclusion from which was that for most recipient countries it is not counter-cyclical.

9 The consequences of EU and US food aid

The previous chapter was devoted to the links that can be traced between aid, local production and commercial imports for the largest possible selection of recipient countries, without distinctions between donors or the types of aid delivered. This has left an impression of the general picture but it is obvious that it can be made up of short- as well as long-term effects in different

directions depending on donor behavior and aid types. The remainder of this study will therefore be devoted to a search for additional nuance in those respects. The pattern of delayed and hence pro-cyclical but very small donor reactions to changes in recipient output levels found in Chapter 8 are common to both main donors and will therefore not be dealt with in this chapter. Full attention will instead be devoted to the possible differences in the consequences of food aid from the US and the EU, considering their somewhat different objectives (outlined in Chapter 4) and their opposing positions on this issue in the global trade negotiations (see Chapter 3).

After a review of reasons why differences in effects between food aid flows from different donors may exist, the attention will be directed to estimates of how EU and US aid affects local food production in and commercial food imports by the recipient countries. In the next step, the possibility that the effects of food aid on recipients in sub-Saharan Africa differ from those in the larger country selection is given some consideration. Then follows an attempt at evaluating whether the new official EU food aid policies beginning 1996 have made any difference for the effects on recipient countries. Considering the separation of program aid from other aid forms that have been common in earlier studies and the fact that drastic reductions in the use of this type of aid has been the most obvious change in EU food aid priorities since 1996, the results of separate analyses for the different food aid types are then presented – still with an eye toward differences by donor.

9.1   Why the effects of EU and US food aid may differ

One obvious reason for differences between the estimated effects of food aid according to donor would be the much greater propensity of the EU to purchase the food given as aid in the recipient countries or regions, but the present analysis will only

be concerned with donor-sourced aid. Another reason may be the distribution of aid between recipient countries given that food demand and supply patterns are likely to differ. There will be a role for that factor in the empirical analysis, but it will be limited by one of the requirements for sample inclusion (noted in Chapter 7), namely that a country has received food aid from both the EU and the US during most of the years covered by the available time series. Remaining reasons of potential importance are

(i) the timing of donations, which is a key determinant of the extent of additionality;

(ii) the commodity content of donations, determining substitutability for local and imported food items;

(iii) the contents of programs and projects in which the aid is used, since that may be important for targeting (and hence the degree of additionality) as well as the impact on the future productivity of recipient agriculture, share of donations that are monetized (sold in local markets upon delivery); and

(iv) any conditions attached to the aid, such as restrictions on recipient economic policies, food imports and re-exports.

The ground is now prepared for an examination of the estimates where, instead of aggregate food aid receipts, the receipts of food aid from the EU and the US have been the aid variables under consideration. Table 5, which is set up just like Table 4, summarizes the key results.[23]

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[23] The estimates of effects of local production and commercial imports on food aid flows, of which at least the former are significant in Granger causality terms, are not presented for space reasons but are of course available from the author upon request.

Table 5. Summary of estimation results for cereal food aid from the EU and the US

	Full sample		SSA		Full pre-1996		Full post-1996		Program aid recipients		Project aid	
Number of recipient countries	33		22		33		33		16		33	
Years covered	1988-2001		1988-2001		1988-1995		1996-2001		1988-2001		1988-2001	
Number of lags used	2		5		2		2		5		5	
	P	*M*	*P*	*M*	*P*	*M*	*P*	*M*	*P*	*M*	*P*	*M*
EU cereal food aid (E)												
Influence (Granger causality test p-value) on future levels of ...	0.4101		0.0116		0.4652		0.1787		0.0967		0.0004	
Share of 10-year forecast error variance in ...	0.08%	1.45%	1.31%		0.14%	1.48%	0.05%		1.42%	7.80%	1.97%	
Cumulative effect of a 1 kg per capita shock after 10 years		1.905	-0.106			1.610			-2.254	6.093	10.300	
Contemporaneous influence in separate M-regression		0.6220		-0.1181		1.2493		-0.2730		2.5434		-2.5291
... associated p-value (two-sided)		0.0587		0.8174		0.0138		0.7979		0.0167		0.2385
US cereal food aid (U)												
Influence (Granger causality test p-value) on future levels of ...	0.4697		0.0393		0.0338		0.5872		0.0850		0.0001	
Share of 10-year forecast error variance in ...	0.07%	3.99%	1.82%	2.86%	0.82%	5.40%	0.04%	13.04%	0.70%	18.74%	1.37%	
Cumulative effect of a 1 kg per capita shock after 10 years		-1.141	0.692	-0.518	-0.240	-0.643		-0.500	0.233	-1.688	0.734	
Contemporaneous influence in separate M-regression		-0.6118		-0.4030		-0.8677		-0.8897		-1.6742		-0.6162
... associated p-value (two-sided)		0.0000		0.0327		0.0000		0.0033		0.0000		0.1094

9.2 Results for the main sample of 33 countries that have frequently received cereal food aid from both the EU and the US

The main sample estimates provide no support for the fears that food aid receipts (from either the US or the EU) threaten local food production. The share of EU aid in the 10-year forecast error variance for local food production is minuscule at 0.08% and the same can be said for US aid at 0.07%. Neither do the Granger causality tests allow conclusions to the effect that food aid receipts influence local production levels.[24]

Figure 7. Commercial cereal imports by the average recipient country after a temporary increase of 1 kg per capita in cereal food aid from the EU and the US, in the year 0

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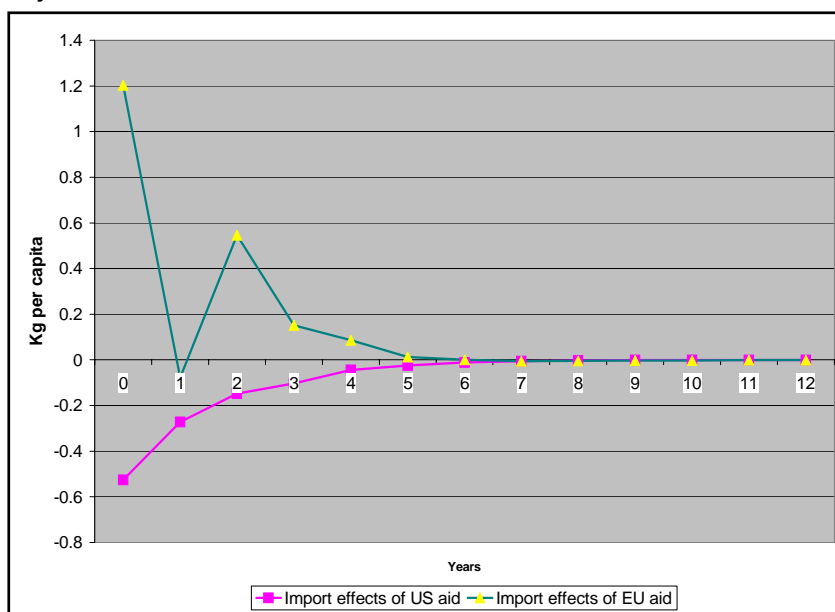
[24] A general rule for the discussion of production effects is that they are considered insignificant when the p-value of the test for Granger causality exceeds 0.1 and the share in the forecast error variance is below 1 percent (those properties coincide in all cases except US program aid). In those cases, other impulse-response related kinds of output (impulse-response diagrams and cumulative effects of shocks) are not reported.

Considering the absence of significant influences of EU (and US) aid on local production in the main sample estimate (with all aid types bunched together), one would expect to find effects on commercial imports. That is indeed the case for both EU and US food aid in the estimates, as can be seen from the p-values associated with the coefficients for contemporaneous influences in Table 5.[25] However, while the (in size terms dominant) US aid seems to cause recipient countries to cut back on imports as expected, receipts of cereal food aid from the EU do instead seem to lead to an *increase* in commercial cereal imports according to the pattern shown in Figure 7.

9.3 Do the effects of food aid look different in sub-Saharan Africa?

The main sample does, as seen in Table 5, include recipient countries with vast differences in potentially important characteristics. There is, however, one geographically defined sub-sample of sufficient size – sub-Saharan Africa. For this set of 22 countries, EU (as well as US) aid does seem to influence local production, as indicated by low p-values for Granger causality (particularly in the case of EU aid) and non-negligible shares of the forecast error variance. Figure 8 shows the result of impulse-response analyses where the estimated VAR system has been subjected to temporary food aid shocks. A temporary increase in EU aid of 1 kg per capita is estimated to make local production quantities in the average recipient country in sub-Saharan Africa initially (for two years) fall below what they would otherwise have been, but then come out higher in later years. A summation of those effects indicates a close to neutral long-term effect of EU aid (an estimated cumulative effect on local cereal production of -

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[25] A general rule for the discussion of commercial import effects is that they are considered insignificant when the (two-sided) p-value of the coefficient for contemporaneous effect of a food aid flow is above 10 percent. In those cases, other impulse-response related kinds of output (impulse-response diagrams and cumulative effects of shocks) are not reported.

0.106 kg per capita over 10 years, as seen in the table). Judging from these, admittedly highly uncertain, estimates, a country in sub-Saharan Africa that is concerned with the long-term development of its own cereal production would be better off receiving cereal food aid from the US (for which a summation of local production effects during the first ten years after the shock yields a positive value of about 0.692 kg per capita).

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Figure 8. Local cereal production in the average recipient country in sub-Saharan Africa after a temporary increase of 1 kg per capita in cereal food aid from the EU and the US, in the year 0
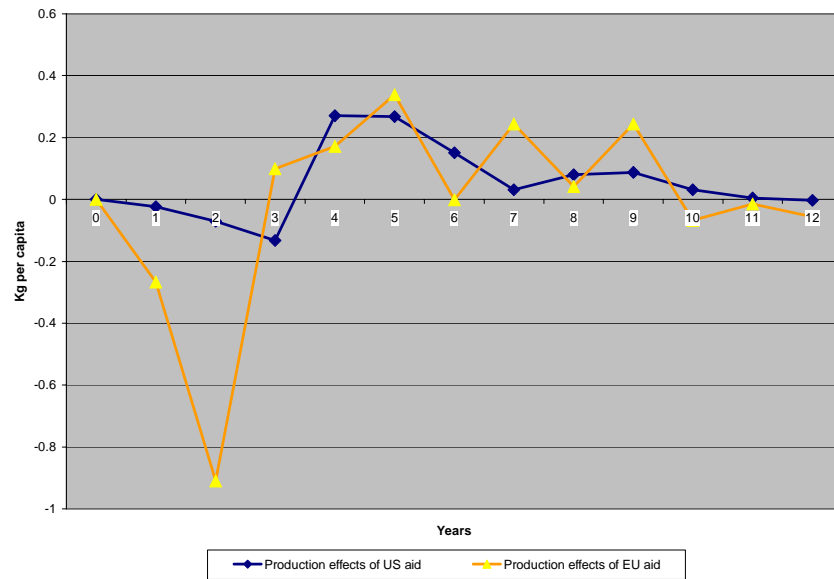
When the sample is confined to recipient countries in sub-Saharan Africa, the import-stimulating tendencies of EU aid do not seem to be present and the trade effects of US aid also seem less pronounced.

9.4 Did anything happen after 1996?

Next, the question of whether the new norms for EU food aid inscribed in Council Regulation No 1292/96 have left any traces in terms of effects on local production, is dealt with by repeating the analysis for the periods 1988-1995 and 1996-2001 using the full sample of (33) recipient countries.[26] As seen in Table 5, the lack of significant production effects is as obvious in the individual sub-periods as in the full period estimate.

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[26] Unfortunately, a shortage of degrees of freedom makes it impossible to repeat this exercise for the sub-Saharan African sample or the sample of frequent program aid recipients used below.

The effects of EU aid on commercial imports do seem to differ between the pre- and post-1996 periods, however. The significant positive short-term effect of EU aid on commercial imports in the early period is not seen in the post-1996 sample, whereas the effects of US aid look stable across periods.

9.5   Effects of different types of food aid

Since it may be argued that the different food aid types do not have the same objectives and therefore are likely to differ in terms of country distribution, timing and targeting, the consequences of each type have been subjected to separate estimations. The most controversial type, program aid, is concentrated to relatively few countries and in some instances to just a few years. Therefore, in order to make the necessary estimation procedures work and obtain meaningful results, the sample has been confined to the 16 countries that received program food aid (restricted to cereals as usual) from the EU or the US for at least 8 of the 14 years for which data are available (1988-2001). For the other types of food aid, which are delivered to a larger set of countries, the regular sample of 33 countries has been used to obtain the estimates reported in Table 5. Direct comparisons between food aid types therefore require considerable caution.[27]

Emergency aid The results for emergency food aid include no instances of Granger causality or significant contemporaneous effects on either local production or commercial imports, and have therefore been left out of the table for space reasons. Those results are only noteworthy in the sense that they do not contradict the position that emergency food aid (which is usually

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[27] The use of lags and error term covariances in a relatively small sample with short time series, in practice limits any structural VAR model estimations of this kind to at most four endogenous variables. That makes it necessary to consider one food aid type variable at a time as endogenous variables if both EU and US aid are to be included in the same system. In order to reduce estimation biases due to omitted influences from other types of aid on the system in question, lagged receipts of the other types of food aid have instead been included as exogenous variables in the individual regressions. In the separate import regressions, contemporaneous receipts of the other types of food aid have also been included as exogenous variables.

administered by the WFP), through well targeted and timely deliveries, is associated with a high degree of additionality.

Program aid While the 1.42 percent share in the forecast error variance attributed to EU program aid is not entirely negligible, the results of the Granger causality test point to a highly uncertain link between program aid receipts from the EU in past years and current local production. The impulse-response analysis points to a negative long-term effect of EU program aid on local production (a cumulative effect of –2.254 kg per capita over ten years), while the heavily criticized US program aid, at least from the European end, seems to have a more limited impact on local production.

The most dramatic import effects of food aid are seen in the estimates focusing on program aid. Of the overall forecast error variance, 7.80 percent can be attributed to EU program aid (and more than twice that can be attributed to US program aid). While the direction of influence is the expected (negative) one for program aid from the US, the EU aid, curiously enough, appears to be import-promoting. With a coefficient of contemporaneous influence of EU program aid amounting to 2.7768, this effect is a magnified version of the one appearing in the estimate for the main sample of countries (pre-1996) with no discrimination between types of food aid.

Project aid The estimates for project aid are quite different, pointing to significant positive long-term effects emanating from inflows of EU aid of this type. The impulse-response diagram in Figure 9 shows how a temporary additional inflow of EU project aid, according to the (of course quite inexact) estimates, would yield much higher local production levels in the recipient country

in the years that follow (yielding a cumulative effect over 10 years of as much as 10.3 kg in additional local production per capita).[28]

Figure 9. Local cereal production in the average recipient country after a temporary increase of 1 kg per capita in cereal food aid from the EU and the US, in the year 0
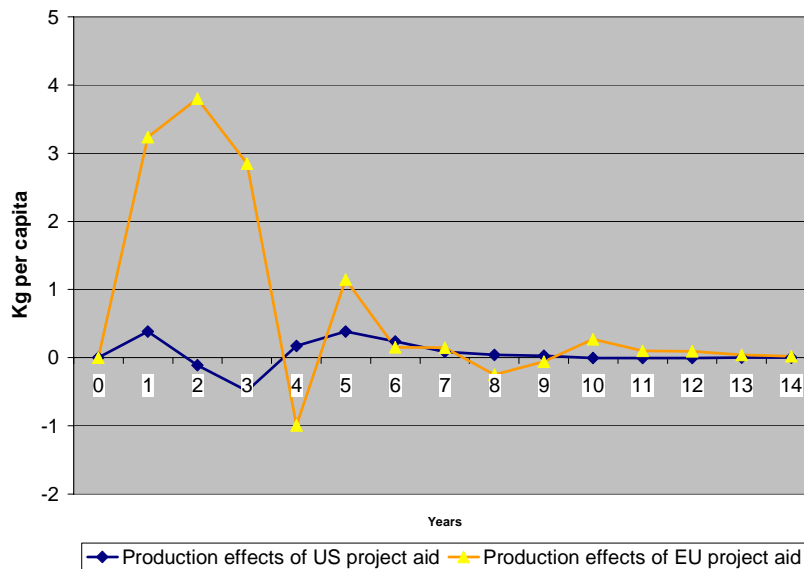
No significant traces on commercial imports are left by either EU or US project food aid, as there are no significant contemporaneous influences to report.

10 Concluding discussion based on the results for EU and US cereal food aid

The just presented econometric analyses have yielded estimates of the net effects of a number of forces at different points in time, but little information of relevance for inferences about the underlying mechanisms. The simple theoretical framework drawn up in Chapter 5 is of some help in efforts to explain the

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[28] In order to control for influences from simultaneous receipts of food aid using locally purchased food, lagged values of total cereal food aid using local purchases have been included as exogenous variables in the individual regressions. Only minimal changes in the values or significance of the other coefficients are registered.

contemporaneous effects of aid receipts on commercial import quantities. As for effects of aid on local production quantities, however, the theoretical predictions are confined to effects on food prices in the year of aid arrival. The basis for the estimates is the assumption that (regardless of accompanying changes in food prices) local food production quantities are unaffected in the year when the aid arrives. Beyond that, the local production response depends on a mix of supply and demand factors (outlined in Chapter 5) pointing in different directions.

One cannot therefore go very far beyond mere speculation when trying to explain the results obtained above. Let us nevertheless conclude with a brief discussion based on comparisons between the results for different samples, and informed by some properties of those samples. Its focus will be on the presence of commercial imports to replace and the relative importance of different types of food aid.

The main full-period estimates point to a rather curious effect of EU food aid on commercial food imports. Instead of some import replacement, as the simple theoretical framework would have us believe and as seen in the case of US food aid, EU food aid seems to be accompanied by increasing commercial food imports by its recipients. Effective targeting and timing of the EU aid, yielding a high degree of additionality in food demand, could explain an absence of import reductions, but not increases in imports, and what follows are some possible alternative reasons for the paradoxical result at hand:

- Despite the ban on re-exports that is normally included among the conditions attached to food aid, it is possible that the cereals contained in EU aid to some extent are exported in return for cereals of other kinds and qualities that better match domestic demand patterns.

- The effect would also arise if the EU were to request that recipient governments match their aid receipts with commercial imports – a kind of export subsidization that, if in existence, would violate the Food Aid Convention.

- One cannot rule out, however, that there are exogenous factors which make both EU aid and commercial imports rise simultaneously. A decline in world market prices of food may raise import quantities demanded, while making food aid a more attractive surplus disposal mechanism for the EU. Another possibility is that the EU often gives food aid in conjunction with other forms of aid, and that the latter, together with the additional food demand created by the food aid itself, add more to the demand for food than the food provided as aid.

For both major donors, the effects of their aid on commercial imports come out as more limited, and the effects on local production as somewhat more significant when the analysis is confined to recipient countries located in sub-Saharan Africa. One possible explanation is that at least some of those countries (or regions within them) have occasionally been without access to cereal imports at competitive cost. A weak indication in support of that hypothesis is that the average ratio between cereal imports and local cereal production among the observations in the sample of sub-Saharan African countries is 0.70, while it is 1.20 in the full country sample.

A complementary explanation is that the food items included in aid receipts have not been as close substitutes for the contents of commercial imports in sub-Saharan Africa as in the rest of the recipient countries. When the adaptation to an inflow of food aid is not entirely through reduced imports, at the same time as the targeting and timing are not good enough to ensure full additionality, farm incomes may fall (see the discussion on net

income effects in Chapter 5) and, by way of effects on expectations and investment capacity, cause reductions in future local food production. That just may be the effect seen in the first couple of years upon receipts of (primarily EU) food aid in Figure 8.

When looking separately at the effects of different aid types, the stimulus to local production that EU project aid seems to provide, and the rise in commercial imports accompanying EU program aid, both warrant some further discussion.

One cannot, of course, exclude the possibility that the inflows of EU project aid have coincided with other efforts to stimulate future local production, which have not been captured by the variables included in the estimates. However, one such explanation that is close at hand – that locally purchased food aid has accompanied donor-sourced EU project aid – has been considered in the estimates by means of inclusion as an exogenous variable. An alternative, yet closely related, explanation is that technical and financial assistance, provided as part of the EU program for food security, has been part of the same larger aid package to recipient countries and has stimulated food production. Last but not least, a possibility is that EU project aid has indeed stimulated local production as intended. The resources freed by the aid may to some extent have been invested in ways conducive to local production, but it may also be the case that the agricultural production promotion elements of the projects themselves (including improvements in transport infrastructure and irrigation) have met with some success.

Reasons for the notable trade effects of EU program aid may (as noted above) be sought in re-exports, coinciding aid flows of other kinds that raise food demand, trade-related conditions attached to the aid, or possibly in a propensity to deliver this kind of aid at times when commercial import prices are low enough to

attract additional imports. The re-export scenario is particularly relevant to program aid, since it is explicitly designed to be sold by the recipient government rather than distributed in kind. Imperfect substitutability between items included in the aid and commercial imports may leave the recipient government with an incentive to re-sell the aid abroad. The case for cyclicality (more aid when world market prices are low) is also particularly strong in the case of program aid, since it is not tied to emergency situations or long-term development projects.

In view of the significant, and somewhat odd, import-promoting effects that seem to arise most strongly with EU program aid, it is interesting to examine whether it is plausible that the relative importance of this type of food aid can account for the variation in estimated import effects of EU food aid across the different samples and time periods considered. While program aid amounts to 42 percent of total donor-sourced cereal aid from the EU in the full sample during the full period, it only amounts to 30 percent in the sample of countries in sub-Saharan Africa, which may help explain the lack of positive import effects in the latter sample. An even larger difference in the relative importance of program aid in EU donations can be seen in a comparison between the pre- and post-1996 periods. The most important change, at least in quantitative terms, that took place beginning in 1996, was the reduction in program aid. In the pre-1996 period, for which the estimates include a significant positive influence of aggregate EU cereal aid on commercial cereal imports by recipient countries, 51 percent of that EU aid was program aid. In the period beginning in 1996, for which no positive influence of EU cereal aid is detected, the program aid share was a mere 21 percent. Hence, the relative importance of program aid may be a key to the trade consequences of EU food aid.

Since no similar pattern arises with US program aid, a recommendation for further research is to look for unique characteristics and circumstances of EU program aid. Those may, as detailed above, include possibilities for re-export, trade-related aid conditions, and coincidence with other aid efforts that stimulate food demand.

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