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Food Aid Effectiveness: “It’s The Targeting, Stupid!”

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In the 1992 United States presidential campaign, Bill Clinton and his staff regularly invoked the forceful reminder "It's the economy, stupid!" in order to maintain a tight focus on the core issue that would ultimately decide their electoral success or failure. This initially seemed reductionist to many observers, because a presidential campaign is a complex affair, with myriad issues and pressures confronting the candidate every day. But Clinton and his staff were ultimately proved correct. Most of the important issues that could ignite or derail their campaign did boil down to the economy, and their famous, ruthless focus proved highly successful.

This paper advances the argument that similar focus on issues of targeting are essential if food aid is to succeed in its core mission to contribute to human development by providing temporary relief of food insecurity among poor peoples in the world. The issue of "targeting" concerns the who, the when, the what and the how questions surrounding transfers: is aid reaching people who need it (and not flowing to people who do not need it),¹ when they need it, in appropriate form, and through effective modalities? There has been considerable research in recent years on targeting transfers generally, much of it motivated by the search for effective targeting mechanisms that do not require costly administrative screening.²

Targeting is of special importance in food aid for two basic reasons. First, food is a critical resource. People who go without enough and appropriate food for even a relatively short period of time can suffer irreversible health effects of undernutrition and related diseases and injuries. Therefore, reaching beneficiaries who would otherwise suffer undernutrition, in a timely manner, and in an appropriate form is especially important for the effectiveness of food transfers. And if done right, food transfers can be fundamental to effective development strategy, by safeguarding the most valuable asset of the poor: the human capital embodied in their health and education.

Second, the key alleged problems surrounding food aid – displaced international trade, depressed producer prices in recipient countries, labor supply disincentives, delivery delays, misuse by intermediaries,

¹ Although I couch this discussion in terms of "needs", those needs are derivative from the basic human right to food being unmet by individuals' own capacity to self-provision. This right obliges a response by others and is the origin of the humanitarian imperative for food aid as intrinsically important, as distinct from the economic logic of food aid as instrumentally important because of its role in building or maintaining productive human capital.

diversion to resale or feeding livestock or alcohol brewing, dependency, inattention to beneficiaries' micronutrient needs, etc. – all revolve ultimately around questions of targeting. If the donor community could improve the targeting of food aid, it could improve the effectiveness of food aid in accomplishing its primary humanitarian and development aim – the maintenance of valuable human capital – and reduce many of the errors that sometimes make food aid controversial, ineffective, or both.

A limited amount of descriptive research has explored *ex post* whether food aid has reached intended beneficiaries, and has found considerable targeting errors of inclusion (providing aid to the non-needy) and exclusion (failure to reach the needy) at both macro and micro levels. There have also been considerable efforts at improving *ex ante* food aid targeting through the development and refinement of early warning systems, vulnerability mapping, and similar tools, so that aid might reach needy people in a more reliable and timely fashion.

This paper offers a brief interpretive review of this evidence. Section I summarizes the empirical evidence on food aid targeting at both macro- and micro- levels, emphasizing the inherent tradeoff between errors of exclusion (missing intended beneficiaries) and errors of inclusion (providing transfers to the non-needy). Section II then discusses the consequences of targeting errors, again looking at both errors of exclusion and inclusion and at micro- as well as macro- levels. Section III reviews some of the options available for improving targeting. Section IV concludes.

I. The Empirical Record on Food Aid Targeting

Were food aid to flow exclusively to those who would otherwise go hungry, and only with timing and in amounts and forms such that those needy recipients did not correspondingly reduce their own production or commercial purchase of food, then food aid would be wholly additional. The term “additionality” is thus central to discussions of food aid efficacy, for one key objective of food aid is to add as much as possible to the food consumption of the poor. This is entirely consistent with the “usual marketing requirements”

² See Barrett (2002a) for a review of targeting in the context of food assistance programs and Besley and Kanbur (1988) for an excellent discussion of targeting questions more generally.

(UMR) provision under the Food Aid Convention (FAC), although the UMR exists primarily to defend commercial trade markets.

The FAC definition of UMRs nonetheless ignores one of the most basic laws of consumer behavior, Engel's law, which states that food is a normal good characterized by an income elasticity of demand less than one. So each dollar of added income received, whether by an individual or a collection of individuals (e.g., a recipient country) almost inevitably generates less than a dollar's additional consumption of food. The empirical evidence suggests that the marginal propensity to consume food is somewhat higher when the additional income is received in the form of food, rather than as cash, but Engel's Law holds nonetheless (Barrett 2002a). The increase in local food supply from food aid shipments therefore necessarily exceeds the induced increase in food demand, resulting in less than one-for-one additionality and inevitably some contemporaneous displacement of commercial food purchases and less increase in nutrient intake than in local nutrient supply. The magnitude of the displacement turns largely on the efficacy of food aid distribution in targeting the poor. Because income elasticities of demand fall sharply as one approaches and moves beyond the poverty line (Strauss and Thomas 1995, Deaton 1997, Barrett 2002a), additionality is highest when food aid reaches almost exclusively intended poor beneficiaries. Leakage to unintended recipients of better means necessarily increases the contemporary market displacement effects of food aid.

An ideally targeted program would have neither errors of exclusion – members of the target subpopulation left out of the program, sometimes referred to as “undercoverage” – nor errors of inclusion – individuals not in the target subpopulation who benefit nonetheless, sometimes referred to as “leakage”. Errors of exclusion entail direct humanitarian costs as people suffer unnecessarily. Errors of inclusion cause waste of scarce resources, often leading to indirect humanitarian costs because transfers to the non-needy crowd out inclusion of the truly needy in the face of tight budgets, and they can distort behaviors, especially by disrupting market demand.

All real world transfer programs suffer targeting errors for the simple reasons that (i) information is costly to collect and process it is impossible to have perfect information about all people at all times (i.e., to know who is and is not needy) and (ii) actual allocations are made for multiple reasons, only one of which is

objective need. Especially where means-based screening of prospective beneficiaries proves administratively infeasible – as is true in most low-income countries – then intra-community heterogeneity and factor market failures tend to generate significant errors of inclusion even in self-targeting program designs (Webb and Reardon 1992, Clay et al. 1999, Barrett and Clay 2001, Jayne et al. 2001, Barrett et al. forthcoming, Jayne et al. forthcoming). Food aid targeting is arguably made especially difficult by the facts that (a) food insecurity is inherently unobservable and thus agencies must use imperfect indicators to try to distinguish between those who need food assistance and those who do not, (b) agricultural prices and surpluses in donor countries significantly affect food aid flows yet are themselves heavily affected by massive domestic farm support programs driven by local political considerations, and (c) food moves relatively slowly and expensively (as compared to finance, for example), creating logistical challenges that can bring on targeting errors in space and time.

Because a program without targeting errors is practically infeasible, there exists a difficult tradeoff between wasteful and distortionary errors of inclusion and potentially damaging errors of exclusion. There's no clearly superior direction in which to err. The difficulty of this tradeoff makes minimization of targeting errors essential. So what does the empirical record on food aid targeting look like?

(i) The evidence on food aid targeting: the macro level

As one would expect on the basis of Engel's Law, the empirical evidence suggests overwhelmingly that food aid partly substitutes for commercial food imports contemporaneously, thereby providing a net foreign exchange transfer, generally on the order of 40-70% of the value of the food aid delivered (Abbott and McCarthy 1982, von Braun and Huddleston 1988, Fitzpatrick and Storey 1989, Nathan Associates 1990, Saran and Konandreas 1991, Clay et al. 1996, Barrett et al. 1999). Put differently, food aid seems to be, on average, only 30-60 percent additional. So the macroeconomic marginal propensity to consume food out of food aid transfers is roughly in line with the microeconomic evidence on consumer demand for food (Strauss and Thomas 1995). One conclusion that comes through in the case study evidence (e.g., Isenman and Singer 1977, Stevens 1979, Farzin 1991, Shaw and Clay 1992) is that the additionality of food aid depends

to a considerable degree on the design and implementation of the program, variables that are difficult to quantify and capture in more formal, quantitative analyses.

The extent of food aid's additionality depends fundamentally on how well targeted it is. Quite a few studies have found at best weak relationships between various indicators of nonconcessional food availability in recipient countries and the food aid volumes they receive (Ruttan 1993, Ruttan 1995, Ball and Johnson 1996, Clay et al. 1996, Gabbert and Weikard 2000, Barrett 2001, Dirven 2001, Barrett and Heisey forthcoming). One reason is that food aid is multiply targeted, first to a recipient country with a particular bundle of commodities, and then to a subpopulation within the recipient country through a particular form of food assistance (Barrett 2002a). Targeting errors occur at both levels.

Food aid allocations at the first, macro level have traditionally served primarily domestic agricultural interests and, episodically, foreign policy objectives, especially in the United States, consistently the world's largest food donor over the past half century (Ruttan 1993, Ball and Johnson 1996, Clay et al. 1996, Dirven 2001, Barrett 2002a). As a consequence, up until the early 1990s, most flows were program food aid provided on a government-to-government basis as foreign aid in kind without any particular linkage, even rhetorically, to relieving shortfalls in food availability. Program food aid has shrunk rapidly for a wide variety of reasons, and humanitarian or emergency food aid has now become the principal type of food aid flow globally and from the United States. Curiously, however, statistical analysis finds that PL480 humanitarian food aid performs no better than PL480 program and project food aid, nor has there been any improvement over time, in stabilizing food availability in recipient economies despite the shifting of focus to humanitarian assistance (Barrett 2001). Moreover, once in the recipient economy, food aid disproportionately facilitates explicit or implicit consumer food subsidies (Pinstrup-Andersen 1988, Hoffman et al. 1994), few of which are well-targeted.

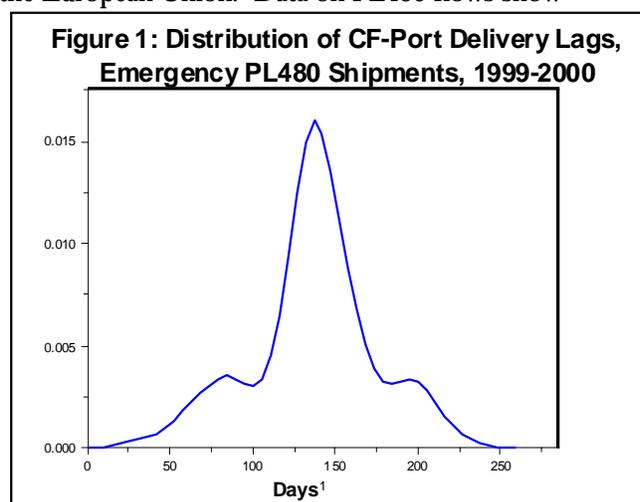
The empirical evidence shows that food aid allocation is modestly progressive – meaning that more goes to those most in need – at the macro level. Food aid today is mainly directed toward low-income food deficit countries and recipients' average food aid inflows modestly increase as their per capita nonconcessional supplies from domestic production and commercial imports fall (Barrett 2001, Merbis and

Nubé 2001, Barrett and Heisey forthcoming, Gupta et al. 2002). But the relationship between need, as reflected in various food and nutrition variables, and food aid inflows is weak (Clay et al. 1996, Merbis and Nubé 2001). This progressivity is not necessarily fine tuned by year and country, sometimes just by region, which would be consistent with concerted response to cross-border movement of displaced persons, although these data cannot establish whether this is indeed the appropriate explanation for the observed statistical relationship (Barrett and Heisey forthcoming).

An oft-overlooked feature of targeting relates to timing. In theory, food aid could be used to stabilize prices and food availability if donors adjust food aid flows in response to (positive and negative) shocks to food output, world market prices, and foreign exchange availability in recipient countries. In this way, food aid could provide a countercyclical transfer so as to help reduce food insecurity. If food aid is meant to respond to short-term, adverse shocks in recipient nonconcessional food availability, donors need to identify emerging needs early and deliver the food quickly. In fact, bilateral food aid tends to flow procyclically (Barrett 1998, 2001, Dirven 2001), for multiple reasons.

First, the complex logistics of procuring and transporting food causes much food aid – especially program food aid – to suffer extraordinarily long lags between the time of commitment and delivery. Clay et al. (1996) report lags of up to two years in flows from the European Union. Data on PL480 flows show similarly long lags. Even emergency shipments faced a median lag of almost five months in 1999-2000 between the call forward date (the date of formal procurement, which follows the initiation of a request, often by months) and the date of delivery to port (which precedes delivery to individual recipients by weeks or months), as shown in the nonparametric density plot in Figure 1. These lags

arise due to inevitable bureaucratic delays compounded by heavy reliance on domestic procurement of both food and sea freight shipping services. Continued operational improvements and advances in early warning



systems might improve the timeliness of food aid deliveries. Ultimately, however, these situations are subject to political determinants that can disrupt deliveries to even long-anticipated emergencies in places where food aid distribution operations have become reasonably efficient through considerable practice, as the Ethiopia crisis of 2000 clearly showed.

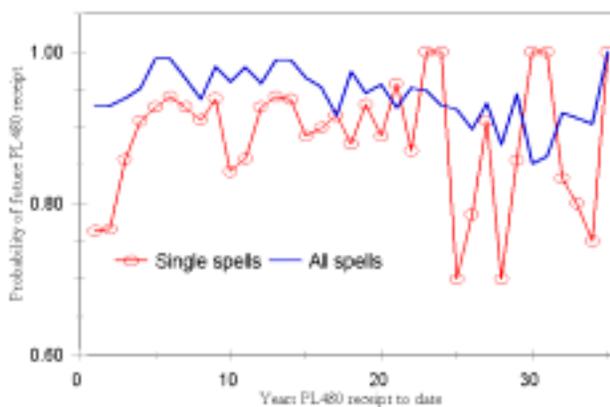
Second, because donors budget food aid on a monetary basis, food aid flow volumes generally covary negatively with international market prices and donor country food inventories (von Braun and Huddleston 1988, Taylor and Byerlee 1991, Clay et al. 1996, Merbis and Nubé 2001).³ As a consequence, food aid volumes are far more volatile than are food production or trade volumes (Barrett 2002a). Available food aid volumes tend to shrink precisely when importing countries most need concessional food flows — when food prices rise — causing both food import volumes and food import unit costs to increase. Program food aid disbursement patterns may thereby destabilize food availability and prices in recipient nations.

Third, inertia effects food aid flows. This is manifest in consistent findings that last year's food aid receipt volume proves the single best predictor of this year's food aid flows (Barrett 1998, Barrett et al. 1999, Diven 2001, Barrett and Heisey forthcoming). Administrative inertia and chronic need lead to considerable momentum in food aid flows, as shown in Figure 2, which shows that the probability of future PL480 receipt — in either one unbroken spell or in a sequence

of spells subject to interruption — is at least 70% for a country that has already received PL480, no matter the number of years the country has already received food aid. The WFP's extensive use of supplemental resources raised through emergency appeals seems to reduce inter-annual inertia in food

aid shipments to any given country relative to analogous parameters found with respect to PL480 (Barrett and

Figure 2: Persistence in PL480 flows



³ Because the EU food aid budget is fixed in volume terms rather than expenditure terms, there is no discernible correlation between world food prices and EU food aid flow volumes (Clay et al. 1996).

Heisey forthcoming). Inertia commonly leads to targeting errors, however. Barrett and Heisey (forthcoming) find strong evidence of region-specific inertia in WFP food distribution, wherein aid flows to regions based on generalized need without regard to year or country-specific food availability. Clay et al. (1999) and Jayne et al. (2002) similarly find region-specific inertia in food aid distribution within Ethiopia.

As a consequence of these various factors, bilateral food aid generally fails to accomplish the objective of stabilizing food availability, and thereby food markets, in recipient countries. Multilateral food aid through the World Food Programme (WFP) is too small in volume to have an appreciable stabilizing effect although, in contrast to PL480 flows, WFP food aid does have a statistically significant stabilizing effect on food availability in recipient countries (Barrett and Heisey forthcoming). Overall, the empirical evidence suggests that the targeting of food aid has highly imperfect at the macro level of recipient countries.

(ii) The evidence on food aid targeting: the micro level

It should be no surprise that evidence at the micro level yields similar findings. In the most detailed recent studies, Sharp (1997), Clay et al. (1999) and Jayne et al. (2002), all studying Ethiopia, found that food aid flows as frequently to the richest, most food secure districts and households as it does to the poorest, most food insecure ones. Surveying a range of studies from rural Africa, von Braun et al. (1998) similarly find frequent targeting errors at community and household level, although the overall pattern is one of quite imperfectly progressive distribution.

Poor targeting at the micro level seems to arise due to a range of factors. Programs are often placed in regions for reasons other than meeting the needs of intended beneficiaries. This is most commonly the case with programs that attempt to combine relief supplies of food with development investments through, for example, food-for-education schemes and food-for-work projects (Gebremedhin and Swinton 2000, Barrett et al. forthcoming). Administrative targeting based on screening of individual applications for assistance is too costly, time consuming and information-demanding to prove feasible in most regions (Besley and Kanbur 1988).

So-called "indicator" targeting is frequently practiced, distributing to subpopulations readily identifiable by age, gender, or location because in aggregate those cohorts are perceived as worse off than other broad, identifiable groups. Like targeting based on administrative screening of applicants' asset and income status, this method restricts participation administratively. But the indicators used make enacting the restriction (e.g., to feed only children below a certain age at a center, to deliver food just to a region that has suffered severe drought) relatively simple. A major concern, however, is that indicator targeting often entails substantial leakage to the non-needy within the targeted subpopulation, thereby weakening the safety net and pitting the transfer system against the commercial production and distribution system that otherwise serves consumers of sufficient means. Furthermore, if the indicator is not, in fact, related to food insecurity, then the indicators employed may create significant targeting errors. For example, Clay et al. (1999) found that many targeting errors in rural Ethiopia were associated with the use of gender and age indicators for targeting, resulting in a disproportionate number of female and aged heads of households receiving food aid even though their food needs did not differ significantly from those of the general population.

The most popular targeting methods are now "self-targeting" and "community-based targeting". Self-targeting transfers have no administrative restrictions on participation. In principle, the characteristics of the transfer are designed so that only those within a target beneficiary group self-select into participating, thereby obviating the need for costly administrative screening and minimizing leakage to the non-needy. Common self-targeting features of transfers include the (low) quality of a subsidized foodstuff, queuing to receive transfers, or a work requirement that carries a high opportunity cost of time for the relatively better-off. The cost (benefit) of participation is made an increasing (decreasing) function of one's pre-participation income or wealth, so that only the needy find project participation attractive. Self-targeting methods have been used by governments for a long time (Drèze and Sen 1990) but have become especially prominent in the past decade. The government of Ethiopia, for example, now devotes 80 percent of its food assistance resources to food-for-work (FFW) programs based on the principle of self-targeting (Barrett and Clay forthcoming).

Yet even self-targeting approaches, such as food-for-work (FFW) and provision of only inferior foods typically only eaten by the poorest peoples, suffer significant targeting errors. While much of the empirical evidence supports the claim that FFW – and self-targeting employment schemes more broadly – effectively reaches intended beneficiaries (Ravallion 1991, von Braun 1995), several recent studies have found evidence that many nonpoor participate in FFW schemes, calling into question the efficacy of the self-targeting feature (Clay et al. 1999, Devereux 1999, Jayne et al. 1999, Teklu and Asefa 1999, Gebremedhin and Swinton 2000, Barrett et al. forthcoming). The most common explanation is that the FFW wages were set too high, inducing substitution of money wage work in the local labor market for FFW work, and thereby limiting the additionality of the FFW transfer since it largely substitutes for other income that would have been earned in the project's absence (Ravallion et al. 1993, von Braun 1995, Teklu and Asefa 1999, Jalan and Ravallion 2000). Moreover, when wages are set too high, project managers commonly face excess labor supply and have to ration participation in some fashion. There are good reasons to believe local elites enjoy a higher probability of selection for participation than do outcasts. In addition to there commonly being unintended beneficiaries, many intended recipients get missed by FFW programs. In some cases this is because they get crowded out by participating elites. Other times finite transfer resources limit the geographic reach of the program to a few administratively selected locations (Devereux 1999, Gebremedhin and Swinton 2000). Imperfect or missing local labor, land and finance markets can likewise distort incentives, leading the poor to opt out of FFW programs and the rich to self-select into them (Barrett and Clay forthcoming).

In community-based targeting (CBT), donors wholly delegate responsibility and authority for household- or individual-level targeting to local authorities. The theory is that geographic targeting can quickly, inexpensively and accurately identify needy areas, within which local leaders have better information with which to identify which households or individuals should receive food aid and how much. Letting the community do the targeting exploits local information advantages and has been shown to be effective in, for example, Albania (Alderman forthcoming). In communities where there exist significant cleavages (e.g., along religious, ethnic or caste lines), or in which there live significant numbers of recent immigrants not yet

well assimilated into the community, or whose leadership is corrupt or venal, provision of a significant, discretionary resource can reinforce preexisting social problems. It can equally prove politically difficult to offer anything other than a uniform distribution of food to everyone within a community, as has been the prevailing practice among community-based food aid targeting in much of northern Kenya in recent years (McPeak and Barrett 2001). Either way, CBT can fail in spite of its informational advantages just as self-targeting can fail in spite of its theoretically superior incentive structures.

Targeting concerns not only the identity of recipients or the timing of transfers. The form of transfers matters as well. Historically, food aid has largely come in the form most convenient to the donor rather than most beneficial to recipients. In recent years, a few European donors have made significant shifts in their food aid strategies, away from domestic farm support and export promotion and in favor of attending to recipient nutritional needs at minimum cost. For example, in 1993 Denmark reduced its use of more expensive, processed animal products to less expensive basic vegetable commodities, thereby enabling Danish contributions to the World Food Programme to provide six times more calories and three times more protein than the 1990 Danish food aid basket, and at lower cost (Colding and Pinstrip-Andersen 1999).

Sometimes what the poor most need to insure their food security is not food – or at least not the type of food being provided through local food aid distribution – but rather health care, clothing, shelter or other essential goods and services. For example, Barrett and Clay (forthcoming) estimated aggregate labor supply curves for payment in cash and in food for FFW programs in Ethiopia. As Figure 3 shows, labor supply is everywhere greater when payment is in cash rather than in kind, revealing a nontrivial fungibility premium prospective FFW participants place on the form in which the transfer is received. At below market wage rates of 3 kilograms of white wheat per day, the premium for cash over white wheat (depicted by the line marked with ovals and plotted against the righthand Y-axis) is 65%, decreasing to 12% at highest end of the wage range considered.⁴ The existence of a substantial cash premium suggests significant mistargeting. This observation reinforces Drèze and Sen's (1990) point that the justification for transfers in kind turns on

⁴ Note that this premium estimate ignores the additional costs of procurement, transport, storage, handling and loss of physical commodities, which only magnify the differences between food and cash distributions.

the need to resolve a local supply problem for the foodstuff in question since the transfers become more expensive per recipient to achieve the same desired end of support.

In summary, the empirical record points to considerable targeting errors in food aid distribution at both macro and micro levels. Both errors of exclusion and inclusion are pervasive. The next section explores the consequences of those errors.

II. The Consequences Of Targeting Errors

Most of the highly controversial issues surrounding food aid arise due to targeting errors. These can be divided roughly into five different topics: nutritional and health impacts, coping behaviors, labor market disincentive effects, local market price effects and trade displacement. We address these each in turn.

(i) Nutritional and health impacts

Evidence on the nutritional impacts of food aid is strikingly scarce. The issue is not the absence of good evidence of favorable effects of food assistance programs – e.g., food stamps, food subsidies, public employment schemes, school feeding programs, supplementary feeding programs, etc. – more generally on participant food consumption, health or nutritional status, for there is abundant, clear, evidence that food assistance improves nutritional status (Barrett 2002a). Rather, the issue is the absence of any significant body of empirical evidence that food donated from abroad – food aid – makes an appreciable difference in the nutritional or health status of individual food aid recipients.

This is problematic for those trying to build or sustain political will among donors to respond to periods of particularly acute need – such as the present crises across several different parts of Africa – with significantly increased food supplies. The problem arises from two main sources. First, formidable methodological obstacles make it difficult to establish conclusively the nutritional impact of food aid. It is difficult to measure nutrient intake accurately and, especially, to disentangle the effects of food consumption from other factors that affect nutritional status in purely observational (i.e., non-experimental) data (Clay et al. 1998). Yet, for obvious ethical reasons, one cannot run randomized, controlled trials of feeding among

nutritionally threatened peoples. Second, and of more immediate relevance, the considerable targeting errors that have historically pervaded food aid programs necessarily dampen the latent nutritional effects of well-targeted food aid. Inclusion in the treatment population of many people whose need for, and thus response to, food aid is modest-to-negligible, and tardy delivery of food to needy people after the period when it would have had the greatest effect both dampen the observable nutritional or health response to food aid receipt.

Provision of food aid with appropriate micronutrient content has also been a longstanding concern in the nutrition community. Far more people suffer from micronutrient deficiencies (e.g., of iron, iodine, vitamins A or D) that affect health than from calorie undernutrition (Barrett 2002a). But because food aid has traditionally been driven by donors' desire to dispose of surplus exportable cereals, food aid has generally failed to contribute much to the nutritional variety necessary to ensure a balanced diet providing all the essential vitamins and minerals needed for a healthy, active lifestyle. Concerns about this fostered the rise of blended food products over the past twenty years, especially in direct feeding programs (Clay et al. 1998, Barrett 2002a). Blended foods are expensive products, however, limiting their reach to the billions of people suffering micronutrient deficiencies worldwide. The commodity composition of food aid limits its nutritional and health benefits, reflecting targeting errors in the form of the food transfer provided.

A related targeting error in the form of the transfer (the "what", as distinct from the "who" or "when" of targeting) concerns complementary inputs to the maintenance of good health. Good nutrition is only one crucial input into good health and in many settings is not the limiting factor in improving health performance among vulnerable populations (Strauss and Thomas 1998). Many NGO programs that are based on monetization of food aid recognize this explicitly and turn the resources provided by food aid shipments into medicines, mosquito nets, and other health-related interventions that may matter more, at the margin, to beneficiary populations than a bit more cereals supply. Put differently, food is not always the form of aid required by populations at health or nutritional risk. Aid provided as food in such circumstances is mistargeted in form and can only be converted in costly fashion (see the discussion of monetization below).

Improved targeting in the commodity composition of food aid transfers, as well as in their timing and in the identity of recipients, could significantly improve the difficult-to-measure nutritional impact of food aid.

(ii) Poverty Traps And Relief Traps⁵

Food aid's greatest prospective effect may come through its safety net function. Errors of exclusion in food aid targeting, including deliveries that are too late to help households when they most need it, create holes in the safety net that may force vulnerable individuals to rely on more costly risk management strategies or permit them to fall into poverty traps from which it can be difficult to escape. Poor households' rational risk management strategies can trap them in poverty and vulnerability.

People are not only born into poverty. Sometimes they fall into poverty as a result of adverse shocks associated with disease, crime, drought, floods, or other natural or human emergencies that cost them productive assets, whether directly (e.g., homes washed away or blindness) or indirectly through distress sales. Safety nets, including those based on food aid – play a crucial role in helping people defend current consumption without having to sacrifice future opportunities through the liquidation of productive assets. The timely provision of safety nets is probably as important as their availability. By the time people leave their farms and arrive at a feeding centre, for example, they may have already used up most, if not all, of their productive assets and their health and nutritional status may already be severely degraded.

Shocks are problematic not just in their realization, but also in their mere prospect because people go to great lengths to avoid potentially calamitous downside risk. The key points to take away from the literature on risk preferences⁶ are (i) households that are risk averse in any fashion are willing to pay a premium (in the form of foregone average income) to reduce risk, and (ii) not all households will be equally willing to pay to avoid identical risks. In particular, poorer households will likely be willing to pay more than richer households to avoid a risk of identical magnitude when faced with the same opportunities. They may even be

⁵ This subsection draws heavily on Barrett and Brown (2002) and Barrett and Carter (2002).

⁶ See especially Corbett (1988), Alderman and Paxson (1992), Rosenzweig and Binswanger (1993), Payne and Lipton (1994), Morduch (1995), and Deaton (1997).

willing to pay more to avoid a risk of a given proportion of income (i.e., pay more to avoid lower absolute risk). Targeting errors of exclusion thus increase households' perceived downside risk, encouraging them to take costly risk avoidance strategies themselves – e.g., eschewing higher-return, higher-risk livelihood strategies that might enable them to grow their way out of food insecurity – or forcing them to liquidate precious productive assets when they suffer serious shocks.

These micro-level poverty traps generate macro-level relief traps for donors who must then dedicate an ever-growing share of scarce overseas development assistance resources to humanitarian relief, at the cost of development investments (Barrett and Carter 2002). The WFP, for example, spent only 34 percent of its budget on emergencies in 1990, but this share had increased to 66 percent by 1996, and to 87 percent by 2001. Targeting errors of exclusion contribute directly to the phenomena of poverty traps and relief traps.

(iii) Labor market disincentives

Microeconomic theory is reasonably clear in its suggestion that transfers increase recipients' welfare, generating income effects that reduce labor supply (Kanbur et al. 1994, Barrett 2002a). However, discouraging beneficiaries from working undermines much popular support for food aid and other transfers, as heated debates over the past decade about domestic welfare programs in Europe and North America have vividly demonstrated. The empirical evidence also shows, however, that labor supply becomes more responsive to changes in income as people grow wealthier. The implication is that targeting errors of inclusion magnify the labor market disincentive effects inherent to food aid (or any other form of transfer) by providing benefits to those who are most able and willing to turn transfers into leisure instead of increased food consumption.

There has been relatively little direct empirical research on the effects of food aid on labor supply in practice and the extant evidence is mixed. Jackson (1982) finds significant labor market disincentives from food-for-work projects in various developing countries while Stevens (1979) Maxwell et al. (1994) and von Braun et al. (1998) found little evidence of labor market disincentive effects in various places in sub-Saharan Africa. To date, there has been no explicit research as to what effect targeting errors have had on the labor

market disincentives associated with food aid. But the predictions of theory are clear on this point: targeting errors of inclusion will increase the disincentives to work that worry many people about food aid programs and beneficiaries' alleged dependency on hand outs.

(iv) Market price effects

The labor supply disincentives associated with targeting errors of inclusion are closely related to market price effects that have been a far more prominent concern surrounding food aid, at least since the time of Schultz (1960). When food aid leaks out to unintended beneficiaries, they substitute free food for purchased food and consume much of the savings in the form of leisure. Poor targeting, including that due to mistiming of deliveries, thereby often reveals itself through price adjustments on local food markets as supply increases at a faster rate than demand. For example, large shipments of food aid to Russia in the late 1990s seem to have caused prices to fall well below *ex ante* market prices (*The Economist*, 1998). Tschirley et al. (1996) and Donovan et al. (1999) each found that large shipments of yellow maize to Mozambique caused both white and yellow maize market prices to fall sharply. Tschirley et al. (1996) emphasize in particular that if food aid shipments are unstable and large relative to demand, market prices may become unstable since prices are then determined by the variable quantity of food aid in the market.

It has long been hypothesized that food aid causes lower average and more volatile local market prices, thereby discouraging food production in recipient countries. Maxwell and Singer (1979) summarize a wealth of evidence through the mid-to-late 1970s on this latter point. Little has changed in the more recent literature (Barrett 2002a). The empirical evidence is strikingly inconclusive. There are plenty of studies finding positive effects of food aid on recipient country food production, plenty finding negative effects, and many with mixed results. This would seem to reflect, following Mohapatra et al. (1999), countervailing factor and product market effects, the net result of which depends on a host of country and program specific characteristics. There certainly does not seem to be a mass of empirical evidence in support of the hypothesis that food aid significantly displaces domestically produced food on recipient country markets. But what is undeniable is that the extent to which food aid disturbs local market prices and discourages local production

depends heavily on the severity of the targeting errors in the program. Minimizing targeting errors of inclusion minimizes adverse market price effects and associated producer disincentives.⁷

In the past few years, the greatest issue concerning the prospective market price effects of food aid have revolved around monetization, whether by governments receiving program food aid or by NGOs taking delivery of project or emergency food aid. The Clay et al. (1996) report on program food aid by the European Union offered a careful and quite condemning assessment of the effect of program food aid on the food security of poor households. They cited vast evidence of serious leakage to unintended beneficiaries and lack of any particularly effective pro-poor targeting in the use of counterpart funds generated by the sale of program food aid shipments. These targeting errors imply minimal demand expansion coupled to the supply expansion associated with food aid receipts, leading inevitably to decreased local food prices. Hence the great interest in adverse producer price incentive effects of food aid in the days when program food aid overwhelmingly dominated aggregate flows. With sharp rollback of program food aid over the past decade, monetization has increasingly become the domain of NGOs ostensibly using the proceeds to benefit poor target populations. Yet the same issues remain with respect to market price effects due to the lack of any effort at targeting the distribution of food once it is dumped in local markets in order to obtain operating funds.

The extensive literature on food aid's effects on market prices has implicitly focused heavily on prospective errors of inclusion, or leakage effects that depress producer incentives. Of potentially greater humanitarian consequence are macro level errors of exclusion, when food aid fails to reach regions and countries that suffer significant food availability shortfalls. Storable food commodities consistently exhibit price patterns characterized by regular spikes as local stocks become exhausted (Deaton and Laroque 1992, 1996). Price stabilization policies underpinned by buffer stocks supplied by food aid long aimed at curbing food price spikes, which have been shown to have at least as great an effect on hunger and excess mortality as crop failures (Sen 1980, Ravallion 1985). Over the past twenty years, such schemes have been rolled back

⁷ It is important to note that the South Asian experience in Bangladesh, Pakistan, and India nonetheless demonstrates that, with appropriate government policies, rapid technological change in agriculture can enable countries to expand

around the world following the argument that stocks prove overly expensive to maintain and are often managed according to political rather than humanitarian or economic objectives. This places a greater premium, however, on timely delivery of food aid to places experiencing shortfalls in food availability that could lead to stock-outs. When errors of exclusion are minimal, the likelihood of stock-outs becomes negligible, while dampens speculative bubbles in storable food prices.

(v) Trade displacement⁸

Due to inevitably imperfect targeting at both macro and micro levels, food aid clearly displaces commercial sales of food contemporaneously in recipient economies. The evidence is unclear as to the distribution of these short-term losses across domestic and foreign suppliers in recipient countries, but the evidence somewhat favors the conclusion that most of the displacement comes out of commercial imports. Whether this displacement adversely affects international food markets depends on the manner in which the food aid is obtained, how well integrated the recipient economy market is with the global market, and recipient demand for variety in food consumption. The longer-term effects of food aid turn on the dynamic income effects of food aid receipt and the extent to which these stimulate future food demand. The crucial questions then are how the short-term losses due to contemporaneous displacement of commercial imports, the global market effects of alternative food aid procurement modalities, and the long-term gains from any derivative income stimulus balance out over time and how these costs and benefits are distributed among donors and third party exporters. Research on these topics has been surprisingly scarce and, largely as a consequence, premature conclusions are too often drawn on the basis of quite limited evidence on the contemporaneous displacement effects of food aid on recipient country markets. Finally, because food aid's effects on trade stem directly from the efficacy of targeting, policymakers exploring the effects of food aid on commercial international food trade must consider explicitly the trade-off between higher expected displacement of

food production even in the face of substantial inflows of food aid and their attendant adverse producer price incentive effects (Shaw and Clay 1993, Dorosh et al., 2002, Gabre Madhin et al. 2002).

⁸ This subsection draws heavily on Barrett (2002b).

commercial trade and higher expected targeting errors of exclusion of intended beneficiaries through restrictive distribution rules.

Despite many policy changes over the past ten years, especially in Europe and Canada, export market development remains an important political justification for food aid, especially in the United States. PL 480 Titles I and III shipments – tellingly directed by the U.S. Department of Agriculture rather than the U.S. Agency for International Development – still comprise a major share (about 20%) of global food aid flows, and there has been significant resurgence in use of 416(b) and Food for Progress flows from the United States in the past few years (Hanrahan 2002). In late 1998, the U.S. Congress approved a 3.1 million metric ton food aid program for Russia. This exceeded the sum of all US food aid shipments just two years earlier and underscores the continued use of food aid for export promotion purposes. The United States' 1996 farm bill, known as the Federal Agriculture Improvement and Reform (FAIR) Act, identified food aid as one of four programs to be used in support of commercial agricultural exports. The 2002 Farm Bill reauthorized Title I PL480 flows aimed at trade promotion and, for the first time, authorized agreements with private entities in addition to foreign governments. It is plain that the trade promotion objective of food aid persists even though it has historically proved ineffective in this role (Barrett et al. 1999).

Since export subsidies have been and continue to be reduced under the disciplines of the Uruguay Round Agreement on Agriculture (URAA), signed at Marrakesh, Morocco, in April 1994, but food aid programs are not subject to the same restrictions, there is reason to worry about the use of food aid as a means to circumvent trade liberalization agreements. Under Article 10 of the URAA, World Trade Organisation (WTO) member countries that are international food aid donors are prohibited from tying food aid directly or indirectly to commercial exports of agricultural products to recipient countries. This restriction was intended to prevent the circumvention of the export subsidy commitments made under the URAA. The URAA also stipulates that food aid is to be given in fully grant form to the maximum extent possible, or on terms no less concessional than those provided for in Article IV of the 1986 Food Aid Convention (FAC). Furthermore, all food aid transactions (including bilateral food aid) are to be carried out in accordance with the Food and Agriculture Organisation of the United Nations' (FAO) "Principles of Surplus Disposal and

Consultative Obligations," including the system of Usual Marketing Requirements (UMR). UMRs aim to minimize the harmful impact of food aid shipments on commercial trade and agricultural production.⁹ This is intended to prevent exporting countries from supplying food aid to markets that would otherwise be commercial (non-food-aid) markets and thereby disrupt international commodity flows and prices. Recipients are thus obliged to maintain a certain minimum level of commercial imports under the FAC. A new, three-year FAC came into force on July 1, 1999, wherein donors agreed to donate to developing countries certain minimum food aid donation volumes (or the cash equivalent) as specified below (FAO, 1999), with at least 80% of the donation on a fully grant basis.

These disciplines on food aid likely have far less impact on the trade distorting effect of food aid than does the efficacy of food aid targeting, however. Ultimately, the primary trade displacement effects arise when food aid leaks out to those whose need for food is limited and who therefore substitute transfers received in kind for food they would otherwise have purchased. If the agricultural trade community wants to work at limiting the distortions created by food aid in the global marketplace – just like recipient country governments that want to limit the adverse market price effects of food aid in domestic markets – then they need to pay far more attention to the practices that guide food aid targeting at all levels.

III. Towards Better Targeting

Targeting is inherently imperfect because information is costly and aid allocation decisions – at all levels – are made not only on the basis of the right to and the need for food but also for political, commercial and other reasons. At the most basic level, so long as the quantity, timing and commodity composition of food aid continue to be driven largely by donor interests rather than recipient country need, targeting errors will remain substantial and the follow-on consequences of mistargeting – meager health and nutritional benefits, continued poverty traps and relief traps, labor market disincentive effects, adverse market price effects and international trade displacement – will persist. Without question, the single most effective strategy for improving the targeting of food aid is to decouple its provision from domestic farm support programs in donor nations.

⁹ Adherence to UMRs is monitored and "enforced" by the FAO's Committee on Surplus Disposal (CSD).

But even taking these broader political economy forces as given, there remains much that can be done to improve the targeting of food aid, and thereby to increase its effectiveness in combating the food insecurity problems currently disfiguring a world with abundant aggregate food supplies and to minimize the unintended consequences of transfers to the poor. These can be broken up into a few key issues, as follows.

(ii) Focus on food availability

As is well known, at least since Sen (1980), food security depends not only on supply side considerations related to weather and crop yields, but just as much on individuals' purchasing power and their access to food through formal or informal safety net mechanisms. Prevailing current definitions of food security therefore incorporate the triad of availability, access and utilization. Aggregate food availability is insufficient to ensure either access to or proper utilization of nutrients to achieve food security (Barrett 2002a).

Adequate availability is nonetheless a *necessary* condition for food security. Food insecurity is inevitable within an economy lacking enough food to satisfy all its population's nutritional needs. Ensuring adequate aggregate food availability has been, and remains today, a serious challenge in much of the low-income world. Food aid – the augmentation of local food supplies by foreign donors – can help to ameliorate food availability problems. Many food assistance programs – as distinct from food aid – prove effective in addressing access and utilization problems. But food aid is neither necessary nor sufficient for effective food assistance programs. Indeed, because of macro-level targeting errors associated with poor and unreliable timing, inappropriate commodity composition, etc., food aid is arguably an impediment to the design and implementation of effective food assistance programs, provided that other resources exist with which to mount programs to address access and utilization problems. Moreover, adverse local producer price effects and trade displacement minimized when food aid flows are targeted toward countries and regions with demonstrably insufficient nonconcessional food availability.

Food availability problems can be chronic or transitory. No one seriously believes that food aid can effectively stimulate domestic food production or purchasing power sufficiently to move nutritionally vulnerable populations out of a state of chronically insufficient food availability. That is the domain of

agricultural research and extension, and rural development more generally. Food aid is typically an inefficient and relatively ineffective instrument for addressing problems of chronic poverty and undernutrition. Rather, food aid needs to be focused on its comparative advantage, which lies in addressing transitory shortfalls in food availability, including drops from a chronically insufficient level. When broad-scale crisis looms due to local crop failures, civil strife or the disruption of commercial marketing channels (e.g., due to floods or earthquakes), food aid has historically been able to plug the gap effectively.¹⁰ When food availability is the problem, need is broad based and targeting errors become sharply reduced.

(ii) Covariate shocks, early warning systems and food sourcing

The degree to which those suffering from serious, adverse shocks need assistance from outside their own community turns fundamentally on the degree to which such shocks covary positively within a community. When shocks are highly covariate – i.e., everyone’s food security rises or falls roughly in tandem – then external resources are absolutely necessary to cover serious shortfalls in food availability. By contrast, when shocks are highly idiosyncratic – i.e., as one household’s food security goes up, another is going down – there is no such *prima facie* case for external transfers. When risk is largely idiosyncratic, redistribution of resources within the community should suffice to insure against shocks. This very basic principle of risk management has been largely overlooked to date in debates surrounding food aid and food security.¹¹

The global community has rapidly improved the predictive capacity and accuracy of early warning systems that can identify significant covariate shocks and thereby cue the provision of food aid to avert emerging food availability crises. Since the 1992 drought in southern Africa, there has not been a single climate-related humanitarian crisis in Africa that has not been widely anticipated and prepared for months in advance. Donors have not always responded swiftly or effectively. But there have been no large-scale, climate-related “surprises” in quite some time. Crises due to civil strife are far less predictable, although

¹⁰ This has been far more true of multilateral food aid distributed through the WFP than of US bilateral flows (Barrett and Heisey forthcoming).

¹¹ One does frequently hear concerns articulated about the closely related problem of food aid displacing traditional social reciprocity networks, thereby undermining the social fabric of recipient communities (Huysentruyt et al. 2002). If

interesting efforts are being made at developing conflict early warning systems now, too. Early warning systems will continue to play a central role in any strategy to increase the efficacy of food aid through improved targeting.

This issue of covariate shocks matters because timing errors in deliveries and inappropriate commodity composition of food aid result primarily when food aid is sourced in the donor country and then shipped to the recipient communities. Direct shipment of food from the donor country to the recipient country might be an appropriate sourcing strategy if shocks to nonconcessional food availability are highly correlated among regions within a country or within countries in a continental subregion, so that surpluses in one country cannot regularly provide for shortfalls in neighboring nations. Surprisingly, to date there is no published empirical evidence directly on this point, underscoring that cost efficiency and targeting efficacy have historically been minor concerns in food aid sourcing. There exists considerable micro-level evidence that most income and asset risk is idiosyncratic rather than covariate (Townsend 1995, Lybbert et al. 2002) – extreme events such as civil war, floods, hurricanes or massive droughts aside – suggesting that the need for external transfers is limited outside of emergencies, i.e., shocks to aggregate food availability.

Over the past two decades, important new food aid procurement modalities have emerged and become widely accepted among some donors. The WFP has pushed the use of local purchases and triangular transactions as innovative means of sourcing distributed food.¹² In 2000, 11 percent of food aid was procured in developing countries (WFP 2001). EU food aid programs have likewise sharply expanded the use of local purchases and triangular transactions, from 16 percent of total shipments in 1989-91 to 24 percent in 1992-94, with countries like Ireland, the Netherlands, and the U.K. now using these modalities for

internal transfers are not occurring, this typically signals problems of social exclusion and noncooperation within target communities.

¹² Local purchase schemes use donated funds to purchase food in surplus areas of the recipient country for distribution in deficit areas. This helps stimulate local production while circumventing market impediments — often weaknesses in the marketing infrastructure, sometimes simply insufficient purchasing power in deficit regions — that impede the free domestic flow of foodstuffs in the recipient country and saving on ocean transport costs. For example, there has been a sharp increase in donor procurement of food on the Ethiopian domestic market for distribution within that country, the largest food aid recipient in Africa (Amha et al. 1997). Triangular transactions work the same way, except that foods are purchased or traded for in a country other than the recipient or donor countries. Triangular transactions are commonly used when a national-level shock (e.g., drought, floods, or cyclones) that destroyed much of a nation's crop did not affect a neighboring country's harvest.

most of their food aid donations (Clay et al. 1996). The United States is the main donor continuing to resist the sourcing of food aid locally or within the continent in which it is to be distributed.

(iii) Climate and disaster insurance

The mismatch between slow-changing appropriations by donor governments and rapidly changing food needs around the world poses a very serious structural challenge for food aid agencies. When faced with demonstrable, looming crises – like those occurring presently in southern Africa and the Horn of Africa – it is often difficult and costly to mobilize even partial support for increased resources to meet acute, emergency need. This is especially true in “silent” emergencies that occur in places largely ignored by the global media and of little or no geopolitical/strategic interest to major donors (e.g., Mauritania currently). Donors often trip over themselves to respond robustly to “loud” emergencies (as in Kosovo, Russia, or Indonesia in the past half dozen years).

This problem could potentially be ameliorated and some improvement in targeting of food aid could be achieved by using new financial products such as weather insurance contracts. By striking a contract that pays out a claim when exogenous indicators – such as rainfall volume over a given period in particular locations – in exchange for a consistent premia paid in all periods out of reasonably stable revenues (charitable donations in the case of NGOs, appropriations in the case of public sector donors), these contracts would improve the match between resource availability and bulk need (Skees forthcoming, Skees et al. 2001). This can help overcome the delays and resource insufficiency that cause many safety nets to be activated too slowly or to miss many of the poor. Furthermore, insurance contracts would provide fungible resources that could be converted into the form (commodity or nonfood) most appropriate to the circumstance. Major global reinsurance companies and the World Bank are presently experimenting with such financial products.

(iv) Meso- and Micro-level targeting: the need for heterodoxy and feedback

A vast literature has sprung up over the past decade or so on the targeting of transfers, including a substantial literature on the targeting of food assistance in particular.¹³ The food aid community in general is quite actively engaged in the search for more effective meso- and micro-level targeting methods, although praxis inevitably lags policy. Nonetheless, good systems of monitoring and evaluation to establish whether food aid is indeed reaching intended beneficiaries (and at reasonable cost of delivery) are disturbingly rare. Proper monitoring and evaluation creates a feedback loop with targeting efforts. This is especially important because all the extant targeting methods in play suffer serious weaknesses, as previously discussed. So the best targeting method for food aid transfers at community, household or individual level will typically be context-dependent. Heterodoxy in targeting mechanisms is wise (and increasingly widespread) policy with respect to food aid.

One of the potentially most practical purposes of evaluation and monitoring systems lies in establishing the most effective form of assistance, not just the identity of beneficiaries and the impact (if any) of the transfer. The availability of food as a resource still prompts a default distribution of food by many agencies in many settings, with a few exceptions to this rule have the opposite and equally inflexible default of always monetizing food aid and providing non-food assistance. Some of the greatest targeting errors come not from reaching the wrong people – in many food recipient communities even the middle of the local income distribution is desperately poor and failing to enjoy its full right to food – but from providing vulnerable people with relatively ineffective assistance. Development and relief agencies need the flexibility to supply food, medicines, seeds, building materials, or cash, depending on local need. Use of good evaluation and monitoring systems will help demonstrate plainly when food is – and is not – the appropriate resource for any particular situation and thereby help avoid many of the targeting errors that bedevil contemporary food aid.

IV. Conclusion

As food aid has grown more scarce in recent years, many donors, especially the Europeans and the World Food Programme have been emphasizing the need to improve targeting. Food aid must reach those

¹³ Barrett (2002a) reviews this literature.

who need it most, when they need it most, and in a form that maximizes its effectiveness in meeting the basic human right to food. There will always exist tradeoffs between errors of exclusion and errors of inclusion, and no transfer program can target perfectly. But improving targeting can resolve many problems associated with food aid and improve its efficacy in achieving the humanitarian and development objectives that motivate its provision.

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