

7

Comparing cash and food transfers: a cost-benefit analysis from rural Malawi

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1. Introduction¹

The Cash and Food for Livelihoods Pilot (CFLP) project was a cash and food-for-assets scheme implemented in southern Malawi over the eight months from October 2008 to May 2009, benefiting 11,100 households. CFLP was designed to prevent acute hunger and invest in disaster prevention and preparedness measures by providing cash, food and mixed cash/food transfers in exchange for participation in the construction of community assets, in line with food-for-assets (FFA) activities under a regular protracted relief and recovery operation (PRRO).²

By *randomly* selecting target beneficiaries for the different transfer types, the project aimed to identify how cash can help WFP and similar agencies achieve their food security goals. Although previous studies of cash transfers in Malawi have demonstrated that cash can be an effective tool for both generating investments in human capital (Miller, 2009) and responding to humanitarian needs (Devereux *et al.*, 2007), few have used a randomized method to compare the use of cash with that of food. By taking this unique approach to cash in humanitarian contexts, the CFLP project attempted to produce learning and best practices for guiding appropriate integration of cash into the WFP response toolkit.

This chapter describes the context and design of the cash pilot and discusses the preliminary effects on cost efficiency and effectiveness of the food, cash and food/cash mix employed in Malawi. Baseline and interim survey data give insights into the *short-term effects* of these different transfers on the food security of beneficiary households.

Owing to the absence of follow-up data, crucial aspects such as non-food spending, nutrition, gender dynamics and livelihood outcomes cannot yet be discussed.

2. Context, programme design and implementation

2.1 Food insecurity caused largely by high lean season prices

CFLP was implemented in a context where food security is caused primarily by problems with access to food, owing to high lean season prices rather than lack of food. As the majority of maize farmers in Malawi have only one harvest, many rural households run out of own-production in November and December, becoming dependent on casual labour. As a result, food prices are highest in the lean season from December to February, and lowest during the harvest in April and May. Over the rainy months of the lean season, flood risk is at its highest, and the slow-onset effects of drought in preceding dry months can transform net producers of maize into net buyers. This situation has been aggravated by insufficiently integrated local markets and the impact of distortive government interventions in commodity markets. Vulnerability occurs to varying degrees across the country, but the more densely populated southern region tends to be more vulnerable to both flooding and drought than the northern and central regions.

Malawi has recorded four consecutive bumper harvests of maize, owing in large part to an extensive government-owned fertilizer and input subsidy programme and a streak of favourable weather conditions. While the wider physical availability of maize has resulted in local market surpluses, expanded strategic government stocks, and increased local procurement options for donors, some districts in the southern region of the country remain food-insecure and highly vulnerable to drought-flood cycles. These disaster-vulnerable areas where food is physically available provide an ideal entry point for a cash scheme linked to building assets that reduce disaster risk.

2.2 The programme's three different modalities

Guided by a rigorous feasibility study, the pilot was carried out in the two perennially vulnerable districts of Chikwawa and Machinga, where 56 and 26 percent of the population, respectively, were found to be severely food-insecure owing to poor access to food and localized shocks such as drought-flood cycles. Households in these districts are characterized by small landholdings of less than 0.8 ha and undiversified livelihoods. Their main income source, *ganyu* or casual agricultural labour, contributes 78 percent of their total income. Households

own few assets, and live far from but are highly dependent on markets, especially for cereals (WFP 2008a). Within the districts, five Traditional Authority (TA) sub-districts were targeted: 44 group village heads (GVHs) within each TA were randomly assigned to receive a cash transfer, a standard in-kind food transfer, or a mixture of the two. The numbers of households targeted were 3,542 for cash, 3,552 for food, and 4,006 for the mix, totalling 11,100 beneficiary households.

CFLP leveraged the existing capacity of local civil society and the private sector to implement the project: World Vision International (WVI) and Emmanuel International (EI) provided beneficiary targeting, capacity building and monitoring; and the Malawi Savings Bank (MSB) acted as the financial intermediary and delivery mechanism for cash transfers. MSB, which had won a competitive tendering process, issued a bank account and a biometrically encoded smartcard to each cash and mix beneficiary. Groups of beneficiaries could arrive at a bank branch at any time, and make withdrawals via their smartcards or withdrawal slips. The value of the cash transfers was based on the value of the WFP food basket, monitored daily at local markets and government-run grain reserve depots.³

Beneficiaries living more than 15 km from a MSB automatic telling machine were given an additional travel allowance of MK 100 (approximately US\$0.70). To avoid continuing the cash transfers when high and rising food prices made them cost-inefficient, an embedded price threshold was designed to switch cash beneficiaries to food, so that cash transfers would not exceed the full cost recovery to WFP of a food basket under the PRRO. In the event, this threshold was not triggered. Food beneficiaries received 50 kg of cereal and 5 kg of pulses a month, at a nearby final distribution point (FDP). Mixed beneficiaries received the local market value of the cereal ration in cash, and the pulse ration in-kind; the cash component was collected at the bank, and the food component at an FDP. The project intended that cash disbursements would occur monthly throughout the eight-month pilot.

A monitoring and evaluation system was designed by the International Food Policy Research Institute (IFPRI) to track changes in three food security indicators: the food diversity score; the food consumption score; and the food consumption group, which is referred to hereafter as the threshold. The food diversity score measures the frequencies with which a range of food groups are consumed over a seven-day period. This provides the basis for the consumption score, which applies WFP-standardized weights to the food groups. The food consumption groups are the category threshold scores by which poor, borderline and acceptable food consumption scores are classified (WFP, 2008b).

2.3 Innovations pose challenges: complications during implementation

Despite careful planning, several unforeseen obstacles emerged during the pilot and complicated implementation of the original project design. These related to breaks in the cash pipeline and problems for beneficiaries withdrawing cash.

The first challenge was a break in the cash pipeline. Based on local food prices, cash was to be distributed to each beneficiary account once a month, for a total of eight transfers. Because of the large amount of this purchase request however, both the local country office and the regional bureau had to take action.⁴

Complications also arose with the integration of MSB into the financial accounting system. As an increasingly complicated flow of funds had to be authorized, payments to beneficiary accounts were delayed. In the end, cash was not distributed for the first three months of the pilot. In the third month, food was distributed in lieu of cash to the cash and mixed beneficiary groups. In the fourth and fifth months, those receiving cash received their monthly entitlement plus the missing entitlements from the first two months. During the remaining months, cash distributions proceeded as planned.

The timeliness of cash transfers had important implications on beneficiaries' financial situation. In expectation of the transfer, many cash beneficiaries took out loans with local moneylenders, at monthly interest rates ranging from 25 to 50 percent. When the CFLP transfers failed to arrive, many borrowers were forced to extend the periods of their loans. These debt obligations had two noteworthy effects: the most easily observed was that the outstanding debt obligations created by the late delivery eroded the real value of the cash transfers to beneficiaries, while the second, less easily measured effect was that erosion of the real transfer value and uncertainty about the transfers' arrival may have forced beneficiaries to resort to coping strategies and livelihood activities that have negative impacts on food security.

Although the pilot was designed to enable beneficiaries to withdraw funds at any time, this did not occur in practice. The flexibility of beneficiary withdrawals was poorly communicated within MSB, where tellers at some branches assumed that beneficiaries could withdraw only on the day when the funds were released to the individual accounts. Some beneficiaries were turned away by tellers and told to return on the date when the funds arrived in the accounts, imposing additional travel expenses. The situation was aggravated by technical problems in many of the most remote bank branches, where problems of connectivity to the main server, power cuts, and broken card swiping machines or fingerprint readers caused further delays in serving the cash beneficiaries. In effect, cash ended up being collected in much the same way as a food

distribution, with groups of beneficiaries showing up on the same day. Because many households needed to buy food immediately after receiving the cash, many grain traders were able to capitalize by temporarily increasing prices above the market value, forcing many beneficiaries to purchase food at inflated rates.

In addition to the cash pipeline break, a food pipeline break also occurred. Maize grain was the planned commodity for distribution to the food and mixed transfer groups. However, by December the WFP warehouse had insufficient maize stock, and some recipients received rice instead of maize grain. Rice was also distributed to some beneficiaries in the last two months of the pilot. Because rice has a much higher local market value than maize grain, transfers to beneficiaries within and among the different transfer groups were not of equal value during these months.

3. Cash improves food security but is expensive relative to food

3.1 Cash households show considerable improvement in food consumption and diversity

Analyses of baseline and interim household survey data collected for the pilot suggest that there is substantial divergence in the food security indicators for food, cash and mixed groups.⁵ The following standard WFP food security indicators were used to assess project impact:

- *Food consumption score*: A weighted diet diversity score calculated from the frequencies of consumption of different food groups by a household during the seven days before the survey. Each food group's frequency is capped at seven and multiplied by a standard weight designed by WFP's Vulnerability Analysis and Mapping (VAM) Unit.
- *Food diversity score*: The unweighted number of food groups consumed over the seven-day reference period.
- *Threshold, or food consumption group*: A classification of food consumption scores. Typical thresholds are used in this analysis: poor < 21; borderline 21.1 to 35; and acceptable > 35.

As indicated in Table 7.1, food consumption increased from its baseline level by approximately 20 percent for the food group, 50 percent for the cash group, and 33 percent for the mix group.⁶ These effects were all statistically significant. Although not reported in Table 7.1, the differences *among* treatment groups indicate that consumption scores increased in the cash group by 23 percent more than in the food group, and by 14 percent more than in the mixed group. These results suggest that more heavily weighted, protein-rich food groups are

consumed when purchasing flexibility – cash – increases. Although this outcome cannot be detected for dairy products and pulses, it was observed that both cash and mixed groups consumed significantly more dairy products and pulses after the transfers than did those who received food.

Table 7.1 Changes in food security indicators for different transfer groups

% change in food security indicator			
Transfer	Food consumption	Food diversity	Consumption group
Food	20% *	-2%	11% *
Cash	50% *	24% *	26% *
Mixed	33% *	12% *	21% *

* = significant at the 1 percent level.

Source: Calculated from baseline and interim household surveys.

Cash and mixed transfers also had significant impacts on dietary diversity. Diversity scores (Table 7.1) increased by 24 percent for the cash group and 12 percent for the mixed group, while the food group did not have any statistically significant change. Cash increased diversity by 27 percent more than food and by 12 percent more than mixed transfers, while mixed transfers increased diversity by 14 percent more than food transfers. The average number of households reporting meat consumption was significantly higher in the cash group than in the food or mixed groups. These scores emphasize that the purchasing flexibility of cash can allow households to broaden their food choices.

Threshold scores, which describe households' food consumption level, also demonstrate the effectiveness of cash. Cash households improved their threshold scores by 26 percent and mixed households by 21 percent, while the food group's threshold scores increased by only 11 percent. Threshold scores for cash were 15 percent higher than those for food, which is statistically significant. This indicates that cash can move recipients from a poor to a borderline, or a borderline to an acceptable classification of food consumption better than food can.

3.2 Cash can be more costly than food

The data suggest unequivocally that cash improves food security indicators more than standard in-kind food transfers do. However, aid agencies selecting the most appropriate delivery mechanism must also consider costs: which treatments are more cost-effective, and which are more cost-efficient?

Cost effectiveness is calculated from the cost of raising a given food security indicator by 1 percent of its baseline value. To measure *cost efficiency*, an Alpha-value is calculated, which measures the cost for every US\$1 equivalent of cash or food received by the beneficiary.⁷ This analysis uses the total programme cost attributable to each transfer type, including the costs of the commodity and administrative and operational expenses. It assumes that the one-off costs for cash and food are the same, i.e., the start-up costs for a new cash programme are not considered. It is assumed that both food and cash beneficiaries must be targeted and identified, and that cash beneficiaries must be registered by financial institutions. Three scenarios are considered: (i) calculates what was actually observed: (ii) assumes there was no break in the food pipeline; and (iii) assumes there was no break in the food or the cash pipelines.

Table 7.2 Costs of increasing food security indicators by 1 percent			
Transfer	Food consumption	Food diversity	Consumption group
Food	\$46 230	\$622 726	\$84 099
Cash	\$19 451	\$40 284	\$37 698
Mixed	\$31 844	\$86 753	\$50 952

Source: Calculated from baseline and interim household surveys.

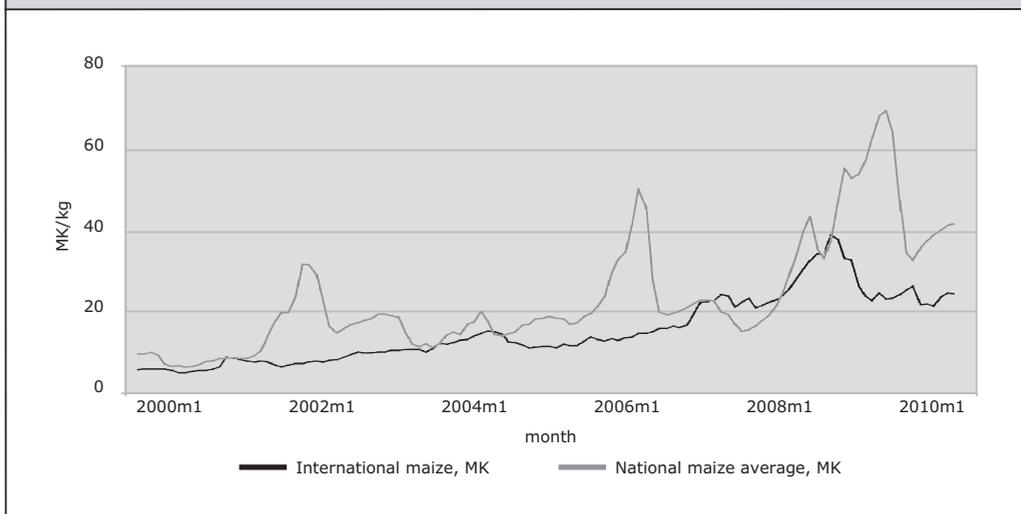
In terms of *cost effectiveness*, the benefits of cash are once again obvious. As indicated in Table 7.2, the programme costs required to raise the three food security indicators by 1 percent of their baseline values is substantially lower for cash than for food or mixed transfers, across all three indicators. Measures of *cost efficiency*, shown in Table 7.3, yield different results. In all scenarios, food has a higher Alpha-value – is more cost-efficient – than cash or mixed transfers. This means that the programme cost of the total local market value of the food and cash delivered to each transfer group was lower for food than for cash and mixed transfers. Such a result immediately gives pause, as conventional thinking is that it should be cheaper to deliver cash than food.

Table 7.3 Alpha-values under different scenarios

Transfer	Observed	No food pipeline break	No food or cash pipeline break
Food	1.35	0.93	0.87
Cash	0.99	0.86	0.76
Mixed	0.98	0.88	0.78

Source: Calculated from baseline and interim household surveys.

How can this curious result be explained? Local price volatility and the resulting market integration may shed light on the behaviour of the Alpha-value. If local markets are integrated with international markets, a co-movement of prices is observed. This is not the case in countries such as Malawi, where there are pronounced price variations between seasons. While international food commodities have demonstrated high volatility in recent years, international medium-run maize prices have increased more gradually than their Malawi equivalents. Although Malawi maize price volatility does not mean that prices are easily predictable, patterns in price *seasonality* are predictable; as shown in Figure 7.1, lean season price spikes are clustered around the month of January.

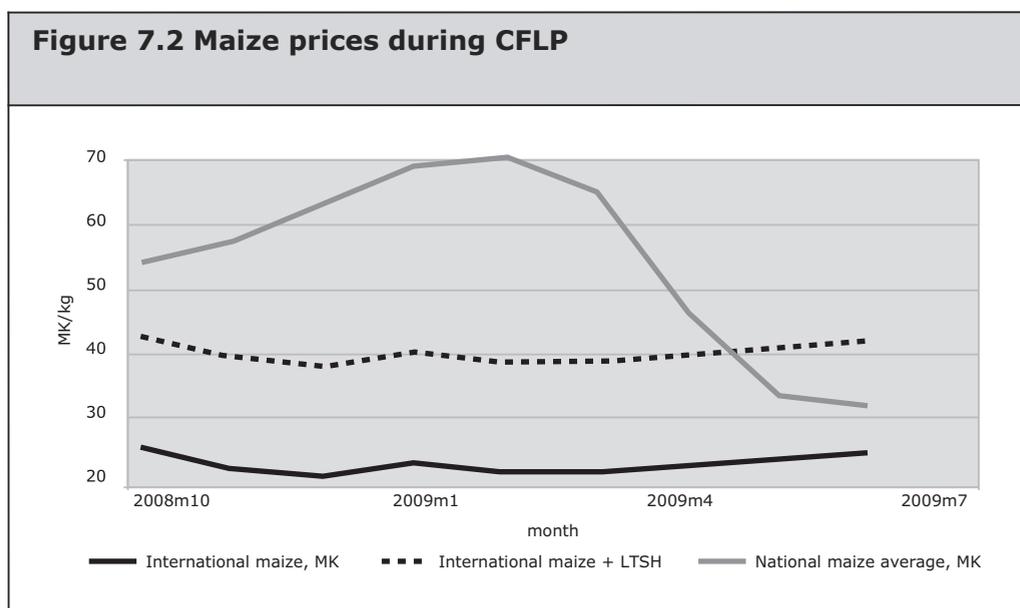
Figure 7.1 Local-international market integration

International maize prices are for US No. 2 yellow, Gulf free on board (FOB).

Sources: Government of Malawi, Ministry of Agriculture and Food Security Retail Price Survey data; and FAO Global Information and Early Warning System on Food and Agriculture (GIEWS), 2009.

The lack of price co-movement – the poor integration – particularly at the beginning/end of the year, means that under the right conditions, agencies can buy low and *transfer* high. If non-local purchase is mandated because local prices exceed import parity, the price for which commodity is procured FOB may differ greatly from the commodity's value on the local market at certain times of the agricultural cycle. If the difference between the WFP purchase value and the recipient transfer value is large enough, such price differences can negate the operational cost savings that make cash attractive.

Figure 7.2 shows observed international maize prices and Malawi's national average maize price during the CFLP project. The Malawi national average represents the local transfer value, the international price is the FOB commodity cost, and the international price plus landside transport, shipping and handling (LTSH) costs is the procurement cost to WFP.⁸ As Figure 7.2 shows, the local transfer value is well above the FOB price. The further below the local market value the FOB cost is, the more flexibility WFP has in terms of operational costs. The difference between the local value of the transfer to beneficiaries – in this example the national average price – and the actual cost to procure commodity internationally is the operational slack. If the local price is high enough, it may exceed the commodity purchase and transportation costs, providing a monetary gain in resource value.



International maize prices are for US No. 2 yellow, Gulf FOB.

Sources: Government of Malawi, Ministry of Agriculture and Food Security Retail Price Survey data; and FAO GIEWS, 2009.

This analysis highlights an important distinction between food and cash. While food can at times be procured at such a low price that its FOB and transport costs may sum to be *less* than the transfer value, cash plus operational costs will always sum to *more* than the cash's transfer value. Giving a beneficiary US\$1 in cash will always require US\$1 plus the operational costs to deliver that US\$1, however low those costs might be. In other words, while food can have an Alpha-value greater than 1 under some circumstances, cash cannot. This does not mean that food is always more efficient than cash, but rather that the efficiency of cash can be more sensitive to operational costs.

Examining prices during the peak lean season in February provides further illustration. WFP procured maize internationally at US\$306.00/mt, while the local value of the same commodity was US\$575.77/mt, 88 percent higher than the FOB cost. Even after factoring in LTSH, WFP costs increased to just US\$426.68/mt. After taking into account transportation, the local value was still 35 percent higher than WFP's costs. The situation changed drastically in just a couple months, however, when the harvest occurred and local prices experienced their typical return from lean season highs. In April, local prices were US\$343.87/mt, 40 percent lower than their February high. WFP procured FOB at US\$275.00/mt, and LTSH increased costs to \$395.68/mt. With local prices plummeting, the WFP commodity costs were greater than the local value of the resources transferred to beneficiaries, even with decreasing international prices. This highlights the important role of local price volatility in cost-efficiency considerations.

4. Implications and challenges for the future

4.1 Cost effectiveness versus cost efficiency

Does it really matter that food has a higher Alpha-value than cash, given that cash is more effective? If US\$1 of cash can do more than US\$1 of food, it may not be pertinent to consider Alpha-values. While CFLP transferred more resources in monetary terms to the food beneficiaries, the cash beneficiaries had more significant increases in food security. In addition, the reason why food was more efficient – poor market integration – is a contributing factor to food insecurity in many parts of Malawi. In other words, food's *efficiency* resulted from the market's *inefficiency*.

Solving the efficiency disparity between food and cash suggests that cash efficiency could be increased by lowering administrative and operational costs. While transferring money from one location to another is cheaper than moving commodity overland, the targeting, registration and identification costs associated with starting up a cash scheme can be substantial. Targeting and

registration are enormous undertakings for even the most capable partners, especially in cultures where beneficiaries might have two names – in Malawi, these would be in the local language, Chichewa, and the colonial language, English. Registration problems abound. The identification of registered beneficiaries can also impose sizeable costs; smartcards with biometric fingerprint identification can be extremely costly. However, CFLP was able to minimize these costs because the financial institution, MSB, was both an implementing partner and a service provider, so absorbed and offset some costs. The potential for increasing the operational efficiency of cash transfers is minimal, or associated with the one-off start-up cost, so cash efficiency, at least operationally, does not seem to be the problem. Rather, it is food transfer efficiency that is at issue. Ironically, food is the most cost-efficient transfer precisely because of the market failure to which it responds.

These findings have additional implications for the full-cost recovery (FCR) mechanism. As noted earlier, an FCR mechanism was embedded into the programme, so that cash beneficiaries would switch to food when the price of transferring cash became too high. One of the important aspects of the pilot is that beneficiaries received transfers of equal value – the values of the cash and mixed transfers were equal to that of a full food ration. Assuming that intended transfer values are equal, this means that the determinant of efficiency, or the Alpha value, is solely cost: $\text{Alpha} = \text{total transfer value} / \text{cost}$. The cheapest modality is, by definition, the most efficient, which was food. However, if food was the most efficient, i.e., the cheapest, the FCR mechanism should have triggered, switching from cash to food when cash became more expensive. This did not occur because although the additional costs of distributing food to the cash and mixed groups in December were recorded as a food commodity cost, the efficiency calculations performed here record them as a cash cost – being units of value transferred to cash beneficiaries. Had the additional food requirements distributed to cash and mixed groups been recorded as a cash expense during the pilot, the costs of cash would have been significantly higher than those recorded, and the FCR mechanism would have been triggered.

The aim of FCR is to ensure that limited resources are fully utilized but, as this study shows, this may mean sacrificing effectiveness for efficiency. FCR prevents a more expensive modality, cash, from replacing a cheaper one, food, as an emergency response tool. However, this analysis has demonstrated that cash is significantly more effective than food at improving food security indicators. The point at which cash transfers are the most expensive transfers for relief organizations – when local prices spike – is when households are the most food-insecure. So FCR in effect switches from a more effective modality to a less effective one, precisely when households are in greatest need.

This suggests that FCR thresholds need to be re-evaluated to take into account the added effectiveness of cash over food. The FCR mechanism should switch only when the costs less the net benefits of cash are greater than those for food, rather than by considering only the costs. A new mechanism might take into account the cost of the difference between the percentage changes in food security indicators brought about by cash compared with food, using food, economic multipliers, diminishing marginal returns to food and cash responses, etc. In other words, cash programming utilizing FCR needs to be more dynamic and have a broader scope than simply evaluating modalities based only on costs. A new FCR mechanism is particularly necessary in poorly integrated markets where the price spikes that cause food insecurity make cash operationally less competitive than food.

4.2 Challenges in responding to cyclical food availability

Although cost issues are of great concern operationally, agencies must not lose sight of long-term programme effects. For CFLP beneficiaries, food insecurity is inherently linked to the loss of purchasing power in the lean season. This seasonality stems from not only a pronounced dry season, but also high post-harvest losses and inadequate storage, lack of irrigation infrastructure, undiversified household incomes, etc. Choosing the appropriate humanitarian response for each case, whether it be with food, cash or mixed transfers, should consider not only the effectiveness and efficiency of the transfers, but also the long-run sustainability of the asset building programmes that aim to help smooth this cyclical food availability and build resilience. Unfortunately, as mentioned at the beginning of this chapter, it is still too early to evaluate CFLP in terms of disaster risk reduction and agricultural development. Questions that might be of particular interest for future interventions are whether or not the type of transfer changes the incentives to work on asset building programmes and/or the quality and sustainability of the assets built.

4.3 Improving the way cash transfers are used

Preliminary lessons distilled from the CFLP project shed light on important considerations for future interventions, for both the Malawi County Office and WFP as a whole.⁹ One of these lessons is that coordination is of the utmost importance in cash transfer projects. During CFLP implementation, WFP's capacity was limited by a lack of good practices and agency guidelines on how to integrate finance and programme units at the country office, regional and Headquarters levels. WFP's learning in this area has made dramatic strides over the past year, so cash delivery mechanisms will now be able to deliver transfers to beneficiaries in a more timely and effective manner. This is important, as

CFLP has demonstrated that failure to deliver expected transfers can result in beneficiaries resorting to unproductive coping strategies.

Finding innovative ways to link cash-for-asset interventions with micro-lending or group savings schemes could be an effective way of leveraging the value of transfers made to beneficiaries. Related to this, continuous beneficiary capacity building must be a priority activity for rural beneficiaries with little banking experience. Education and empowerment are the keys to effective use and management of cash transfers. This was addressed in the CFPL project by providing financial education to the beneficiaries, who were shown how to use bank cards and trained on savings and bank services.

As cash transfers are used increasingly to respond to chronic and transient food security needs, agencies must continue to find new ways of making cash distributions to beneficiaries effective. One of the reasons for choosing MSB to provide financial services was because it has a wider cash distribution network in rural areas than its competitors; expanding such networks could increase the cost-efficiency of cash programmes, while lowering the transport and opportunity costs imposed on beneficiaries. Agencies in Malawi are currently exploring ways of using networks of private retailers to distribute cash, as has been successful in other regions. Distributing resources closer to target villages can have community-wide benefits beyond those accruing to individual households.

¹ The authors wish to thank Anthony Makaluni, Susanna Sandström and Dorothy Tembo.

² Based on a report by Balzer and Gentilini (2006) and on the 2007 appropriateness and feasibility assessment (WFP, 2007c), the WFP country office decided to design and implement CFLP. The initial process was supported by the WFP Special Initiative on Cash and Voucher Programming in Southern Africa, the German government and the Swedish government, whereas the actual implementation was made possible through a grant from the Government of the Kingdom of Saudi Arabia.

³ The Agricultural Development and Marketing Corporation (Admarc) is a para-statal body that buys grain from and sells it to farmers at fixed prices.

⁴ As the pilot was one of the first it had implemented, WFP invested significant time and efforts in scrutinizing and verifying various operational and contractual procedures.

⁵ With 1,239 observations, the baseline survey was larger than the interim survey, with 293 observations. Financing constraints have delayed a final survey of CFLP households, but the interim survey was conducted in April, during the seventh month of the eight-month project, so the interim data should provide a reasonable approximation of final short-run project outcomes.

⁶ As the baseline and interim surveys conducted by IFPRI are cross-sectional, the change between the two surveys is not household-specific. Means comparisons of transfer group indicators are therefore the most logical statistical tool for this analysis. A two-sample comparison of means was used to test the significance of the differences in indicator means within and among transfer groups. As programme placement was randomized and the differences in baseline indicators among transfer groups are not statistically significant, a comparison of post-transfer indicator means among transfer groups should be sufficient for comparing the different changes in food security indicators of the different groups.

- ⁷ For the purpose of the cost-benefit analysis in this chapter, the Alpha-values are calculated as the ratios of the market transfer values (food, cash or a combination of the two) to the costs for WFP to providing that transfer. The method differs from the standard Alpha-value calculation in WFP that takes the ratio of the local market price of a food basket and the costs for WFP to providing that basket.
- ⁸ An approximated average LTSH rate of US\$120/mt is added to the international price. Although national and international costs approximate local and FOB prices only roughly, they serve as reasonable proxies for demonstrating the intuition.
- ⁹ WFP is in the process of producing a comprehensive lessons learned paper (WFP, 2010b). This consolidates information from the baseline survey (Sharma, 2008), interim evaluation (Sharma, 2009), cost analysis (WFP, 2010a), and an *ex-post* impact evaluation.