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FEEDING THE WORLD'S HUNGRY

**Fostering an efficient and
responsive food access pipeline**



Financial Innovations Labs bring together researchers, policy makers, and business, financial, and professional practitioners for a series of meetings to create market-based solutions to business and public policy challenges. Using real and simulated case studies, Lab participants consider and design alternative capital structures and then apply appropriate financial technologies to them.

This Financial Innovations Lab Report was prepared by Jill Scherer, research analyst; Glenn Yago, director of Capital Studies; and Betsy Zeidman, research fellow and director of the Center for Emerging Domestic Markets.

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FINANCIAL INNOVATIONS LAB REPORT

ACKNOWLEDGMENTS

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The Milken Institute is an independent economic think tank whose mission is to improve the lives and economic conditions of diverse populations in the United States and around the world by helping business and public policy leaders identify and implement innovative ideas for creating broad-based prosperity. We put research to work with the goal of revitalizing regions and finding new ways to generate capital for people with original ideas.

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human capital: the talent, knowledge, and experience of people, and their value to organizations, economies, and society;

financial capital: innovations that allocate financial resources efficiently, especially to those who ordinarily would not have access to them, but who can best use them to build companies, create jobs, accelerate life-saving medical research, and solve long-standing social and economic problems; and

social capital: the bonds of society that underlie economic advancement, including schools, health care, cultural institutions, and government services.

By creating ways to spread the benefits of human, financial, and social capital to as many people as possible—by *democratizing* capital—we hope to contribute to prosperity and freedom in all corners of the globe.

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EXECUTIVE SUMMARY

Global food security remains one of the paramount concerns of our time. One-sixth of the world's population faces hunger, poverty, and a day-to-day struggle for survival. Every year, hunger and malnutrition are responsible for more than half of all child deaths worldwide—approximately 6 million children under the age of 5. And the cost of hunger from medical expenses, lost productivity, and lower educational attainment is estimated at \$500 billion to \$1 trillion over a generation's lifetime.

Organizations providing humanitarian food assistance—including international relief agencies, national governments, and non-governmental organizations—are one of the few lifelines that the hungry have. But these aid groups face significant challenges to obtaining and quickly delivering food in a cost-effective, efficient, and responsive manner. The high commodity prices and falling incomes of the past year have exacerbated hunger, leaving a record 1.02 billion people without enough to eat and exposing critical weaknesses in the food assistance supply chain.

Meeting these growing needs in a climate of volatile prices and supply will require improved risk management and more predictable, flexible funding for food assistance organizations. Intervention is necessary at several levels. As the G-8 nations discussed in July 2009, strategies for improving food security must focus on strengthening long-term agricultural development, emergency food assistance, and safety-net and nutrition programs.

To find out if finance can help fast-track assistance to the developing world, the Milken Institute, with support from the Bill & Melinda Gates Foundation, sponsored a unique gathering that brought together not only humanitarian and government agencies but also experts from international development finance institutions, commodity exchanges, banks, foundations, and research organizations. Together, participants in this daylong Financial Innovations Lab in July 2009 in Washington, D.C., brainstormed creative ways to use the tools of finance to address hunger.

Tough obstacles

While it may seem like a straightforward task to get food to hungry people, the obstacles facing humanitarian organizations make it anything but. Because humanitarian organizations often rely entirely on voluntary annual contributions to fund their operations, they face a high degree of uncertainty in terms of the timing and volume of available funds. Additionally, many donors place restrictions on their donations, limiting the countries and projects for which the funds can be used. As a result



WFP/Anna Ylakauttu, Madagascar, 2009

BY THE NUMBERS

- **1.02 billion** people do not have enough to eat.
- **6 million** children under 5 die of hunger and related causes every year.
- **\$30 billion** is spent directly on child and maternal undernutrition each year.
- **60 percent** of chronically hungry people are women.
- **65 percent** of the world's hungry live in just seven countries: India, China, the Democratic Republic of Congo, Bangladesh, Indonesia, Pakistan, and Ethiopia.

Source: U.N. Food and Agriculture Organization

of these funding challenges, humanitarian organizations cannot plan and budget effectively or apply donated funds to where they are of greatest need. Predictable funds and flexible capital are necessary to ensure that organizations are able to maximize the use of limited resources.

Humanitarian food assistance organizations also must cope with price and supply risks. If not managed properly, these risks can compromise an organization's ability to secure food at low cost and in sufficient quantities. Because they generally must wait for funding before purchasing commodities, organizations have little leverage in the marketplace and often miss periods when prices are lower (e.g., right after harvest). In addition, because supplies are often far from where they are most needed, delivery can take considerable time.

Viable solutions

In response to these challenges, Lab participants explored a number of potential solutions that hold promise for improving the efficiency and responsiveness of food assistance delivery. The solutions that seem most appropriate and most viable in the near- to medium-term include (see sidebar for a longer description of each solution):

- Issue food assistance bonds backed by donor commitments
- Make forward purchases
- Use call option contracts
- Tap public-sector grain reserves
- Arrange tax credits for private-sector companies so that humanitarian organizations can tap their stocks at the tax-free price

These and other proposed solutions are outlined in this report. If humanitarian organizations would like to move forward with one or more of these options, we recommend working groups be convened to further develop these concepts and generate pilot projects. Before doing so, however, it is critical that organizations discuss these options with their donors and determine which solutions are the most viable to implement.

Successful solutions will be those that can overcome legislative, regulatory, management, and political constraints, which affect the efficiency of humanitarian organizations and their ability to introduce new approaches. For instance, the United States, the world's largest food assistance donor, requires that U.S.-grown commodities, not cash, make up most of its food assistance and that 75 percent of these donations be transported on U.S.-flagged vessels. Furthermore, political and counterparty risks in developing countries also raise concerns, as do the financial expertise and funding structures of aid organizations.

Ultimately, the solutions recommended in the report would allow humanitarian organizations to deliver food to developing countries on time and at a lower cost. Making operations more efficient will increase the number of people who receive food assistance and will limit hunger's long-term negative impact on developing countries' economic development.

In an environment where millions die annually from hunger and where climate change threatens to worsen the situation, it is crucial that food assistance organizations maximize how they use their limited funds. The long-term costs and consequences of hunger in terms of health, productivity, and national security make early and efficient response imperative.

In an environment where millions die annually from hunger and where climate change threatens to worsen the situation, it is crucial that food assistance organizations maximize how they use their limited funds.

RECOMMENDATIONS: THE TOP FIVE

Though many solutions were discussed, we consider these to be the most viable in the three areas that pose the biggest challenges for food assistance. We recommend that humanitarian organizations strongly consider the following solutions for possible adoption.

SOLUTION TO FUNDING CHALLENGES:

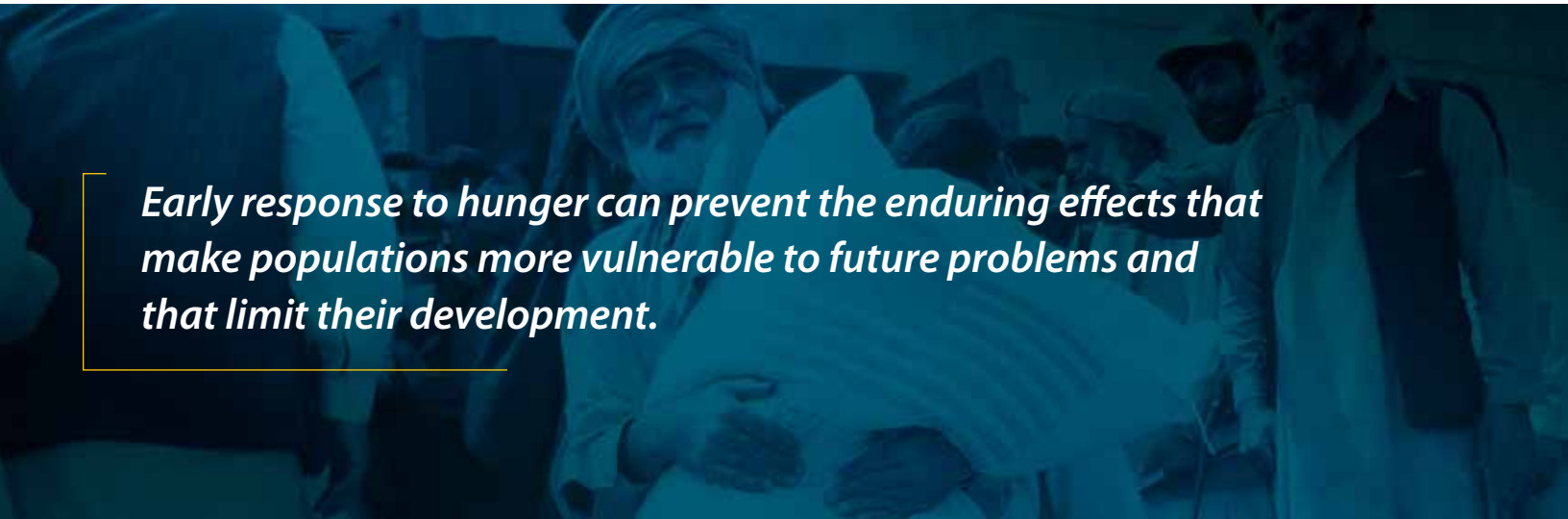
- *Issue food assistance bonds backed by donor commitments.* Similar to the International Finance Facility for Immunisation (IFFIm), a group of donors would make legally binding commitments to a food assistance organization, which could use those commitments as backing for rated bonds to be issued on the capital markets. A third party, such as the World Bank, could act as financial manager, and credit support could be provided by foundations. Frontloading the bonds would increase funding predictability.

SOLUTIONS TO PRICE RISK CHALLENGES:

- *Make forward purchases.* In contrast to spot purchases, forward purchases are made before the supplies are needed to take advantage of lower prices. They also offer flexibility on price, volume, and delivery locations; allow shorter lead times; and enable humanitarian food assistance organizations to plan better.
- *Use call option contracts.* Call options—the right, but not the obligation, to buy a commodity at a certain price for a period of time—facilitate access to commodities at lower prices. Because they don't mandate the purchase, the buyer can back out if the commodity ultimately isn't needed, forfeiting only the premium paid for the option.

SOLUTIONS TO SUPPLY RISK CHALLENGES:

- *Tap public-sector grain reserves.* Food assistance organizations could access physical grain reserves managed by national or local governments to improve response times during emergencies.
- *Arrange tax credits for private-sector companies to tap their stocks at the tax-free price.* Humanitarian groups could purchase privately held food stocks tax-free if they can arrange a tax credit for the companies that supply them. A group would arrange the tax credit with the Ministry of Finance in the country where the food stocks are held.



Early response to hunger can prevent the enduring effects that make populations more vulnerable to future problems and that limit their development.



WFP/Photo Library, Bangladesh, 2007

INTRODUCTION

In Kenya's Rift Valley, three meals a day is a luxury. Drought has ravaged the countryside, causing crops to fail and setting in motion the world's latest food crisis.

"We are eating just once a day," said Elizabeth Chepkumi, a wife and mother who earns the rough equivalent of 5 cents an hour breaking rock in a quarry with her husband. "It's just white maize meal mixed into porridge with a little water. I'm worried about the near future because I have two young kids."

The drought has also sparked cereal shortages that have almost doubled prices in many parts of the country. People walk up to 30 kilometers a day in search of water. Many are selling their farms and moving to the cities in hopes of finding work and food.

"We don't know what to do. Even our cows have died because of lack of food and water. We are living on hope and faith, just one day at a time," farmer Lucy Gathigia Mahinda told a humanitarian worker in September 2009. She depends on food assistance to feed her seven children.¹

The hunger endured by these two families is all too familiar to more than 1 billion people who go hungry each day—one-sixth of the world's population.²

The situation faced by relief groups is familiar as well. An emergency appeal for \$576 million, led by the United Nations, has drawn just \$323 million to date for Kenya,³ and the U.N.'s World Food Programme (WFP) said recently that nearly one-tenth of Kenya's population urgently needs food.

Solving world hunger has long been on the globe's list of things to do, but the issue took on added urgency when the food crisis went global in 2006-08. Greater demand and lower crop yields, among other factors, sent energy and food prices soaring, and riots erupted in more than 30 countries. The effects still linger in many developing countries; a report in July 2009 found that 71 percent of the domestic prices analyzed were more than 25 percent higher than in 2006.⁴

In response to the crisis, the G-8 nations in July 2009 pledged \$20 billion over three years toward stronger agricultural development, emergency assistance, and national safety-net and nutrition programs. Each of these strategies reinforces the others. Agricultural development eventually eases the need for food assistance. Food assistance groups fill short-term gaps and support agriculture by purchasing locally. And national safety-net and nutrition programs address chronic health needs and allow children and adults to focus on school and work instead of hunger.

Solutions to hunger and malnutrition are available on several fronts. Improvements to farming processes, technology, and crop yields are one angle, and better educating people about nutrition is another. On the political front, wealthy nations could use a carrot-and-stick approach of canceling poor countries' debts if they make measurable progress on basic living conditions.

To see if finance can also help foster an efficient and responsive food access pipeline, the Milken Institute, with support from the Bill & Melinda Gates Foundation, sponsored a unique gathering that brought together not only humanitarian and government agencies but also experts from international development finance institutions, commodity exchanges, banks, foundations, and research organizations.

The daylong Financial Innovations Lab in July 2009 in Washington, D.C., focused on capital markets-based solutions, using as a case study the work of the WFP, the world's largest humanitarian agency. This diverse group considered the obstacles to delivering assistance, including price, supply, and funding challenges. Among the most promising solutions were food assistance bonds, forward purchases, call option contracts for contingencies, grain reserves, and tax credits for private companies holding reserves, all of which are described in this report.

Through the use of financial tools, the experts who gathered at this event hope to create a future in which everyone enjoys freedom from hunger.

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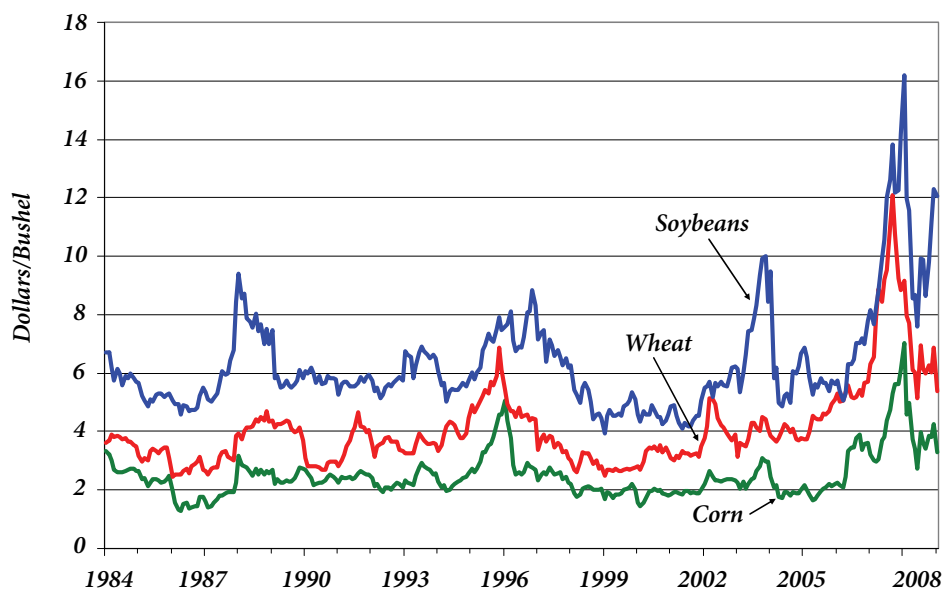
ISSUES & PERSPECTIVE

During the food crisis of 2006-08, the prices of commodities around the world increased significantly. International prices for grain doubled (see figure 1), while prices for other basic commodities rose more than 60 percent.⁵ Contributing factors included rapid growth in income and consumption in China, India, and other countries; grain and other food stocks being diverted to biofuels; supply disturbances; costlier fertilizers and fuels; low levels of grain reserves; and temporary export controls.⁶ Although prices have decreased from their 2008 peaks, they remain high in many developing nations and may rise again in 2010 because of predicted shortages.⁷

FIGURE

1

Grain prices doubled at peak of 2006-08 food crisis.



Notes: Grain prices are for Corn No.2 Yellow, Wheat, No.2 Hard (Kansas), Soybeans, No.1 Yellow. The years begin July 1.
Sources: U.S. Department of Agriculture, Datastream.

The global financial crisis has made a bad situation worse. People have less money to feed themselves and their families, and institutions have fewer resources to help. For example, the WFP estimates it will need \$6.7 billion for 2009 but expects donations of just \$3.7 billion.⁸ In addition, remittances—money that immigrants send to their home countries—have decreased despite previous annual growth rates as high as 20 percent. The World Bank predicts a 7 percent to 10 percent drop in remittances in 2009.⁹

The shortage of funding from all these sources will lead to more hunger around the world. Aid organizations must find ways to maximize financial efficiency and reduce response time.

THE FOOD ACCESS PIPELINE

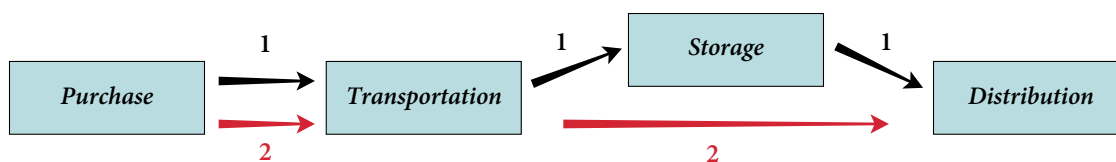
Food assistance usually takes one of two paths (see figure 2):

1. An organization buys food, transports it to the country in need, stores it for a short period near the beneficiaries, and distributes it.
2. An organization buys food, transports it to the country in need, and immediately distributes it.

Blockages at any point along the pipeline can lead to higher costs and delayed distribution. Often, the first logjam occurs in funding. Aid organizations support their operations with voluntary contributions from governments and private donors. The amount and timing of the donations are frequently unpredictable, which limits the groups' ability to make strategic choices about when to purchase food, whether and where to store it, how and when to transport it, and how to distribute it.

FIGURE
2

The Food Access Pipeline.



Source: Milken Institute.

TABLE
A

Traditional procurement tools used by food assistance organizations.

TOOL	DESCRIPTION	ADVANTAGES	DISADVANTAGES
Reserves	Purchased in advance, shipped to destination, and stored	<ul style="list-style-type: none"> • No lead time for procurement or delivery • Price is known 	<ul style="list-style-type: none"> • Warehousing/insurance costs • Risk of damage or loss • Little flexibility on volume or delivery locations • Can crowd out private sector if owned and managed by government
In-kind donations	Donors contribute commodities, which are shipped to destination	<ul style="list-style-type: none"> • May be the only type of contribution a donor country allows • Generally high-quality products • Sourcing from other regions can help overcome local supply constraints 	<ul style="list-style-type: none"> • Risk of long lead times • Risk of high transport costs • Can create disincentives to local and regional market development
Spot purchases	Purchases made when funding is confirmed, then shipped to destination	<ul style="list-style-type: none"> • No storage charges • Price is known after purchase is completed 	<ul style="list-style-type: none"> • Risk of high commodity costs • Risk of high transport costs • Risk of long lead times • Performance risk (whether the supplier will actually deliver) • Inability to predict costs makes it difficult to budget/plan • Little flexibility on volume or delivery locations

Source: Julie Dana, World Bank.

The procurement process also has several shortcomings. Procurement has traditionally occurred through spot purchases, in-kind donations of commodities, and purchases placed in reserve (see table A). Spot purchases involve securing supplies as needed and delivering them immediately or soon afterward. This method can result in high prices and transport costs, delays in meeting emergency needs, and few delivery options. In-kind

donations—the major mechanism used by the United States—have long lead times and can discourage the development of local and regional markets. Using reserves eliminates long lead times and price uncertainty but generates storage costs. Public reserves may also act as a disincentive to local suppliers, who assume the reserves will be tapped in lean times. It is also difficult to predict if aid will be needed in the place chosen for storage.

FUNDING AND RISK MANAGEMENT CHALLENGES

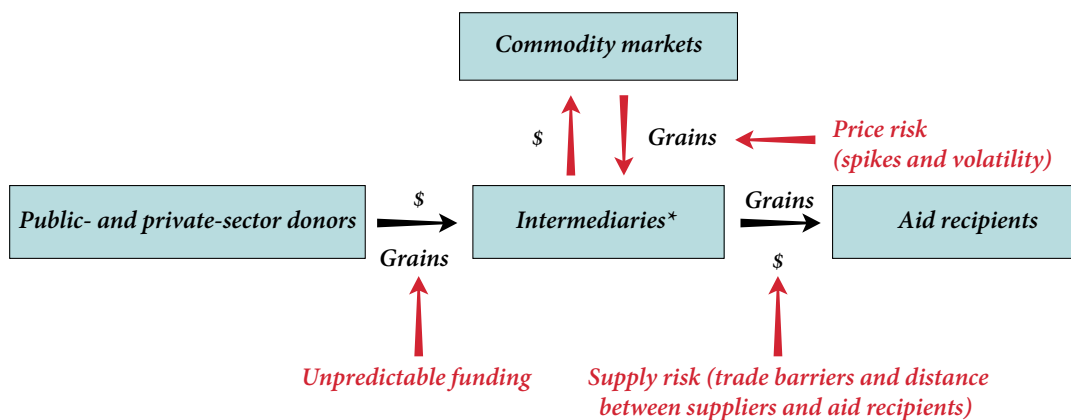
Another way to look at the aid system is to consider the parties involved. Humanitarian organizations act as intermediaries among public- and private-sector donors, the commodity markets, and aid recipients (see figure 3). At each intersection of the market participants, unpredictability and certain risk factors threaten the success of an intermediary's operations. During the Lab, Michael Klein, special advisor to the WFP, noted that food assistance organizations face financial, physical, and regulatory challenges. The Lab explored the financial and physical concerns in two sessions: one on funding challenges and another on risk management challenges—that is, effectively and efficiently handling the procurement and delivery of products. This report reviews the findings of those sessions. Regulatory challenges were discussed briefly and are covered at the end of this document.

Funding challenges involve the unpredictable nature of funding streams that rely largely on donations. In addition to uncertainty over the size and timing of grants, aid organizations face restrictions on how they use some donations. Certain donors require that their money be used for specific projects or countries. Substitution is not allowed, even if the need is greater in another part of the world or for another commodity. As a result, planning and budgeting are constrained, and organizations are unable to take advantage of economies of scale or periods when costs are lower. Ultimately, funding challenges affect the degree to which organizations can serve those in need.

Lab participants distinguished between two types of funding needs: core operating costs (e.g., salaries, administrative costs) and procurement. Funding unpredictability affects how

FIGURE
3

The food assistance model.



organizations operate day to day and their ability to plan and respond to specific needs.

Risk management challenges involve price and supply issues that compromise an organization's ability to secure food at a reasonable price and in sufficient quantities. Price risks involve volatility in the cost of commodities, and price spikes increase the number who need food assistance and the overall cost to humanitarian organizations. A lack of deep financial markets in recipient countries limits the degree to which commodity prices can be hedged, leaving these countries vulnerable to changes in

market prices. Supply risks refer to factors that make it difficult for humanitarian assistance organizations to reach recipients. For instance, adequate quantities of food can be difficult to secure during emergencies and sometimes must be purchased far from the area in need. Additionally, trade barriers and security concerns affect the supply of goods that can be delivered quickly.

Better management of price, supply, and funding risks will help humanitarian assistance organizations develop a sustainable aid model.

THE URGENCY TO IMPROVE FOOD ASSISTANCE DELIVERY

Meeting these challenges is critical. The cost of doing nothing is simply too high in the face of worldwide hunger and rising economic inequalities. Hunger and malnutrition are responsible for the deaths of approximately 6 million people younger than 5 each year—more than half of all child deaths worldwide.¹⁰ Climate change is likely to make this situation worse; a recent report by Oxfam International estimates that by 2015 climate-related disasters will affect over 50 percent more people annually than the 1998–2007 yearly average.¹¹

Just a few months of undernutrition can have long-term consequences on not only health but also economic development. Reducing hunger is a crucial part of national security because shortages can lead to riots and political instability. Early response to hunger can prevent the enduring effects that make populations more vulnerable to future problems and that limit their development (see sidebar). This is especially important as developing countries grow. In 2011, the world's population is expected to reach 7 billion—up 200 million from 2009—with the majority of this growth in the poorest nations.¹²

The cost of hunger is massive. The U.N. Food and Agriculture Organization (FAO) estimates the cost of child and maternal undernutrition—taking in too few calories to meet an active person's minimum needs—at \$30 billion per year. This figure includes the medical costs of treating more problem pregnancies and sick children whose immune systems have been weakened by hunger. Similarly, a study on Central America and the Dominican Republic calculated the cost of undernutrition to be as much as 11 percent of a country's gross domestic product. An estimated 90 percent of the cost was in lost productivity and lower levels of education.¹³ The indirect costs are much larger. Lost productivity and income due to premature death, disability, absenteeism, and fewer educational and occupational opportunities cost from \$500 billion to \$1 trillion over a generation's lifetime.¹⁴

The costs of addressing hunger and malnutrition are likely small relative to the benefits. One analysis found that the benefits of reducing malnutrition from insufficient protein outweigh the costs by an average factor of 7.7 to 1. Similarly, the benefits of reducing iron and iodine deficiencies outweighed the costs by an average factor of 9.8 and 22.7, respectively.¹⁵

Reducing hunger is a crucial part of national security because shortages can lead to riots and political instability.

WFP/James Giambrone, India, 2008



IN INDIA, MALNUTRITION HIDES IN PLAIN SIGHT

India has seen a decade of explosive economic growth, but the country is playing catch-up when it comes to child nutrition.

More than 42 percent of children younger than 5 are underweight, which can stunt physical and intellectual growth for a lifetime. In China, also an emerging nation, the number is just 7 percent.

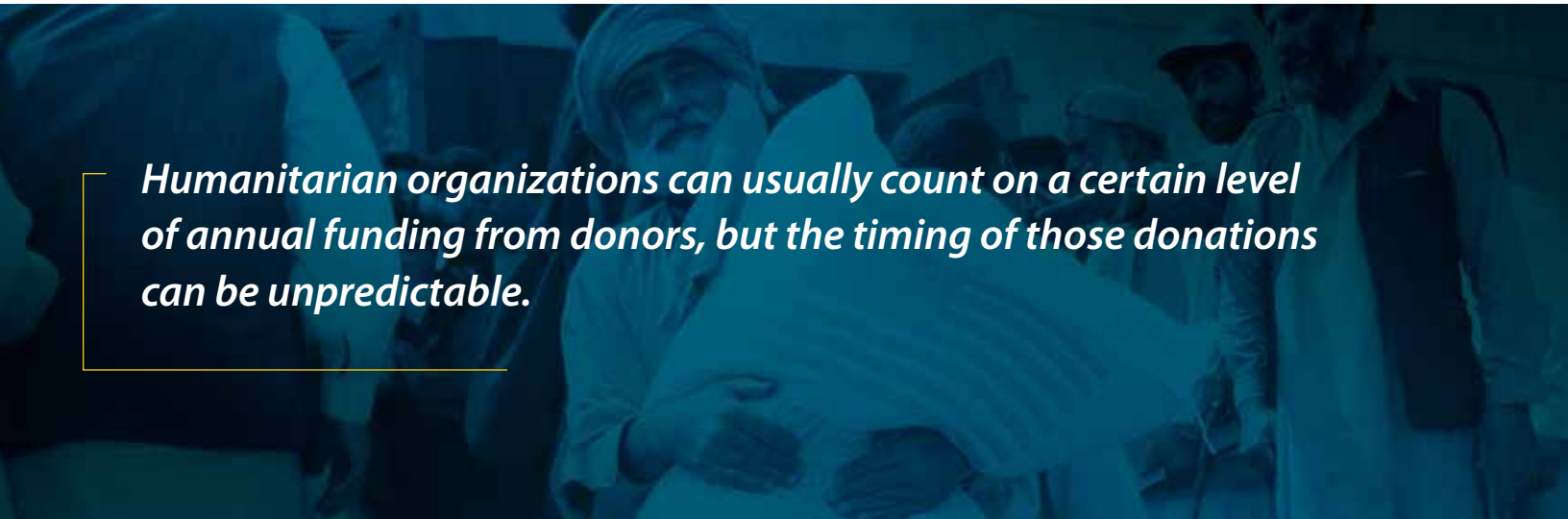
The situation was striking to health researcher Purnima Menon as she toured a New Delhi slum. Just 5-foot-2, Menon towered over the women she met, and children her daughter's age were at least a foot shorter, she told *The New York Times* in March 2009.

Stunted children and adults are so prevalent, she said, that it makes malnutrition invisible.¹⁶

Aid groups have launched pilot efforts to reduce delivery times and better allocate scarce resources. As one example, the United States Agency for International Development (USAID) installed a warehouse in Djibouti in 2007, slashing delivery times by 75 percent—three to four months—compared to the typical timeframe for U.S. grain to reach the Horn of Africa.¹⁷ As another, Malawi's government purchased a call option in 2005 to ensure supply and cap the price of maize during the annual lean season. Malawi exercised the option and saved \$50 to \$90 per metric ton over the spot purchase price at the time of delivery. In addition, the WFP set up a forward purchase pilot program in 2008 through which it obtained 238,000 metric tons of cereals for nine operations in Africa. The delivery time was reduced from the typical three months to an average of one month. These innovative mechanisms will be detailed later.

Ultimately, this report seeks to identify solutions that:

- Allow food assistance organizations to deliver food on time and at lower cost.
- Increase the number of people who receive food assistance, decrease the number who suffer from undernutrition, and minimize hunger's effects on developing countries' long-term economic development.



Humanitarian organizations can usually count on a certain level of annual funding from donors, but the timing of those donations can be unpredictable.

FUNDING SOLUTIONS FOR THE FOOD ACCESS PIPELINE

To achieve their goals, humanitarian organizations need predictable funding and flexible capital so they can plan and operate efficiently. Obviously, funding that comes in response to weather-related emergencies and civil conflicts will always be irregular, but core operating or procurement costs could be made more predictable. Fewer restrictions from donors on the use of their contributions would also let food assistance organizations make the best use of their resources.

Increasing predictability carries with it the challenge of sustaining the overall volume of donations. “The problem is that humanitarian funding for the last 20 years, which is when it’s really accelerated, is a model that actually generates its volume precisely from its unpredictability,” said Allan Jury, director of the U.S. Relations Office at the WFP.

Lab participants discussed several ideas to solve organizations’ funding challenges, but those presented below would likely be the most effective.



WFP/Marco Frattini, Uganda, 2008

SOLUTIONS TO FUNDING CHALLENGES

SOLUTION

1

Apply the Advance Market Commitment model to food assistance delivery.

The Advance Market Commitment (AMC) was developed to encourage private companies to research, develop, and produce vaccines for low-income countries. The concept was based on the fact that drug makers weren’t making certain vaccines, especially those for poor populations, because they weren’t certain they could recover their costs and make a profit. The AMC aimed to overcome this hurdle by guaranteeing the price of vaccines once they have been developed. The idea was that vaccine makers would have a ready market, giving them an incentive to invest the large amounts necessary to conduct research, train staff, and build manufacturing facilities.

A pilot of the AMC was launched in June 2009 with \$1.5 billion in commitments from Canada, Italy, Norway, Russia, the United Kingdom, and the Bill & Melinda Gates Foundation and \$1.3 billion from the GAVI Alliance. Donors guaranteed prices to vaccine makers to produce vaccines for developing countries. Participating companies also made long-term, binding commitments to supply the vaccines at lower, sustainable prices after the donor funds are depleted.¹⁸

The model could also be applied to food assistance. Donors could commit funds so that humanitarian organizations could make long-term contracts with suppliers and service providers. Guaranteeing that funds will be available long-term would make suppliers and service providers more likely to agree to multi-year contracts and lower prices. Food assistance organizations would benefit from the stability and might be able to borrow money using the commitment as a sort of collateral, giving them more flexibility in purchasing.

FOR FUTURE DISCUSSION

- *Would suppliers respond to advance commitments?*
- *Which private-sector actors would participate in these agreements?*
- *What would the specifics of these contracts look like?*
- *How much money should be committed in advance?*

SOLUTION

2

Issue food assistance bonds backed by donor commitments.

Humanitarian groups should explore raising money through the bond markets. If a group of donors made legally binding commitments to a food assistance organization, rated bonds could be issued and repaid with those future funds. This model is similar in concept to the International Financing Facility for Immunisation (IFFIm), which secures funding for vaccines.

Figure 4 outlines how a food assistance bond might work. A special purpose vehicle (SPV) would issue bonds backed by donor commitments. The proceeds from the bonds would be transferred to a humanitarian organization. Because the money required for humanitarian relief varies from year to year, the bond proceeds could be based on the amount the

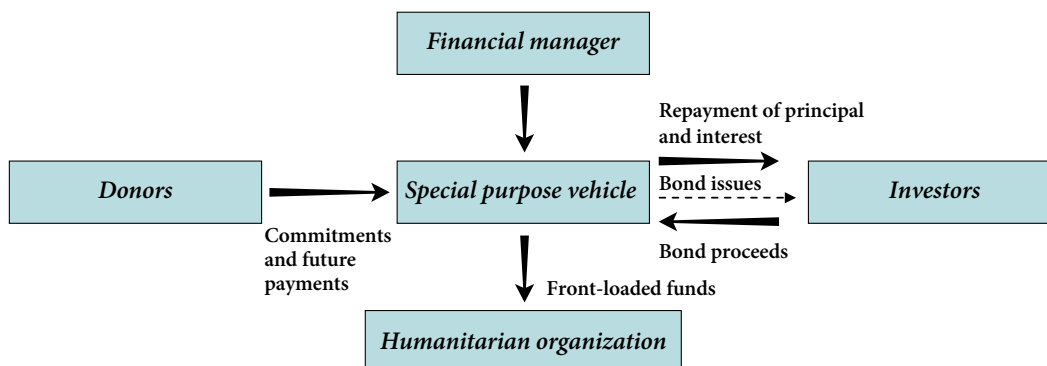
organization generally receives each year. Emergency needs could still be funded through specific appeals when a crisis occurs. Investors in the bonds would receive their principal plus interest. A separate entity, possibly the World Bank, would act as financial manager for the transaction. Interested philanthropic organizations could provide credit support.

Bonds could provide a portion of an organization’s funding up front, giving it a clear budget picture and the ability to react immediately instead of waiting for donations to arrive, potentially saving more lives. In addition, up-front funding would benefit countries where the timing of delivery is important. For example, during Sudan’s rainy season, it is

FIGURE

4

How a food assistance bond would work.



Source: Milken Institute.

extremely difficult and expensive to move food around the country, said Jury, of the WFP. The most sensible approach—particularly in Darfur and some other isolated areas—is to collect about 90 percent of the year’s food supply by April. Proceeds from food assistance bonds would allow this up-front purchase, and bond proceeds would likely have fewer restrictions than donations from individuals.

On the other hand, issuing bonds is expensive. A cost-benefit analysis could assess whether a bond issue is worthwhile. For example, an analysis of the IFFIm funding structure predicted it would increase the health impact of spending on vaccines by 22 percent, even after taking into account the costs of private-sector borrowing.¹⁹ Another challenge is that this type of structure requires a credit rating, which is difficult if the organization does not have one. In such cases, another organization would have to lend its balance sheet for the transaction.

In the case of the IFFIm, the International Bank for Reconstruction and Development, part of the World Bank, manages the bond proceeds, tracks liquidity to meet disbursement commitments, and services the debt. The bank monitors leverage to ensure that the IFFIm meets all its long-term financial obligations. The IFFIm had a long-term rating on its bonds of AAA from Standard & Poor’s as of July 2009.²⁰

FOR FUTURE DISCUSSION

- *Would donors be willing to participate in legally binding commitments?*
- *How many years should the funds cover?*
- *Would food assistance bonds be cost-effective?*

SOLUTION

3

Create a swing donor facility.

Donors now make commitments without fear of repercussions if they donate less than they pledged.

A swing donor facility would hold donors responsible for their commitments and would penalize them if they fell short. Donors now make commitments without fear of repercussions if they donate less than they pledged.

For example, signatories of the Food Aid Convention (FAC), the main international agreement on food assistance, committed to providing a minimum of 5 million metric tons of aid annually. But from 1999 to 2005, Canada missed its commitments in four of seven years, and Argentina never came close to meeting its pledges.²¹ The FAC aims to improve world food security by “making appropriate levels of food aid available on a predictable basis,”²² but predictability cannot occur unless donors keep their promises. A major drawback of the FAC is this lack of an enforcement mechanism. Without it, donors who have committed to a fixed amount of in-kind assistance have a financial incentive to delay donations when commodity prices are high and wait until prices fall.²³

This concept of a swing donor facility, recently proposed to make aid flows for health care more predictable, could also work for food assistance. The swing donor—perhaps a multilateral finance institution or foundation—would guarantee annual minimum aid flows from a certain group of donors to a humanitarian organization. The swing donor would make payments if the participating donors failed to meet their commitments. Tardy donors would be charged the shortfall amount with interest and penalties.²⁴



It may be difficult to find an entity willing to act as the swing donor because large sums may be needed to cover donors who fall short. To encourage participation and limit the sum required, an entity could agree in advance to cover only a certain level of funding.

FOR FUTURE DISCUSSION

- *Would countries agree to participate in a swing donor facility?*
- *What minimum amount of annual funds should be agreed upon?*
- *What possible entities could act as the swing donor?*

SOLUTION

4

Guarantee a base level of funding to humanitarian organizations.

Humanitarian organizations can usually count on a certain level of annual funding from donors, but the timing of those donations can be unpredictable. An entity or groups of entities may be willing to guarantee a portion of an organization's funds. Guaranteed funds could support an organization's core operations, while ad hoc projects could be left to donors who respond to specific crises.

The guarantee could take the form of a letter of credit from a foundation, development finance institution, or consortium of these entities. The humanitarian organization could use this letter to gain access to bank credit. Loans would be repaid with donor funds as they arrive, and the guarantor would cover any shortfall.

A guarantee would benefit all parties involved. The humanitarian organization would gain access to flexible capital. The bank would benefit from the good track record of donors who provide a certain level of funds every year. And the guarantor would support the humanitarian organization, likely without having to pay up-front costs.

FOR FUTURE DISCUSSION

- *What foundations or other entities might be willing to guarantee funds?*
- *What level of funding should be guaranteed?*

SOLUTION

5

Use a multi-year funding structure.

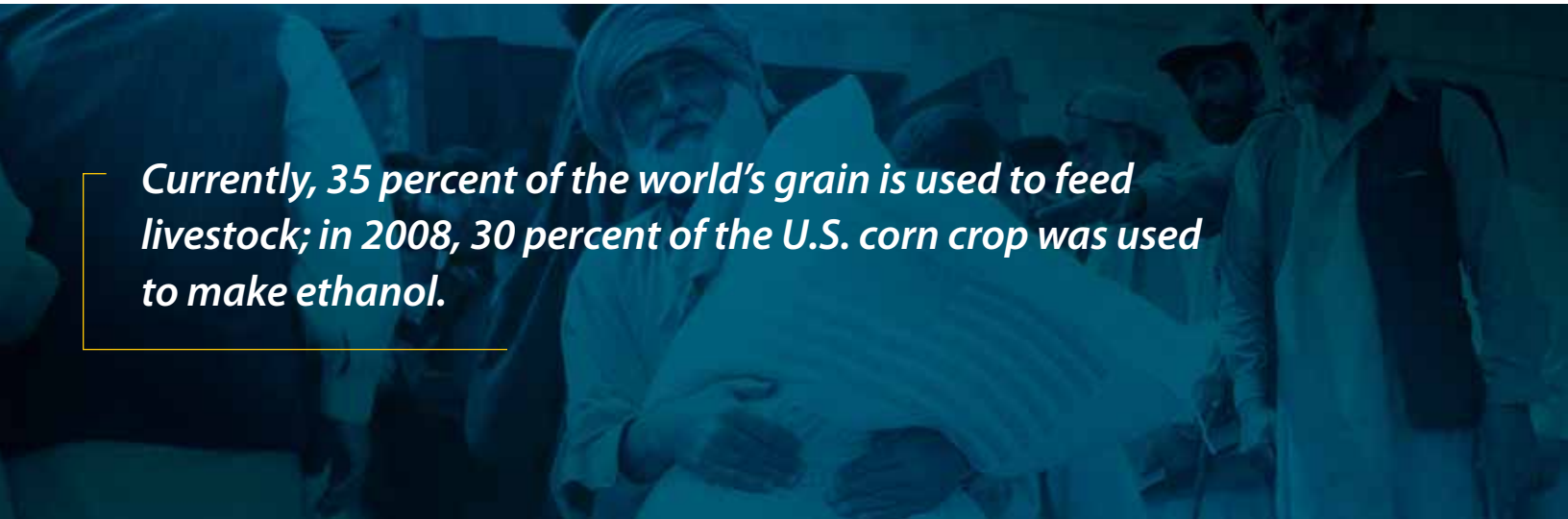
The International Development Association (IDA), part of the World Bank, provides interest-free loans and grants to the poorest countries. It is largely funded by donors who meet every three years to replenish the IDA's funds. During the meetings, donors discuss needs and commit a certain amount for the next three years. At the most recent meeting, 45 countries pledged \$25.1 billion to the IDA for the three years ending in June 2011.²⁵

Humanitarian organizations could adopt a similar funding structure. As with the IDA, donors would set broad policies for using the funds. Because donors often place restrictions on the use of their contributions, a process that allowed flexibility

would be beneficial. This funding structure could be combined with the swing donor facility (solution 3) or a guarantee (solution 4) to ensure the funds are available as promised.

FOR FUTURE DISCUSSION

- *Which donors would be involved?*
- *What costs would pledges cover?*
- *Would a swing donor facility or guarantee be necessary?*



Currently, 35 percent of the world's grain is used to feed livestock; in 2008, 30 percent of the U.S. corn crop was used to make ethanol.

RISK MANAGEMENT SOLUTIONS FOR THE FOOD ACCESS PIPELINE

Risk management solutions for food assistance can be used to manage volatility in commodity prices and improve the timing of delivery. Rather than being competing solutions, they represent tools in an organization's toolbox.

Different risk management solutions are appropriate depending on the probability of need (see figure 5). These tools are described in further detail in the following sections.

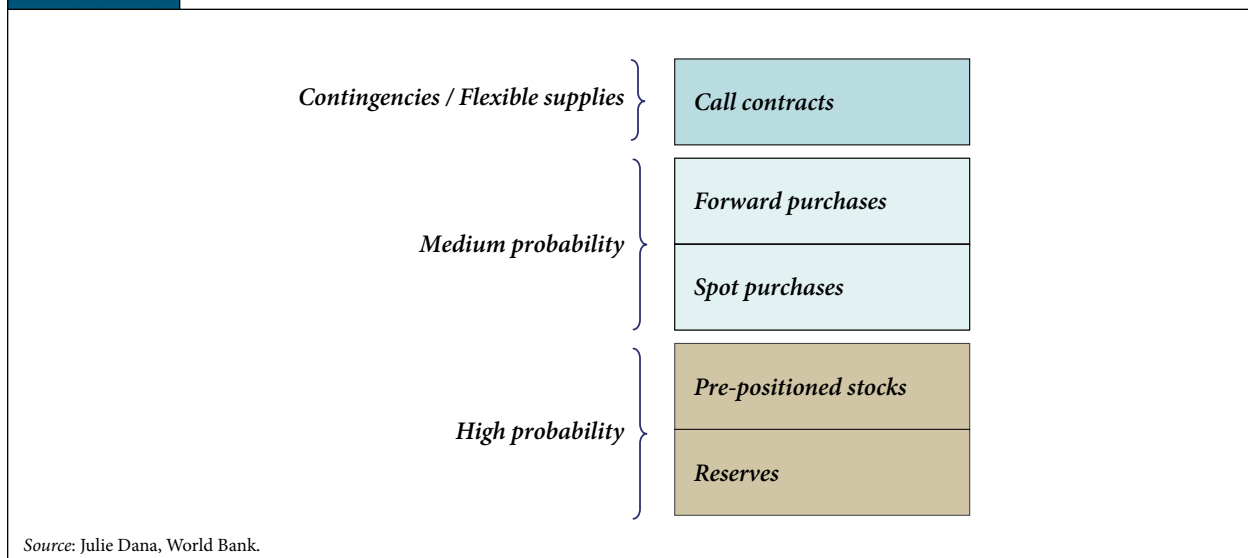
In countries with a high probability of a food emergency, such as those with frequent droughts, reserves and pre-positioned food stocks can help humanitarian groups and governments respond more quickly. These mechanisms can also be useful for safety-net programs that require regular access to food supplies.

Spot purchases and advance purchases can be used for medium-probability events, such as countries where civil unrest gradually leads to a need for aid.

FIGURE

5

A risk management approach to commodity procurement.



Call contracts let entities lock in prices for contingencies. In these cases, resources may be needed, but the quantity and the timing of the need are uncertain.

In estimating the probability of need, it is necessary to think geographically. For example, landlocked countries are more likely to require supplies because the lack of ports makes them more difficult to reach. While the likelihood of need may be low for any one location, the more needs are aggregated—for instance, at the country or regional level—the higher the probability that aid will be needed.

SOLUTIONS TO PRICE RISK CHALLENGES

Humanitarian organizations could use a number of alternatives for managing price risk (see table B).

SOLUTION 6	<i>Make forward purchases.</i>
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Forward purchases have long been used for corporate procurement, but most humanitarian organizations have not adopted the practice. In contrast to spot purchases, forward purchases are made before the products are needed to take advantage of lower prices. Right after harvest, for instance, prices tend to be low, but during emergencies, commodities may be expensive in the region that is in crisis. Forward purchases also offer flexibility on volume and delivery locations.

The WFP, which fed 102.1 million people in 78 countries last year, has operated a successful forward purchase pilot since 2008. Robert Opp, special advisor to the executive director at the WFP, explained that the program has allowed the WFP to purchase commodities based on a regional summary of shortfalls and donation forecasts. This program allows WFP to act more quickly than under its regular procurement process, which begins only after donations have been confirmed for a specific project. So far, the WFP has purchased more than \$80 million in commodities with the forward purchase pilot. Forward purchases have reduced

the WFP's delivery times by 67 percent, from an average of three months to one month. The WFP could expand its pilot and use the mechanism in its regular operations.

Of course, forward purchasing also has some risks. For example, performance risk—whether a supplier will actually deliver—is a consideration. Financing mechanisms, posting collateral, or accessing credit lines may also be required to make purchases in advance of donations.

FOR FUTURE DISCUSSION

- *What companies could act as counterparties?*
- *How can local private-sector actors be involved?*
- *When should forward purchase be used?*
- *For which commodities and countries should forward purchase be used?*
- *How can counterparty risk be managed?*

SOLUTION 7	<i>Use call option contracts.</i>
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Call option contracts are a useful way to make procurement cheaper and more flexible. Options provide the right, but not the obligation, to buy (a call option) or sell (a put option) a commodity at a certain price for a particular period of time.

For example, the World Bank, among others, worked with the government of Malawi in 2005 to secure a call option for maize. The country was experiencing a food crisis and was not sure donors would respond to its appeal for aid. Officials recognized that the price of maize was rising because of a regional shortage and sought a contingent import agreement that would allow them to lock in prices. With guidance from the World Bank, Malawi purchased a call option contract based on the South

African Futures Exchange to ensure its supply and cap the price of maize. The Malawi government was a counterparty to the contract, the World Bank provided technical support, the U.K. Department for International Development (DFID) provided financing for the premium, and Standard Bank of South Africa provided the contract.

The contract gave Malawi the option to purchase maize at a set price. The government could declare the volume in tranches on different dates, so it did not have to buy it all if it was not needed. Furthermore, the contract permitted Malawi officials to choose from three delivery locations so the maize could be delivered where it was most needed.

TABLE B		<i>Alternative procurement tools for food assistance organizations.</i>	
TOOL	DESCRIPTION	ADVANTAGES	DISADVANTAGES
Forward purchases	<ul style="list-style-type: none"> • Purchases with set or variable pricing mechanisms, providing for fixed or optional delivery points at a later date • Can be long-term supply arrangements 	<ul style="list-style-type: none"> • No storage charges • Flexibility on volume, price formula, delivery location • Allows for price risk management • Shorter lead times 	<ul style="list-style-type: none"> • Performance risk • May need financing mechanisms (posting of collateral or credit lines)
Call option contracts	Buyer has the right but not the obligation to take delivery of the goods	<ul style="list-style-type: none"> • Allows for price risk management • Flexibility on volumes, price formula, delivery locations • Shorter lead times 	<ul style="list-style-type: none"> • Cost of call option premium • Performance risk
Financial hedging using futures or options	Use financial contracts on established futures exchanges to either lock in prices (futures) or establish price caps (options)	<ul style="list-style-type: none"> • May provide financial protection against price shocks 	<ul style="list-style-type: none"> • Prices of many commodities purchased by humanitarian organizations are not closely linked to commodity exchange prices • Doesn't address how commodities are delivered • Requires significant financial infrastructure, including funding and/or credit lines to manage margin calls • Hedging with futures creates unknown and potentially large financial liabilities

Source: Julie Dana, World Bank.

Imports through this contract were \$50 to \$90 less per metric ton than market levels at the time of delivery. Basis risk—the risk that prices on the exchange would not correlate with local prices—was eliminated because the cost of transporting the goods to Malawi was included in the price.²⁶

The donor was key to making this transaction happen. Julie Dana, senior financial specialist at the World Bank, explained that the DFID ultimately decided to participate in the 2005 Malawi option because it was one of the largest donors to Malawi and knew it would definitely be buying and shipping grain. It made sense for the DFID to hedge its risk and protect its budget by financing the call option.

Despite the potential cost savings, some Lab participants doubted that the boards of food assistance organizations would agree to fund call option premiums, especially if the options ultimately are not exercised. However, development finance institutions like DFID could consider covering the premiums.

Panos Varangis of the International Finance Corporation (IFC)

likened options to a form of insurance and stressed that the potential for huge savings makes them worthwhile even if they are not always exercised.

“The resentment of buying a call or a put option and then not exercising it ... it’s effectively buying an insurance policy and not seeing your house being burned, and then being sad that your house has not been burned,” Varangis said. “It can be shown to governments that paying a 12 percent premium on a call option, there is bang for the buck, and somehow we need to demonstrate that to the donors, that their money is not wasted even though the option has not been exercised.”

FOR FUTURE DISCUSSION

- How can the Malawi call option be replicated more widely?
- Who would the participants be?
- What roles would they play?
- Under what conditions would call options make sense?



UNMIS/Tim McKulka, Sudan, 2008

INSURANCE SOLUTIONS FOR FOOD SECURITY

Only the richest 3 percent of people in the world are covered by insurance.²⁷ Yet, insurance could be a valuable way to increase food security, prompting payments to cover vulnerable populations during natural or manmade disasters. Humanitarian organizations could use these products to receive funds as soon as they are needed and would enable them to respond to emergencies more quickly. Aid groups are already adopting these tools to some extent. The first humanitarian insurance policy was issued in 2006 between the WFP and insurer AXA Re. The insurer agreed to pay up to \$7.1 million if Ethiopia experienced a drought during the year.²⁸

Though the Financial Innovations Lab did not explicitly address insurance solutions for improving food security, it is important to recognize recent advances in this area.

- Catastrophe bonds:** Catastrophe bonds transfer the risk of low-probability, high-loss events to the financial markets. The current market volume for catastrophe bonds is around \$11.4 billion, covering various risks such as earthquakes, storms, and floods.²⁹ Investors who buy these instruments receive high interest payments but could lose part or all of their investments if a catastrophe strikes. Humanitarian organizations could benefit from catastrophe bonds, as suggested by Lab participant Jerry Skees, president of GlobalAgRisk Inc. and a professor at the University of Kentucky, because payouts from these bonds are reliable and predictable in amount.

The private sector can play an important role in relief efforts targeting low- and middle-income countries, as demonstrated by Swiss Re's GlobeCat Ltd. transaction in late 2007. The global reinsurer sold \$25 million worth of securities linked to Central American earthquakes. Payment was to be triggered using the Modified Mercalli Intensity Scale, which measures groundshaking intensity. Swiss Re aims to replicate this model with donors who would pay the premium for the transaction. According to Swiss Re, \$1 million in donations can be used to pay insurance premiums to generate \$45 million in payout for relief efforts.³⁰

- Index-based weather insurance:** New technologies for weather forecasting are being developed that can be used to trigger insurance payments as soon as an event occurs. Satellite mapping and water requirement satisfaction indices, for instance, are being used together as a trigger mechanism for drought insurance. Skees discussed using the surface temperatures of oceans as a forecasting mechanism for bad weather. Forecasting systems also could help aid groups determine the need for early intervention. Donors have experimented with using indexed weather insurance for farmers in developing countries since 2002.³¹
- Political risk insurance:** Lab participants from the private sector said their firms are reluctant to engage in developing countries with a history of corruption and erratic government intervention in commodity markets, which affects profits and the incentive to do business in those nations. Political risk insurance isolates this type of risk for the private sector and could help mitigate it. John Simon, visiting fellow at the Center for Global Development, said political risk insurance can make it easier for private-sector firms to work in places where, for example, the government floods the market with grain from a national reserve or caps commodity prices.

SOLUTION

8

Employ a financial hedging strategy.

Food assistance organizations could hedge price risk by trading futures or options on a formal commodities exchange. Futures would allow them to lock in prices, while options would allow them to cap prices.

Certain challenges limit the effectiveness of this tool for food assistance. First, food assistance requires physically delivering a commodity, while hedging is usually a purely financial transaction. In addition, futures trading requires managing daily margin calls through a credit line, which can be difficult to secure in developing countries, and financial liabilities for futures can be quite large. Furthermore, basis risk limits the benefits of exchanges in developed countries, where financial hedging is often cheaper because these exchanges tend to be more liquid than those in developing countries. However, commodity exchanges in developing countries like Brazil, China, India, Indonesia, Malaysia, and South Africa can be used successfully in contracts for domestically consumed commodities and for international commodities where basis risk is high.³²

Dan Cekander, director of grain research for Newedge, recommended mapping where the best hedges lie for various regions before they are needed. This would allow the parties involved to act quickly when a hedge is deemed worthwhile. Dana, of the World Bank, noted the cost-effectiveness of acting

early. The premium for the Malawi government's call option would have been cheaper if the government had purchased the contract earlier, she said.

Selecting the exchange where the hedging would take place is based on several factors, including which commodities are being hedged and whether the hedge is for price risk or physical delivery (and where delivery would be required). Rod Gravelet-Blondin, senior general manager in the Agricultural Products Division of JSE Ltd., said hedging price risk does not necessarily require a commodity exchange in the region because much of it can be hedged on the Chicago Mercantile Exchange. However, local or regional stock exchanges are more practical for delivery.

FOR FUTURE DISCUSSION

- *How feasible would it be for food assistance organizations to employ a financial hedging strategy?*
- *What would the timeframe be for doing so?*
- *Given that it does not involve physical delivery, how useful is this strategy in this context?*
- *What would a map of hedging options look like?*

SOLUTIONS TO SUPPLY RISK CHALLENGES

SOLUTION

9

Tap public-sector grain reserves.

Physical grain reserves can help mitigate supply risk. In emergencies, humanitarian organizations could tap public-sector reserves in the country or region in need. In addition, physical grain reserves have proved to be a valuable way to help small farmers realize the best price for their harvest and ensure food is available during lean periods.

Public and private reserves are held in countries around the world. Although both types of storage can buffer needs during food shortages, the private sector typically holds an insufficient amount of food to feed people during an emergency or holds it far from the areas of greatest need. The public sector often steps in to fill this gap by keeping its own reserves. Because the poorest people are unable to access private markets when prices rise drastically, governments use reserves as a safety net to help meet these needs. This section examines best practices to ensure that public-sector reserves are run efficiently and in a cost-effective manner.

Use of public-sector reserves by food assistance groups is already happening to some degree. The WFP has accessed reserves in developing countries to improve response times. It often borrows from Ethiopia's national grain reserve and replaces the grain when supplies from donors arrive.³³

Grain reserves can be structured in many ways and can be physical or virtual. Physical reserves consist of food stocks held in warehouses close to where they may be needed. Virtual reserves, a proposal by researchers at the International Food Policy Research Institute, would require participating countries to commit funds for intervention in the grain markets when prices rise above a certain level. The reserves are virtual in that these funds would not be drawn on unless needed. Total required commitments were estimated at \$12 billion to \$20 billion. Intervention would consist of executing short sells in futures markets to lower the spot price.³⁴

Lab participants recommended the use of physical reserves and questioned the high cost of virtual reserves. In a paper presented at the World Grain Forum 2009, Brian Wright of the University of California, Berkeley, noted that the scheme is financially risky, subject to manipulation by traders, and likely to lose money on average, eventually exhausting its budget.³⁵

Lab participants explored several forms of reserves:

- Community granaries.** The WFP successfully supports community granaries that provide storage at the local and village level in Cameroon and the Sahelian countries south of the Saharan desert. The agency helps establish these granaries and trains locals to operate them. In addition to providing storage, community granaries ensure a stable food supply in the community. They buy from local farmers during harvest and sell in lean periods.

Physical grain reserves have proved to be a valuable way to help small farmers realize the best price for their harvest and ensure food is available during lean periods.



WFP/Simon Crittle, Sudan, 2006

- Warehouse receipt systems.** These storage facilities stabilize farmers' incomes because they allow them to store their food instead of selling right after harvest, when prices are usually lower. They also allow farmers to use their stored commodities as collateral for financing. Lab participants noted that warehouse receipt programs give farmers confidence to produce because the programs reduce the risk of a surplus. Farmers can store and market their excess production, making it less likely that they will reduce production the next year.

Chris Moore, senior advisor on public policy for the WFP, noted the importance of warehouse receipt systems in smoothing local shortages. Though a country is often seen as a unified source of supplies, in reality, shortages can occur in one part of a country when another part has a surplus. "If you can reduce the risk for the producers within the country in areas that more likely are surplus, then you can make more opportunities available for local purchase and then shorter delivery times within the country," he said.

- National reserves.** Countries that experience frequent shortages or emergencies may set up their own reserves to respond more quickly. Ethiopia, Mali, and Indonesia, among others, hold national reserves.
- Regional reserves.** Countries can pool their resources and create a reserve. For example, the members of the South Asian Association for Regional Cooperation—Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka—have set up a regional food reserve for shortages and emergencies. Regional physical reserves might not work everywhere, however. The New Partnership for Africa's Development (NEPAD) does not recommend regional reserves in Africa because of high management and logistics costs and potential delays in decision-making. Instead, NEPAD suggests setting up committees that facilitate the use of national reserves for regional objectives. It also recommends regional financial reserves that could be drawn on during emergencies.³⁶

Lab participants saw various challenges with public reserves but offered some methods to mitigate them. The challenges and corresponding solutions are:

- Reduction in private storage.** Private storage facilities may reduce their holdings if they assume the government will provide food during lean seasons. It is important that publicly held stocks not discourage private storage because private storage has a smoothing effect on prices, Wright, of UC Berkeley, noted. Private-sector stocks help limit price spikes because the facilities buy right after harvest and sell when supplies are scarce.

Solution: Limit the amount of physical stocks held in public reserves. The public sector should hold only enough food in reserve to cover expected shortfalls, based on estimates of private-sector food stocks and predicted need. Information systems, monitoring, and transparent operation of reserves are critical to carrying out this approach effectively.

Fraud risk. In a fraud situation, a warehouse will claim to store a commodity that in reality does not exist, a risk that Kshama Fernandes, vice president of IFMR Capital, said she faces with warehouses in India. The size and structure of reserves can affect the probability of fraud, according to Tom Bauer, head of Food & Agribusiness Research & Advisory at Rabobank International in Asia. He has found that smaller, more scattered storage units tend to be targets of theft. Centralized storage might decrease theft, but Wright said this increases transport costs and delivery times.

Solution: Wright suggested finding some kind of intermediate storage, between centralized and scattered stocks, that would minimize cost and theft but would maximize access. Jorge Rodriguez of Archer Daniels Midland Company (ADM) said proximity to ports can make it easier to monitor and control the movement of products. He also stressed the importance of having someone financially responsible for the reserves. Bonded warehouses, where they exist, are useful in this regard. It is also essential to employ professional-level collateral management. Fernandes said IFMR structures agreements so that collection managers have a financial incentive to protect the stored goods. The agreements require those looking after the commodities to pay a certain amount if reserves are damaged or stolen.

Impact of stock release and replenishment on local markets. Stock release and replenishment should be timed carefully because the process can disrupt local markets and put pressure on prices. Stocks must be recycled periodically because commodities have a defined shelf life.

Solution: Selling products during the lean season is one way of recycling food stocks. Because stocks can discourage domestic production, clear rules for stock release and replenishment are critical to increase the predictability of when commodities will enter the market. As noted above, information systems that reveal the level of reserves can also be useful.

Other concerns include:

- **Ratio of cash to physical reserves.** In addition to the physical commodity, reserves should include a cash component. The ratio of cash to grain would differ depending on where the reserve is located. For example, a country that is well-connected to the global trading system may not require physical storage but should have cash to purchase commodities in times of need. Costa Rica, for instance, has a 100 percent cash-based reserve.
- **Location of reserve.** Reserves are particularly useful in locations far from major trading routes where delivery during emergencies is difficult. To limit transport costs and delays, food stocks should be placed near major areas of potential need. When it is not known where stocks will be needed, placing them near areas of production helps retain delivery options.
- **Costs of holding grain reserves.** Grain reserves also face a number of financial challenges that limit their ability to play a long-term role in food assistance supply chains. These challenges include the high cost and sometimes significant losses associated with procuring and storing grain and rotating and replenishing stocks. Existing physical reserves tend to rely heavily on donor funding. Sustainable solutions for financing reserves should be explored further.

FOR FUTURE DISCUSSION

- *Where should reserves be located and at what level (local, national, or regional)?*
- *What is the most cost-effective way to run reserves?*
- *How can reserves be financed so they are less reliant on donor money?*
- *How can physical reserves be combined with other risk management instruments (e.g., purchasing put options to managing excess reserves)?*



SOLUTION

10

Arrange tax credits for private-sector companies to tap their stocks at the tax-free price.

In addition or as an alternative to public reserves, food assistance groups may want to tap privately held food stocks. Rodriguez, of ADM, discussed the possibility of giving such organizations access to his company's food stocks, which are stored in many countries, including most ports in West Africa. If the stocks are close to where need arises, they would cost less to transport and could be delivered quickly.

However, private companies must pay taxes on commodities. As a result, the price at which a company can offer the commodities to assistance organizations, which are exempt from paying taxes, can be high. If ADM could receive a tax credit for future import fees, Rodriguez said, it could provide food to such organizations quickly and locally at the tax-free price. Rodriguez noted that humanitarian organizations would have to arrange this with each country's Ministry of Finance.

FOR FUTURE DISCUSSION

- *What companies hold food stocks near vulnerable regions of the world?*
- *In which countries are these private-sector stocks held?*
- *What would a reasonable system to administer this solution look like?*
- *Could this solution be designed so delays and administrative costs do not exceed the savings?*

SOLUTION

11

Set up pre-positioned food stocks near the area in need.

Pre-positioned stocks—commodities secured in advance of emergencies and placed at strategic locations for shipping at a later date—can be beneficial because they reduce response times and can result in lower prices.

Since 2002, USAID has pre-positioned stocks, improving response times. For example, the food aid warehouse it established in Djibouti in 2007 has helped reduce delivery times to Ethiopia, Somalia, Sudan, and the surrounding region by 75 percent—three to four months—compared to shipping food from the United States. Due to its success, USAID will set up several more warehouses in 2009.³⁷

Although pre-positioning has improved USAID's delivery time, several concerns remain. The practice involves additional storage and cargo costs. For instance, USAID officials found that average freight rates for prepositioned cargo could be \$20 per metric ton more expensive.³⁸ USAID also has not used the facility to its full extent. While the facility holds up to 30,000 metric tons of commodities, it usually holds just 5,000 to 6,000

metric tons. USAID has not been able to build up the reserve because emergency needs have taken priority.

Finally, not all countries are feasible locations for pre-positioned stocks. Dale Skoric, director of the Policy and Technical Division for USAID's Food for Peace, said USAID put its facility in Djibouti because it can get silo sanitary certificates there. Skoric pointed to the importance of working with a government that is willing to re-export the commodity with the right certificates.

FOR FUTURE DISCUSSION

- *Are pre-positioned stocks more cost-effective than other methods of securing stocks (e.g., tapping public-sector reserves, procuring supplies locally or regionally)?*
- *What are the most strategic places to hold these stocks?*
- *Given that pre-positioned stocks are funded by donors, how can this solution be made sustainable?*

SOLUTION

12

Buy call options with domestic animal feeders or biofuels producers.

Wright, of UC Berkeley, said call options might be a better alternative to physical reserves. The demand for grain for biofuels and animal feed has increased significantly, he noted, reducing the amount available for human use. Currently, 35 percent of the world's grain is used to feed livestock; in 2008, 30 percent of the U.S. corn crop was used to make ethanol.³⁹

To counteract this diversion of grain in areas where animal feeding or biofuels are prevalent, intermediaries could buy call options from domestic animal feeders or biofuels producers to make their grain available for relief during a food crisis. Similar options agreements exist with farmers who irrigate to guarantee urban water supplies in droughts. If severe crises are relatively infrequent, such options might be more cost-effective than managing physical reserves.

FOR FUTURE DISCUSSION

- *How much do particular cereals used for animal feed and biofuels contribute to human food shortages?*
- *How much additional supply could call options divert to human consumption?*
- *How willing would animal feeders and biofuels producers be to enter into these contracts?*
- *What would be the trigger mechanism to execute the call?*



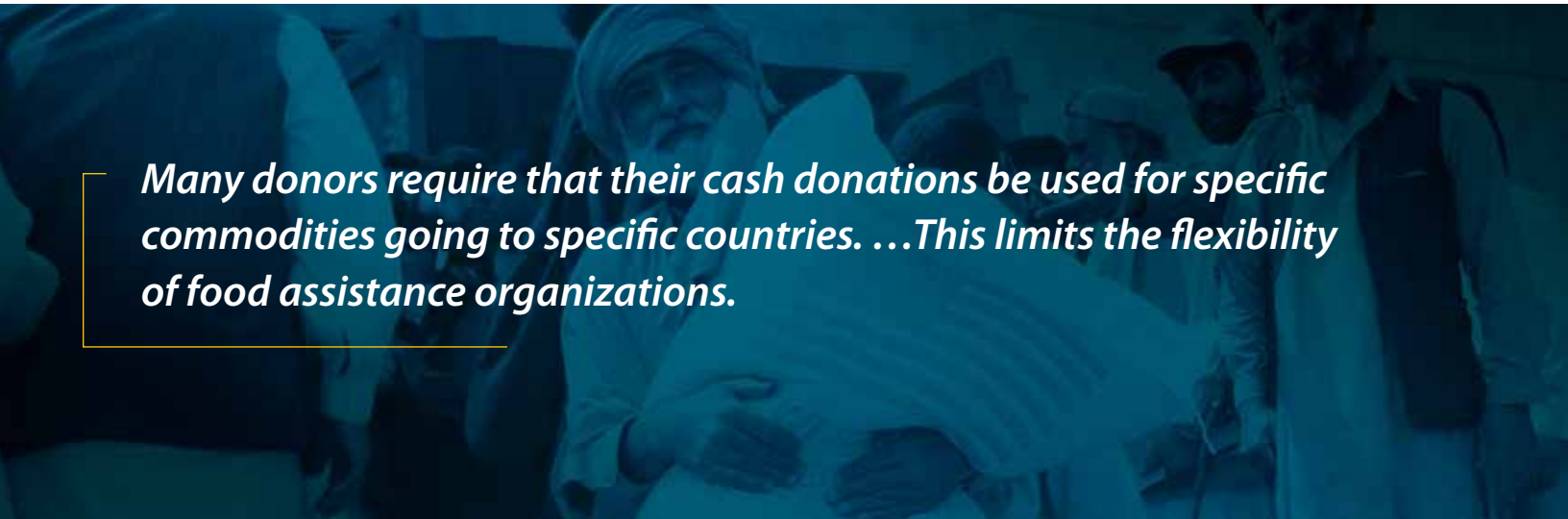
FOOD CRISIS TURNS DIRT INTO DINNER

In Haiti, what looks like a clay plate may actually be a meal.

Brittle and gritty, these flat, uneven dirt “mud cakes” became dinner for hungry Haitians during the 2008 food crisis. “It stops the hunger,” mud-cake maker Marie-Carmelle Baptiste, told the *Guardian* newspaper in July 2008. “You eat them when you have to.”

The mud cakes became an unofficial misery index. As the situation grew more desperate, mud-cake production increased, and food sold by other vendors languished on their shelves. Hunger pangs were so severe that Haitians referred to them as “swallowing Clorox.”

Though the mud cakes are consumed year-round by impoverished pregnant women seeking a source of calcium, the food crisis turned them into a staple for the poorest Haitians. Estimates at the time predicted Haiti’s food import bill would skyrocket 80 percent for the year.⁴⁰



Many donors require that their cash donations be used for specific commodities going to specific countries. ...This limits the flexibility of food assistance organizations.

LEGISLATIVE, REGULATORY, MANAGEMENT, AND POLITICAL CONSTRAINTS

Any of the solutions considered in this report would have to be deployed in the context of various legislative, regulatory, political, and management constraints. Although the Lab did not focus on these issues, their relevance was noted. The limitations of the United States, the world's largest food assistance donor, are the most prominent. For instance, the United States requires that most of its food assistance be commodities grown on U.S. soil, instead of cash, and that 75 percent of food aid be transported on U.S.-flagged vessels.

The provision of cash instead of in-kind aid would enable the United States to deliver assistance more effectively. A recent report from the U.S. Government Accountability Office found that local procurement could save a significant amount of time and money compared to in-kind food assistance. An analysis of food assistance delivered to certain countries from 2001 to 2008 estimated that local procurement cost 25 percent less on average than similar in-kind donations purchased and shipped from the United States. It also found that, from 2004 to 2008, delivery of in-kind food assistance to 10 sub-Saharan African countries took an average of 147 days, while local and regional procurement took 35 and 41 days, respectively.⁴¹

By using in-kind food assistance, the United States also neglects development opportunities overseas. Skoric said 45 percent of each dollar spent on food assistance went to purchasing the commodity and 18 percent went to ocean transport in 2008. That means 63 percent of each dollar stayed in the United States instead of supporting farmers and communities in developing countries. The July 2009 statement from the G-8 acknowledges the need for more funds to foster local development.

In addition, many donors require that their cash donations be used for specific commodities going to specific countries (or that their in-kind donations be specifically targeted). This limits the flexibility of food assistance organizations. In most cases, they cannot borrow commodities from reserves in the region of need and replace them at a later date. Also, limiting the use of local reserves delays response times. Changing these constraints generally would require legislative action.

Additional constraints result from the lack of rule of law, corruption (real or perceived), and unpredictable local politics in many developing countries. Several Lab participants representing private-sector firms noted their reluctance to enter into contracts in such countries. The Lab discussed the possibility of political risk insurance as a way to encourage the private sector to work in these countries.



WFP/Nasir Attai, Afghanistan, 2005



ZIMBABWEANS HUNGRY IN FORMER LAND OF PLENTY

In once bountiful Zimbabwe, seven out of 10 people went hungry last year, eating either one meal or nothing the day before, a United Nations survey found.

Now in its seventh year of drought, Zimbabwe used to export significant amounts of maize, but since farmland was redistributed early this decade, the country has become a net importer of the crop.

In a place where feeding families was already difficult, 2008's food crisis made things worse. Villagers foraged for worm-infested fruit and boiled wild leaves, and Maidei Kunaka ground up the animal feed to nourish her three children.

"It's not tasty, but we at least have something in our stomachs," she told a *New York Times* reporter in December 2008.⁴²

Zimbabwe used to export significant amounts of maize, but since farmland was redistributed early this decade, the country has become a net importer of the crop.

The structure of aid also generates some constraints on implementing these solutions. The funding stream is such that aid organizations respond to the wishes of the donors, rather than the hungry. The donors are far removed from the countries and may not fully understand the intricacies of transportation and distribution in these places.

Finally, introducing new funding and risk management solutions into humanitarian organizations requires additional expertise.

The organizations' leaders are expert in the issues surrounding food assistance and in managing NGOs, but not necessarily in innovative financing. Klein, the WFP advisor, suggested this knowledge need not reside in the organization but could be provided by others along the supply chain. Any exploration of these strategies would require the engagement and education of key personnel in food assistance organizations.

CONCLUSION

It is vitally important that humanitarian food assistance organizations deliver food on time and at low cost to vulnerable populations. Efficient operations will increase the number of people who receive food assistance and will limit hunger's long-term effects on developing countries' economic development. In an environment where millions die annually from hunger and climate change threatens to worsen the situation, it is crucial that food assistance organizations maximize their use of limited funds. The long-term costs and consequences of hunger on areas such as health, productivity, and national security make early and efficient response imperative.

Participants in the Financial Innovations Lab proposed and discussed specific solutions to increase the efficiency of these organizations. Most of the mechanisms explored in the Lab and reviewed in this report are not, in and of themselves, new. Both the funding instruments and the risk management solutions have long been used in the private sector. What is innovative is their application to the challenges faced by organizations providing food assistance.

As noted, Lab participants touched on a variety of options. This report contains those that seemed most appropriate to the identified challenges and were explored in the most detail. The complexity of implementation varies greatly, and some have a greater chance of being adopted than others. Of those covered here, the ones that seem to be the most promising in the near- and medium-term are food assistance bonds, forward purchases, call option contracts for contingencies, physical grain reserves held by the public sector, and tax credits for private companies willing to sell their food stocks.

Additional discussion and research are required to determine if these approaches would indeed work for humanitarian organizations, taking into account financial, organizational, management, and political challenges. If there is interest in moving forward with one or more of these options, we recommend convening working groups to further develop each concept and its application to food assistance. Participants should include representatives of the relevant aid organizations, Lab participants interested in ongoing involvement, and other experts needed to produce an implementation plan. These might include government agencies, development finance institutions, individuals with specific financial expertise, attorneys (e.g., someone with an international tax practice to consider the tax credit solution), grain traders, and appropriate foundations.

Each group would include five to 10 people and would delve into the details of how the solution might work, obtain any missing information, identify and reach out to potential partners, and test the concept with key stakeholders. The questions noted in this report could serve as a starting point. The goal of the working groups would be to refine one or more solutions so pilots can take place.

Before convening working groups, food assistance organizations should discuss the options with their donors and determine which are the most viable for further consideration. It is critical that donors support humanitarian organizations in updating and restructuring their financial and risk management tools.

Solutions for hunger exist on many levels: technological, agricultural, political, and financial. The developed world just needs the will and motivation to follow its conscience, and the G-8 nations' commitment is a good starting place. Hunger can no longer sit on the world's back burner. The health of 1 billion people depends on it.

APPENDIX I

Financial Innovations Lab Participants

*(Affiliations at time of Lab)***Tom Bauer**

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APPENDIX II

Literature Review

AUTHOR(S)	YEAR	TITLE	PURPOSE	RESULTS	IMPLICATIONS	TYPE OF DOCUMENT
Brian Wright	2009	A Note on International Grain Reserves and Other Instruments to Address Volatility in Grain Markets	Considers the underlying causes of the price hikes of 2007–2008, reviews the different models of grain reserves, and considers their applications for managing grain market volatility in light of the recent crisis.	Recent price spikes are not particularly high relative to historical swings. Causes of spikes include: rapid increase in developing countries' income; diversion of food for biofuels; rising costs of fertilizer and fuels; and a relatively low stocks-to-use ratio, leaving market vulnerable to large price spikes from small supply disturbances. Anxiety over the 2007 rice shortage triggered panic; export controls, taxes, and bans exacerbated the crisis. The author considers various storage policies and rejects: a large international grain reserve (it would save on stocks and storage costs, but international collaboration during food emergencies is highly unlikely); price band rules for stabilization (price peaks are reduced to the top of the band, but private storage is reduced and production is discouraged when most needed); and a virtual buffer stock to smooth spikes (financially risky and subject to manipulation). Supports national strategic reserves with floor prices; small emergency reserves; better collection and sharing of information on global grain stocks; and stronger WTO export controls.	The author believes that national grain reserves offer the best protection against price volatility. Price stabilization schemes are more complex than is typically assumed and less effective in ensuring food security for those most at risk.	Paper prepared for conference
Joachim von Braun and Maximo Torero	2009	Implementing Physical and Virtual Food Reserves to Protect the Poor and Prevent Market Failure	Provides more specifics on how a virtual reserve would work. Expands on the authors' 2008 policy brief (summarized below).	The authors provide a schematic of the virtual reserve and explain how the participating entities would contribute. Their preliminary estimates are that the virtual reserve would need to be between \$12 billion to \$20 billion to send a credible signal. The innovative concept behind the virtual reserve is that it provides a signal to market participants, and by capping potential profits, it may divert speculators from entering the market.	The virtual reserve responds to the need to facilitate well-functioning grain markets. The reserve discourages speculators from driving up food prices, which makes food less accessible to billions of poor people around the world.	Policy brief
Joachim von Braun and Maximo Torero	2008	Physical and Virtual Global Food Reserves to Protect the Poor and Prevent Market Failure	Proposes two solutions to the recent failures in commodity markets, which caused steep price increases and limited the availability of food in developing countries around the world.	The authors suggest (1) constructing a minimum physical grain reserve for humanitarian assistance. It would be stocked with a reserve equal to about 5 percent of current food aid flows. The major grain-producing countries would supply the food, and a group of participating countries would fund the reserve. The reserve would be decentralized and stored at strategic points in or near developing countries. The authors also recommend (2) setting up a virtual reserve to calm markets when prices rise above a certain estimated price band. It would be virtual in that participating countries would commit to supplying funds if needed for intervention in the grain markets, but these funds would not be drawn upon unless needed. Intervention would consist of executing short sells in futures markets to lower the spot price.	The authors believe the recent rise in grain prices was due not only to changes in supply and demand, but also to rising expectations, speculation, and hoarding. Their solutions are meant to provide emergency assistance while also attending to rising prices in commodity markets.	Policy brief

AUTHOR(S)	YEAR	TITLE	PURPOSE	RESULTS	IMPLICATIONS	TYPE OF DOCUMENT
New Partnership for Africa's Development (NEPAD)	2004	NEPAD Study to Explore Further Options for Food-Security Reserve Systems in Africa	Presents lessons based on a review of eight African countries' experiences with food reserves. The study was initiated by African Heads of State at the African Union Summit in July 2003 to review how physical reserves might ameliorate food insecurity in Africa.	African governments with a record of food insecurity should consider establishing national emergency food security reserves, managed by independent entities, with enough stock to meet needs for up to three months. Ethiopia's Emergency Food Security Reserve is one of the best examples of such a system. Physical reserves should have clear stock management and accounting procedures and trained staff, as well as a financial component to cover management costs and to purchase food locally where there are surpluses. Complementary measures to the reserve should include: development of food security, market development and trade policies; national early warning and food security information systems; and transport, storage, and communications infrastructures. A good example of such an "integrated" food security reserve system is Mali's PRMC. Regional physical reserves are not recommended because of their high management and logistical costs and potential delays in decision-making.	Physical reserves might not be appropriate for all African countries. The reason for holding reserves in Africa is the limited scope of local markets and the long lead times for obtaining food in an emergency. The size of physical reserves depends on a country's proximity to international markets and degree of variability in domestic production.	Report
World Food Programme and New Partnership for Africa's Development (NEPAD)	2004	WFP-NEPAD Study on Food Security Systems in West Africa: Mali, Burkina Faso, and Niger	Examines three models of food security in West Africa and proposes a model food security structure that may be applied in other regions and countries in Africa.	Food reserve systems in Africa should have sound policies, strong government and donor support, good management, independent information services, objective rule-based decision-making, solid baseline data, and mutual trust among the supporting entities. National physical food reserves to respond to food crises are the most likely to succeed. Regional physical food reserves are unlikely to work due to the difficulties of designing a structure that is acceptable to all participating countries, as well as decision-making and funding hurdles. (The unsuccessful attempt to create a regional food reserve for the Sahel in 1987 serves as an example.) Regional financial reserves, however, are feasible. A scheme in which donors maintain a line of credit dedicated to emergency needs is also possible.	Reserves can protect African countries in times of food crisis. Food security systems will likely require the support of donors.	Report
John Lynton-Evans	1997	Strategic Grain Reserves: Guidelines for Their Establishment, Management, and Operation	Serves as a practical guide for determining the need and appropriate structure for a strategic grain reserve.	Strategic grain reserves can generally serve three functions: (1) allowing countries to cope with food emergencies, (2) stabilizing prices, and (3) providing loans of grain to specific agencies (e.g., when shipping delays occur). The government should fund and own the reserve, though an independent entity may manage it on a day-to-day basis. Minimum size of the reserve should be one month's requirements and the maximum size should be equal to the quantity required to meet market demand until alternative supplies can arrive. Part of the reserve could be held in cash and part in physical stock. The proportions of each could be adjusted on a yearly basis to respond to changing likelihoods of a food emergency (the greater the risk, the higher the ratio of physical stock to cash, and vice versa).	A strategic grain reserve can take many forms. Its most appropriate structure depends on a government's policy objectives and general conditions in a given country.	Report

AUTHOR(S)	YEAR	TITLE	PURPOSE	RESULTS	IMPLICATIONS	TYPE OF DOCUMENT
Thomas A. Miller	1981	Policy Alternatives to Manage Demand: Food Reserves and Storage Programs	Examines U.S. storage and reserve programs in an international context.	The U.S. policy of free trade and farmer-owned reserves (which encourages farmers to put aside grain when prices are low and place grain on the market when prices are high) could be supplemented with government-owned emergency food reserves. Government-owned reserves could be more effective at meeting emergency needs compared to private stocks. The author also discusses the option of creating international food reserves, but a number of questions remain about how this would work, including who pays, who stores the reserve, and who controls it.	The author notes that adding a government-owned security reserve, along with making minor changes in farmer-owned reserve operating rules, would increase the cost-effectiveness of U.S. grain policy and bring more stability to the world market.	Journal article
D. Gale Johnson	1978	Limitations of Grain Reserves in the Quest for Stable Prices	Explores the extent to which grain reserves can stabilize prices, with a focus on reaction to the 1972–1974 world food crisis.	Grain reserves by themselves would not have prevented the price increases that occurred from 1972 to 1974, although they can provide some price stability. With regard to whether an internationally supervised system of grain reserves is feasible, the author states that countries would not be able to negotiate rules for managing those reserves; they would need to agree on price bands, cost sharing, quantities, and ownership. Additionally, it is likely that international grain reserves would substitute for privately held stocks such that the size of reserves from an international agreement would add little to world grain stocks.	In 1972, the U.S. released stocks too quickly and was unable to manage the large grain price increases in the years that followed. Until we know how to predict the ramifications of changes in national agricultural and trade policies, we cannot estimate optimal grain carryover amounts or the effects of grain carryovers on price variability.	Journal article
Forward purchases and other risk-management instruments						
Tim Large (Reuters)	2009	Interview: WFP Plans Global Fund to Pre-Buy Food Stocks	Announces the World Food Programme's plan to launch an advance-purchase facility to secure food stocks in preparation for future emergencies.	An advance-purchase facility is intended to make the flow of food assistance more predictable. Under the plan, WFP will buy food at low prices, thus ensuring its availability before the need is acute. This approach would preclude the need to buy food at high prices during food shortages, a situation that often involves making purchases far from the country simply to secure lower prices or sellers breaking contracts when they find they can make more money elsewhere as prices continue to rise.	Josette Sheeran, executive director of WFP, states, "We need to get out of the erratic nature of food aid, so that we can make it a productive investment in societies and we can ramp up in a calmer, more systematic way."	News article
World Food Programme	2009	World Hunger Series: Hunger and Markets	Describes how well-functioning food markets can end hunger not just by providing food, but also by creating jobs and spurring economic growth. Outlines the opportunities and challenges in improving food security and suggests ten market-based strategies to end hunger.	Market-based actions to address food security include: decreasing staple food tariffs, removing import barriers, imposing export restrictions, releasing strategic grain or cash reserves, monetization, and using futures and options. The consequences and possible issues that might arise with each strategy are noted. The authors state that the appropriateness of public sector interventions depends on context specific factors.	Markets can help the poor get higher prices for their products and better wages for their labor, but they can also exacerbate hunger and worsen nutrition status. When implementing market-based solutions, the public sector needs to be sensitive to possible outcomes and embrace those measures that will benefit the poor.	Report

AUTHOR(S)	YEAR	TITLE	PURPOSE	RESULTS	IMPLICATIONS	TYPE OF DOCUMENT
Julie Dana and Christopher L. Gilbert	2008	Managing Agricultural Price Risk in Developing Countries	Surveys the experience of risk management in developing country agricultural supply chains.	Generally, entities in developing countries make limited use of developed country risk management markets. Access issues (e.g., contract sizes are usually much larger than developing country actors need, thus requiring that positions be aggregated; futures trading requires credit lines, which farmers and others lack; regulations make it expensive for developed country brokers to trade with developing countries) and basis risk limit the availability and benefits of these markets. Developing country futures exchanges with agricultural contracts (e.g., in Brazil, China, India, Indonesia, Malaysia, and South Africa) can be successful in contracts for domestically consumed commodities and international commodities in cases where basis risk is large.	To increase use of market-based approaches, it is necessary for countries to identify and quantify risk, monitor price exposure over a season, and establish risk management monitoring and reporting. Developing countries need improved access to risk management, which should be tailored to their requirements and circumstances.	Chapter in a book
Kraig Jones, Kellie Curry Raper, Judith M. Whipple, Diane Mollenkopf, and H. Christopher Peterson	2007	Commodity-Procurement Strategies of Food Companies: A Case Study	Evaluates the main characteristics that food manufacturers consider in commodity procurement decisions. Based on interviews with twelve commodity-procurement personnel at three food-manufacturing companies.	Food manufacturers generally procure commodities through spot-market (i.e., cash) transactions or forward purchasing mechanisms. Firms may also reduce price risk by hedging spot-market purchases in the futures market. Characteristics that are important in commodity procurement decisions fall into three categories: (1) product constraints (e.g., perishability), (2) company constraints (e.g., storage availability), and (3) service constraints (e.g., special promotions). Commodity procurement departments focus first on supply maintenance, then on profit, and finally on relationship building.	The authors state that this study is a first step in trying to understand the process of commodity procurement (and the motivations that drive it), given that little information currently exists in this area.	Journal article
Guillermo Benavides and P. N. Snowden	2006	Futures for Farmers: Hedging Participation and the Mexican Corn Scheme	Examines why few farmers hedge their crops using market instruments and whether the public sector can offer incentives to encourage it. Uses Mexico's ASERCA program as an example.	Low utilization of Mexico's ASERCA program is not due to "inertia" on the part of farmers, but rather to the fact that farmers still bear a large portion of the risk, despite public subsidy. Although the farmers make use of the hedging scheme, they do not do so at a level that increases production to the degree that justifies costs.	The experience of ASERCA shows that government subsidies for hedging are unlikely to be worthwhile.	Journal article
Julie Dana, Christopher L. Gilbert, and Euna Shim	2006	Hedging Grain Price Risk in the SADC: Case Studies of Malawi and Zambia	Explores whether hedging on the South African Futures Exchange (SAFEX) may help to manage maize import risks in Malawi and Zambia.	To determine whether imports or storage offers the best way to provide maize in shortfall years, the authors simulate a pure inventory strategy, a pure export strategy, and a mixed strategy in which half of the countries' maize requirements are met by inventory and half from imports. Their scenarios are based on data from Malawi and Zambia between 1997 and 2004. They find that the import strategy has the lowest average cost, but the mixed inventory and import scheme lowers cost variability and therefore provides greater predictability. They then run a simulation to assess whether hedging imports is worthwhile. They find that hedging with futures and options lowers average costs, and reduces the cost variability associated with an unhedged pure import scheme. These benefits are greater when the hedge is leveraged.	Hedging should be carried out and a storage facility should be established, as the latter allows physical access to grain. Hedging can help deal with price variability of imports, but cannot protect against transport, storage, or financing costs. Together, these factors account for about 50 percent of the total cost of maize imports in Malawi and Zambia.	News article

AUTHOR(S)	YEAR	TITLE	PURPOSE	RESULTS	IMPLICATIONS	TYPE OF DOCUMENT
Alexander Sarris, Piero Conforti, and Adam Prakash	2005	The Use of Organized Commodity Markets to Manage Food Import Price Instability and Risk	Explores whether it is possible to hedge price risks of wheat and maize imports of low-income food-deficit countries.	The authors run simulations of hedging using Chicago Board of Trade (CBOT) futures and options data for the period 1986 to 2002. They find that hedging using futures and options in the CBOT exchange offers a way to reduce the unpredictability of import costs. Futures reduce unpredictability over a short period before import orders are placed, while options can increase predictability over longer periods. They note that the benefits from hedging relate only to predictability since CBOT is efficient and therefore profit opportunities are limited.	Low-income food-deficit countries can benefit from hedging imports. This strategy allows them to secure enough food for the population and precludes having to deal with short-term food crises. The authors note that this can lead to “a more orderly pattern of public investments and hence potentially faster growth.”	Working paper
Derek Byerlee, Bob Myers, and Thom Jayne (World Bank)	2005	Managing Food Price Risks and Instability in an Environment of Market Liberalization	Examines the sources and magnitudes of food price shocks, their resulting economic and social costs, the experiences of countries implementing market reforms, and specific policy options to manage food price instability and risk in a liberalized market environment.	Chapter 7 describes four policy options to limit price instability and risk: (1) market-based risk management instruments (warehouse receipts, futures and options, index-based weather insurance, and commodity-linked finance); (2) countercyclical safety nets (programs that become available when food prices are high or food security is otherwise threatened); (3) variable tariffs (to protect producers from very low prices in food-importing countries); and (4) strategic reserves to stabilize prices. The authors stress that the latter two policy options should be applied with great care, if at all, and only with certain safeguards to ensure they are implemented correctly.	The risk management instruments named in the report are rarely used in low-income countries. To increase their use, the public sector should create an enabling environment by helping to develop institutions that support rural financial markets and expand the availability of credit, improving communication and information systems, and educating intermediaries who could take advantage of these mechanisms.	Report
Donald F. Larson, Jock R. Anderson, and Panos Varangis	2004	Policies on Managing Risk in Agricultural Markets	Reviews the transition from price-stabilization policies in agricultural markets to market-based instruments to manage risk.	Many policies aimed at stabilizing commodity prices were dismantled in the 1990s due to their poor performance and high cost, among other problems. Attention turned from stabilizing market prices to managing their uncertainty. Market-based risk management strategies (including futures, options, and index insurance) can help small-scale farmers and other businesses in developing countries manage price and production risks.	Despite the promise of these strategies, risk management strategies present challenges. Their costs can be high, the degree to which they can be used in developing countries may be limited (e.g., because the contracts usually involve larger volumes than small-scale farmers would possess), and their markets are incomplete (e.g., not all commodities are covered).	Journal article

AUTHOR(S)	YEAR	TITLE	PURPOSE	RESULTS	IMPLICATIONS	TYPE OF DOCUMENT
World Bank	1999	Using Markets to Deal with Commodity Price Volatility	Outlines the barriers to using market-based commodity risk instruments in developing countries.	Barriers to scaling up use of market-based commodity risk management tools include: limited knowledge of how these tools work, counterparty risk, lack of credit, absence of liquid derivatives markets, problems of scale (i.e., aggregation of price risks of many small producers is necessary to hedge in international markets), basis risk (i.e., lack of correlation between local and international prices), and lack of transparent local reference prices.	Using markets to manage commodity risks offers great opportunity for developing countries, yet a number of barriers need to be addressed in order for actors in these countries to take advantage of these mechanisms.	Policy brief
Other						
United States Government Accountability Office	2009	International Food Assistance: Local and Regional Procurement Can Enhance the Efficiency of U.S. Food Aid, But Challenges May Constrain Its Implementation	Examines the impact of local and regional procurement (in which donors purchase food supplies in the country affected by the food crisis or a country nearby) on the efficiency of delivery, the impact on economies where food is purchased, and the relevant U.S. legal requirements.	Local and regional procurement (LRP) can substantially reduce the costs and delivery times involved in food assistance, lead to the provision of more culturally appropriate food, and support local economies. Challenges to adopting an LRP policy include: (1) insufficient logistics that lead to delivery delays; (2) donor funding restrictions; (3) weak legal systems that affect buyers' ability to enforce contracts; (4) inability to ensure quality standards and product specifications, which affect food safety and nutritional content; and (5) potential negative effects on local markets (driving up demand and prices).	More evidence is needed on whether LRP can adhere to quality standards, the reliability of market intelligence needs to be improved, and regulations regarding cargo preference requirements need to be updated.	Report
Francesco Fiondella (Reuters)	2008	Fighting Poverty with Index Insurance	Summarizes the outcomes of a workshop on the challenges in scaling up index insurance.	Index insurance (in which payout is triggered, for instance, if rainfall totals do not meet a threshold level) can help alleviate poverty and lessen the impact of climate change. It is preferable to traditional crop insurance, which requires insurers to go to each farm to assess damages and involves moral hazard problems. The largest obstacle to scaling up index insurance is how to reduce basis risk (i.e., the risks the insurance does not cover) and communicate it to farmers. Another obstacle relates to the complexity of program design. There is a tradeoff between complex insurance programs with low basis risk and simpler ones with higher basis risk.	Index insurance is a promising way for farmers in developing countries to manage agricultural risks.	News article
Erin Bryla and Joanna Syroka	2007	Developing Index-Based Insurance for Agriculture in Developing Countries	Presents lessons from pilot programs on index-based insurance products for agriculture and explores how to scale up such products in developing countries to promote sustainable development.	Discussion of weather index-based insurance began in 1999; donors began to finance pilot programs in 2002. Since then, several pilots around the world have been completed, including those in India, Ukraine, Ethiopia, and Malawi. Weather-indexed insurance represents a new alternative to traditional crop insurance, which was prone to moral hazard and adverse selection. Insurance payouts are triggered by an index instead of through actual crop yields. Current premiums for insurance tend to be 8 to 10 percent of the total amount insured, which has proved affordable for farmers. The main limitations of this insurance are that it does not cover all exogenous risks, basis risk, and the need for good-quality weather data.	Weather index-based insurance can assist farmers in covering weather-related production risk, enable them to access financing, and allow them to engage in higher-income activities. These results can lead to sustainable development.	Policy brief

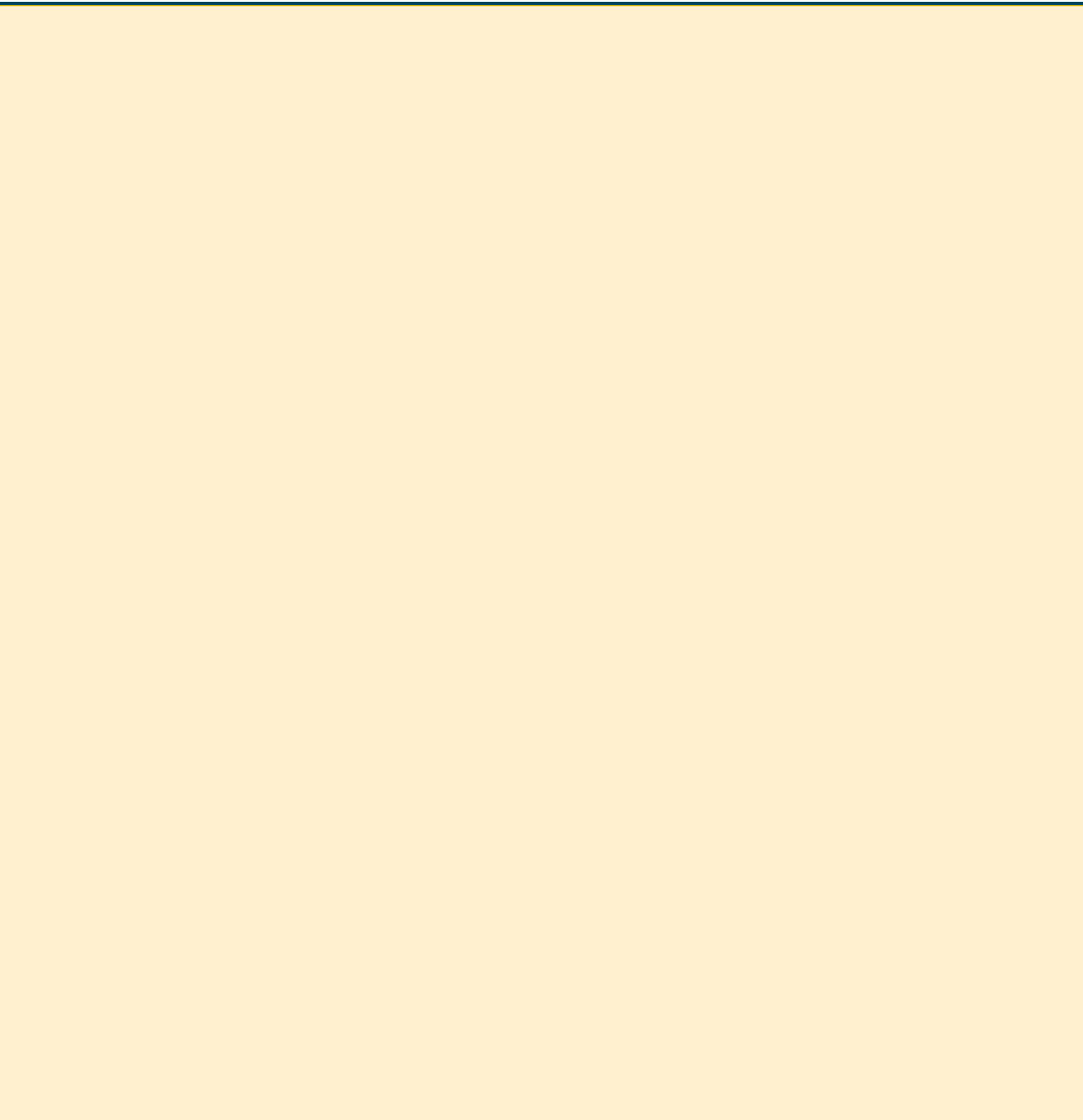
AUTHOR(S)	YEAR	TITLE	PURPOSE	RESULTS	IMPLICATIONS	TYPE OF DOCUMENT
Roger G. Ginder	2002	Grain Elevator Credit Sales Contracts and Alternatives to Reduce Their Risk to Producers	Reviews the financing needs of grain elevators and discusses the risks of credit sales contracts (a common tool), with exploration of alternative financing solutions.	The author explains the hazards of using credit sales contracts as a financing mechanism when farmers sell grain to elevators. While there are advantages (e.g., enabling the orderly flow of specialty grains or obtaining grain early when an elevator has excess capacity), these instruments can be misused by elevators facing financial difficulty. They may exploit their temporary title as a means to access needed cash. Potential solutions explored include: eliminating credit sales contracts as a legal means of selling grain, regulating contracts by limiting their dollar size, establishing an indemnity fund to cover losses, requiring more complete financial disclosure, requiring an escrow account, and requiring a letter of credit from the elevator's lender. The authors review the pros and cons of each solution, noting that each has some value and none is perfect.	Credit sales contracts are a common tool to enable farmers to transfer grain to elevators at harvest and delay selling it until a later point when the market may be stronger. But they pose significant risks to the buyer (elevator), and risk mitigation strategies should be considered.	Paper prepared for conference

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